



**Biljana ANGELOVA, Dubravka JURLINA ALIBEGOVIĆ  
Srdjan REDZEPAGIC**

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**Biljana ANGELOVA  
Dubravka JURLINA ALIBEGOVIĆ  
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## PREFACE

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As a result of an international scientific conference, with the joint effort, we have obtained this publication entitled CONTEMPORARY TRENDS AND PROSPECTS OF ECONOMIC RECOVERY. The long and successful cooperation between the institutions participating in this researches (CEMAFI International, Nice, France; University Nice Sophia Antipolis, Nice, France; Faculty of Economics – University of Coimbra, Coimbra, Portugal; Faculty of Economics – Technical University of Košice, Košice, Slovakia; Institute of Economics, Banja Luka, Bosnia and Herzegovina; Economic Institute Sarajevo, Sarajevo, Bosnia and Herzegovina; Institute of Economics Zagreb, Zagreb, Croatia; Institute of Economics Skopje, Macedonia; Institute of Economic Sciences, Belgrade, Serbia ; Institute for Economic Research, Ljubljana, Slovenia; Belgrade Banking Academy, Belgrade, Serbia; Faculty of Economics Podgorica, Podgorica, Montenegro and Chaire Jean Monnet, University Sorbonne Nouvelle, Paris, France, permitted to regroup these significant researches in this publication. The aim of it is to provide a clear presentation of the main facts, figures, theories, and practices required for a full understanding of contemporary trends worldwide and prospects of economic recovery, too. A wide variety of topics is therefore covered in this publication, and that is perhaps its main value. This publication provides a strong theoretical and practical approach to the actual analysis of global economic system and predicts future development of it.

Biljana Angelova  
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**PART I.**

**THEORETICAL ASPECTS OF  
ECONOMIC DEVELOPMENT,  
INTERNATIONALIZATION AND  
PROCESS OF EU ENLARGEMENT**

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# ASSESSING THE IMPACT OF THE WELFARE STATE ON ECONOMIC GROWTH: A SURVEY OF RECENT DEVELOPMENTS

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Marta C.N. SIMÕES<sup>1</sup>  
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## **Abstract**

*From the mid-1980s to the late-1990s a considerable number of empirical studies investigated the impact of the Welfare State (WS) on economic growth with no definite conclusions on the sign, transmission mechanisms and direction of causality of the relationship. More recently, globalization, population ageing and the public fiscal sustainability crisis experienced by many European countries brought the WS to the forefront of the debate on Government retrenchment. Some authors argue that the WS makes economies less productive and competitive, and thus hampers economic growth since its funding consumes scarce resources and introduces distortions in economic activity through disincentives embedded in the structure of the WS. Yet other authors call our attention to the fact that WS interventions have the potential to generate economic externalities that can outweigh their (potential) distortions. The opposing arguments on the impact of the WS on economic growth thus seem to claim for more empirical research on the subject. This paper provides a survey of the recent progress in the applied literature on the relationship between the WS and economic growth. The survey highlights that most empirical studies focus on testing the impact of social expenditures on the level or the growth rate of output ignoring the institutional features of Welfare State interventions. In turn, this leads to econometric specifications that make it difficult to interpret the observed aggregate relationships and derive meaningful and useful policy implications. The unresolved key issues that remain concerning conceptual, measurement and methodological issues call for more work on comparative analysis of WS size and composition and the respective impact on economic growth before a consensus can be reached.*

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**JEL Classification:** H51; H52; H53; I38; O40; P1

## 1. INTRODUCTION

From the mid-1980s to the late-1990s a considerable number of empirical studies investigated the impact of the Welfare State (WS) on economic growth with no definite conclusions on the sign, transmission mechanisms and direction of causality of the relationship (see Atkinson (1996); Damerau (2011)). More recently, globalization, population ageing and the public fiscal sustainability crisis experienced by many European countries brought the Welfare State to the forefront of the debate on Government retrenchment (see Clemente et al. (2012); Huber et al. (2013); Bontout and Lokajickova (2013); European Union (2013)).

There is a long-standing debate in the economic literature on the influence of the Welfare State on economic performance and controversies still remain on the sign of this relationship. Some authors argue that the Welfare State makes economies less productive and competitive, and thus hampers economic growth since its funding consumes scarce resources and introduces distortions in economic activity through disincentives embedded in the structure of the Welfare State (see Mares (2007)). Yet other authors call our attention to the fact that Welfare State interventions have the potential to generate economic externalities that can outweigh their (potential) distortions (see Lindert (2004)). The focus of this survey is to discuss recent attempts at incorporating the Welfare State in the empirical growth framework. After surveying the main theoretical arguments, we present recent empirical work on the effects of the Welfare State on economic growth with a particular focus on the main methodological problems that still need to be addressed.

The remainder of the paper is organized as follows. Section 2 briefly reviews the main concepts associated with the Welfare State. In section 3 we review some theoretical arguments on the linkages between the Welfare State and economic growth. Section 4 presents a review of the empirical evidence, highlights the main methodological problems, and suggests ways to move forward in empirical research. Section 5 concludes.

## 2. WHAT IS THE WELFARE STATE?

The origins of the Welfare State date back to the late 1800s but the modern use of the concept is usually associated with the implementation of social policy measures

in 1948, in the UK, following the Beveridge (1942) report. The construction of the modern WS occurs after World War II in the democratic developed countries, namely the Western European countries and the USA (e.g. the Fair Deal and the Employment Act of 1946), corresponding to a variety of regimes. Economic research on the subject registered different peaks since the 1950s but the debate on the relationship between the WS and economic performance is not a recent one (see Barr (1992); Atkinson (1995); Hassler et al. (2003); Lindert (2004)). More recently, globalization, the collapse of the Socialist countries, ageing trends in developed countries, among other factors, led to the resurgence of interest in the subject in the late 1990s, with the analysis of the globalization-WS nexus (see Rodrik (1998); Meinhard and Potrafke (2012), Schulze and Ursprung (1999) and Ursprung (2008) surveys), a topic of the utmost importance for developed countries. The 2007-2008 crisis and specially the sovereign debt crisis that hit some European countries since 2010 and the fiscal sustainability problems that followed gave a new breath to the economic research agenda on the WS and more specifically to the relationship between the WS and economic performance (Afonso and Allegre (2011), Andrade et al. (2013), Damerau (2011) and Piachaud (2013)). Nevertheless, the origin of the term is still in dispute<sup>4</sup> Hudson (2013) and there is disagreement on the concept, possibly because, as Esping-Andersen and Myles (2008) highlighted the fact, it has immensely evolved after the 1950s. The most important social reforms in terms of accrued benefits and population coverage have occurred in the 1970s, with large social expenditures increases until the 1990s in the richest democratic countries (see for example Lindert (2004)). There are other no less important reasons that might explain the lack of consensus on a WS concept: the several dimensions of the WS (e.g. welfare sources, modes of delivery, functions, types of intervention, boundaries of coverage, objectives, Barr (1992)) and also the existence of several ideal and real regimes (see Arcanjo (2006) and Bamba (2007) surveys).

The Encyclopaedia Britannica<sup>5</sup> offers a general definition that emphasises the roles and principles of the WS: “concept of government in which the state plays a key role in the protection and promotion of the economic and social well-being of its citizens. It is based on the principles of equality of opportunity, equitable distribution of wealth, and public responsibility for those unable to avail themselves of the minimal provisions for a good life. The general term may cover a variety of forms of economic and social organization.” There are however definitions more focused on social expenditures, economic instruments and intervention areas. For instance, Lindbeck (2008) presents two definitions, a

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<sup>4</sup> According to Timmins (1995:6-7) cited by Hudson (2013) the first entry for “welfare state” in The Oxford English Dictionary dates back to 1955.

<sup>5</sup> The Encyclopaedia Britannica, available at <http://www.britannica.com/EBchecked/topic/639266/welfare-state>.



narrow and a broader one: “According to a narrow definition, the welfare state comprises two types of government spending arrangements: (i) cash benefits to households (transfers, including mandatory income insurance) and (ii) subsidies or direct government provision of human services (such as child care, pre-schooling, education, health care, and old-age care). By broader definitions, the welfare state may also include price regulation (such as rent control and agricultural price support), housing policies, regulation of the work environment, job-security legislation, and environmental policies.” Following the latter definition focus and regardless of the division between the narrow and the broader definitions, we can define the Welfare State as a state in which the government uses a significant portion of national resources to provide services that benefit individuals or families who meet certain criteria, i.e. they are intended to be consumed individually, as opposed to collective consumption goods such as national defence or internal security<sup>6</sup>.

If we take into consideration the main principles and social expenditures from the definitions above, we may agree with Barr (2001) that assigns two main objectives to the WS: a) a redistributive function (a *Robin Wood* function) – redistribution of income and wealth among individuals; and b) an insurance function (a *Piggy Bank* function) – provides protection to individuals against risks such as sickness, disability, unemployment, ageing, in an environment of imperfect information and uncertainty, through mechanisms of insurance and redistribution aimed at redistributing over the life-cycle. This function seems to have gained an accrued importance nowadays especially for the developed countries. The two functions give rise to public actions, commonly known as social protection and might be defined as “...*the public actions taken in response to levels of vulnerability, risk and deprivation which are deemed socially unacceptable within a given polity or society.*” Norton et al. (2002:543). Social protection is usually divided into social assistance, social insurance and labour market interventions. Social assistance covers public policies that target vulnerable groups (due to low income, age, or other dimensions of poverty). Social insurance covers public policies to mitigate risks, and the beneficiaries make compulsory contributions to the schemes. Due to their specificity, labour market interventions (LMI), although combining objectives a) and b), constitute another distinct group of social protection and might be defined as “*government actions to help and support the unemployed and other disadvantaged groups in the transition from unemployment or inactivity to work.*”<sup>7</sup>. Important public actions such as active labour market programmes (ALMP) are part of LMI and according to the OECD Glossary, ALMP “*includes all social expenditure (other than education) which is aimed at the improvement of the*

<sup>6</sup> See *A Glossary of Political Economy Terms*, Paul M. Johnson, Department of Political Science, Auburn University ([http://www.auburn.edu/~johnspm/gloss/welfare\\_state](http://www.auburn.edu/~johnspm/gloss/welfare_state)).

<sup>7</sup> See [http://epp.eurostat.ec.europa.eu/cache/ITY\\_SDDS/EN/lmp\\_esms.htm](http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/lmp_esms.htm).

*beneficiaries' prospect of finding gainful employment or to otherwise increase their earnings capacity. This category includes spending on public employment services and administration, labour market training, special programmes for youth when in transition from school to work, labour market programmes to provide or promote employment for unemployed and other persons (excluding young and disabled persons) and special programmes for the disabled.”*<sup>8</sup>

The quantitative description of the WS whatever the preferred approach (there are three fundamental approaches that substantiate the contemporaneous research: the expenses approach, the institutional approach and the regime approach, see, among others Wilensky and Lebaux (1965), (Castles (2004, Castles (2009), Gilbert (2009)), Korpi and Palme (2007), Esping-Andersen (1990, Espigen-Anderson (1999)) relies on the existence of an international database on social expenditure meeting criteria of quality, comparability and reliability, thus allowing for cross-country analysis. OECD produces such a database: the OECD Social Expenditure Database (SOCX)<sup>9</sup> that includes 34 OCDE countries for the period 1980-2012. Relative to the Eurostat and the ILO Social Accounting Systems, the SOCX presents a wider social scope and this is one of the reasons why it is so widely used among researchers (see Caminada et al. (2010, Caminada et al. (2012), Fishback (2010), Adema et al. (2011), Adema and Whiteford (2010)).

The SOCX database considers six social expenditure sources (public, mandatory private; public and mandatory private; voluntary private; net Public; net Total) and three types of expenditures (cash benefits, benefits in kind and total) and identifies nine social policy areas in the framework of social protection<sup>10</sup>: Old-age; Survivors; Incapacity-related benefits; Family; Active labour market policies; Unemployment; Other social policy areas; and Active labour market policies. The number of social expenditure programmes covered is thirty eight, such as: Total; Old age - Pension; Old age - Early retirement pension; Old age - Other cash benefits; Old age - Residential care / Home-help services; Old age - Other benefits in kind. This disaggregation is important since expenditure composition matters for economic performance and there are policy areas, social programmes and expenditures types that might absorb most of it.

Up to now we have only considered cash benefits and benefits in kind that serve social purposes but the fiscal system might serve also those objectives by including tax breaks for social purposes (TBSP) that either replace cash benefits or constitute

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<sup>8</sup> See <http://stats.oecd.org/glossary/detail.asp?ID=28>.

<sup>9</sup> See the OECD Social Expenditure Database (SOCX)

(<http://www.oecd.org/social/expenditure.htm>).

<sup>10</sup> More detailed than the above classification of social protection into social assistance, social insurance and LM.

a stimulus to the provision of private benefits. Child tax allowances and tax relief for the provision of private health plans are examples of the former and the latter TBSP, respectively. Additionally, TBSP might be awarded directly or indirectly (employees and private funds) to households. Examples of both types are tax relief for households and favourable tax treatment employer-benefits provided to households (see ADEMA et al. (2011: 25).

The number of social expenditures programmes listed above provides analysts and researchers with a richness of data that might cover a large scope of studies using different levels of aggregation and taking into consideration different programmes. For example, if the main objective of the cross-country study is to describe the evolution and recent trends in public social expenditure, the standard procedure would be to aggregate in order to get the main components. We might consider Cash Benefits (old age and survivors pensions; income support to working age population) and Services (health; all other services except health). No less important is that data richness allows researchers to take into consideration Social Expenditure composition and to quantitatively assess the contribution of different items (corresponding to different programmes) to economic performance (economic growth) since different measures might have opposite sign effects, and of different magnitude, on economic performance and growth. The literature reviewed in the next section gives the theoretical rationale for the latter interpretation.

### **3. DOES THE WELFARE STATE INFLUENCE GROWTH? AN OVERVIEW OF THE MAIN THEORETICAL ARGUMENTS**

From a long-run macroeconomic performance perspective, the fundamental question that has been asked is whether an extensive Welfare State and sustained economic growth are incompatible goals, i.e. whether it is necessary to reduce the first to stimulate the second (see Atkinson (1995)). A main objective of the WS defined as an aggregate of expenditures that enables the provision of the services described in the previous section is that of reducing inequality of opportunities by allowing for a more equal distribution of income. However, the impact of greater inequality on growth remains an unresolved issue in both the theoretical and the empirical literature. Aghion et al. (1999) and Barro (2000) contain a review of this literature suggesting that less inequality can be either beneficial or damaging for growth depending, for instance, on the particular stage of development of an economy or the specific part of the income distribution that is targeted. Earlier theories predicted a positive influence due to a higher propensity to save of the richer, with higher inequality leading to more physical capital accumulation and thus growth. Endogenous growth theory generally claims that inequality is

detrimental to growth on the basis, among others, of the credit market imperfections channel that lead to lower levels of human capital investments and thus slower growth because only initially rich individuals have the collateral to gain access to the credit necessary to invest in human capital. García-Penãlosa (2008) argues that since output growth, from a supply-side perspective, has four fundamental sources, physical capital, human capital, the labour supply and the level of technology, each of these represents a mechanism that relates the two variables, and so, depending on the main source of growth, inequality and growth may be positively or negatively related. Recent empirical studies have also failed to reach a consensus on the sign of the effect of inequality upon growth, arriving at varied and sometimes conflicting results (see Dominicus et al. (2008); Neves and Silva (2014)). In general, cross-country studies suggest that there is a negative relationship between initial income inequality and subsequent economic growth, even after controlling for other important growth influences, but using panel evidence leads to different conclusions. Forbes (2000) argues that this can be interpreted as evidence that inequality is detrimental to growth in the long run but not over shorter time horizons.

Another strand of the economic growth literature that contains some insights on the WS-growth nexus is that on government size and economic growth. Barro (1990) benchmark study argues in favour of the existence of productive public expenditures, those that contribute to an increase in investment in the economy, and unproductive ones, with the former allowing the acceleration of economic growth. WS expenditures that promote capital accumulation can thus be seen as productive public expenditures that enhance growth. For instance, it can be argued that social spending as whole promotes de accumulation of social capital by improving citizens' trust levels (see Kumlin and Rothstein (2005)), while health and education expenditures increase investment in human capital (see Piachaud (2013)). In a recent survey on the general topic of government size and growth, Bergh and Henrekson (2011) highlight the lack of consensus on the sign of the relationship, which the authors attribute to differences across studies on the measurement of government size and the sample of countries under analysis. However, the authors argue that: "(...) on studies that examine the correlation between growth of real GDP per capita and total government size over time in rich countries (OECD and equally rich), the research is rather close to a consensus: the correlation is negative (...)." (p.873). They also suggest that economies with big governments, such as the Scandinavian countries, can still register high growth rates because of (associated) higher social trust levels or by implementing market-friendly policies in other areas.

Focusing on social expenditure alone to determine the influence of the size of the WS on economic growth may, however, be inappropriate since it ignores the

impact of the taxes needed to finance its interventions. The main argument is that the higher taxes needed to support a larger WS will decrease the rates of investment and innovation by firms and discourage a larger effort from workers since the government will retain part of their earnings and profits, respectively, and thus lead to a decline in the long-term rate of growth of output (see Afonso and Allegre (2011)). The fundamental issue thus becomes to determine whether the potential economic costs of the Welfare State can be compensated by its respective benefits. Within an exogenous growth framework such as the benchmark Solow model (Solow (1956)), where the growth of technology is the main source of growth but it is not influenced by the decisions of economic agents, the higher taxes levied to finance social protection affect growth negatively during the transition towards the steady state due to lower investment, but not in the long-run, although transition can last for a long time. Endogenous growth theory highlights the role of human capital in the production of technology (see Lucas (1988); Romer (1990); Jones (1995)), whose accumulation can be influenced by the WS as whole as a provider of equality of opportunities or more directly as a provider of health and education. Depending on the stage of development, it is thus possible within this framework that larger welfare states are compatible with higher economic growth rates even if the taxes needed to finance it have negative consequences.

On a normative level more practical policy implications must be derived from the analysis of the impact of the composition of the WS (and not its total size) on economic growth, namely because of the behavioural or incentive effects of different dimensions of the WS (see Damerau (2011); Piachaud (2013)). From an economic growth perspective, two important dimensions of the Welfare State are public expenditures on education and health, to the extent that they lead to the accumulation of human capital. A healthier and more educated population/workforce corresponds in principle to a higher availability of human capital in the economy, thereby improving the productivity of workers and increasing in this way output (see Mankiw et al. (1992)). In advanced economies it increases the respective innovation capability (see Romer (1990)) and in those that are below the technological frontier it allows for the diffusion and transmission of knowledge in order to process new information and implement successful technologies developed by the leaders (see Nelson and Phelps (1966)). Investment in education and health can thus generate substantial returns over time, not just at the individual level, but especially for the economy as a whole, and the Welfare State can play a crucial role in this dynamic process. Spending on active labour market policies and policies which enable combining work and family, such as parental leave and day care, can also improve human capital and have a growth enhancing effect. Other types of social protection expenditures are often regarded as having negative growth effects due to the reduced incentives associated.

Unemployment benefits provide an illustration, with many economic models assuming that they discourage labour supply, since they guarantee an income for the unemployed workers (that discourages returning to work) and also serve as a protection to active workers, which are thus discouraged from higher working effort. But it is also possible to argue for positive behavioural effects of unemployment benefits by affecting the incentives of workers to undertake long-term investments in skills (see Estevez-Abe et al. (2001)). When the unemployment benefits are earnings-related they provide to high-skilled workers, with higher wages, some guarantees that their investments in education will not be lost during periods when they are temporarily out of work. Population aging and the associated increase in the share of elderly render old age pensions an important role in the analysis of the relationship between the WS and economic growth. Maintaining the current schemes available in most developed countries would necessarily imply a rise in taxes with its negative growth consequences. Additionally, the positive behavioural and inequality reduction (particularly higher human capital investment) effects are less likely to apply in this case unless a case similar to that for unemployment benefits can be made. By providing benefits that are proportional to wages, pension schemes provide some guarantees to high-skilled workers that their investments in human capital will not be undermined when they retire.

In summary, the literature reviewed indicates that it is not possible to determine universally whether the Welfare State as a whole stimulates or reduces economic growth. There will be some measures that have a positive influence, while others will have a negative impact, which makes empirical analysis fundamental to identify the existing relationship.

#### **4. EMPIRICAL EVIDENCE ON THE EFFECTS OF THE WELFARE STATE ON GROWTH**

##### **4.1. Main Findings**

The empirical analysis of the relationship between the WS and economic growth has relied on the estimation of growth regressions in which the dependent variable is the growth rate of real GDP, total or per capita, and social expenditures, total or disaggregated according to different categories, appear as the main explanatory variables, along with a number of other independent variables, the so-called control variables, which have proved to be important in explaining output growth in previous empirical studies (see Sala-i-Martin et al. (2004)). These studies explore information for a wide range of countries over different time periods but mostly for OECD countries due to data availability regarding social spending. Although we

highlight in the theoretical discussion that different dimensions of the WS are likely to have different growth effects, we start by describing a few studies that examine the correlation between total WS size and growth. Next we review studies that focus on the composition of the WS and their impact on economic growth. We also emphasize studies published in peer-reviewed journals or by credited international organizations after the year 2000 in order to provide an up-to-date picture of the empirical literature on WS and growth<sup>11</sup>.

Examples of recent empirical studies that take a more aggregate perspective of the Welfare State by considering the impact of public social spending as a whole on economic growth include HERCE et al. (2001), Fic and Ghate (2005), Im et al. (2011), Afonso and Furceri (2010), and Afonso and Allegre (2011). Applying a time series framework, Herce et al. (2001) investigate causality between GDP growth and social protection expenditure in twelve EU countries over the period 1970–1994. The results differ across countries: in seven cases causality runs only from social protection growth to GDP growth, while in the five remaining countries there is no evidence of causality in either sense. In each of these two groups of results it is possible to find countries with different WS models. In particular, the group of countries for which causality does not apply includes Denmark (Nordic WS model), the United Kingdom (Anglo-Saxon model), France (Continental model), and Greece and Italy (Mediterranean model), an indication that the design and implementation of the WS matters. Fic and Ghate (2005) use as an indicator of the size of the Welfare State spending on public transfers relative to public investment spending for 19 OECD high-income countries studied between 1950 and 2001. The authors pay particular attention to the possibility of joint endogeneity of social spending and growth variables and the existence of a non-linear relationship. They identify a dynamic feedback process between growth and the WS of the following form: “(...) initially, a high pre-break growth rate induces the welfare state to rise. Over time, a growing welfare state leads to a decline in growth. In the long run, lower growth dampens the growth of the welfare state.” (p.596). Im et al. (2011) compare the influence in developed and developing countries over the period 1990-2007, considering as a proxy for the Welfare State public spending on social protection, education and health relative to GDP. The 85 countries in the sample were categorized into three groups: developing; developed; and semi-developed countries. The fixed effects estimations results point to a positive correlation in developing countries, which becomes negative in semi-developed and developed countries. Afonso and Allegre (2011) try to assess the role of the WS within a more general investigation of the importance of fiscal policy for long-term output growth. Their dataset covers the period 1971–2006 for 15 EU Member States. The coefficients of the growth regression estimated using

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<sup>11</sup> For a review of earlier studies, see for instance, Atkinson (1996) and Arjona et al. (2002).

the GMM estimator reveal a negative relationship of social transfers, on the expenditures side, with economic growth and, simultaneously, a significantly negative coefficient attached to social contributions, on the revenues side. Using labour productivity and multifactor productivity as dependent variables in the regressions, the results remain basically unchanged. Afonso and Furceri (2010) focusing on OECD and EU countries also find a negative coefficient attached to social contributions, both in terms of size and volatility, although for EU countries the negative impact of indirect taxation seems to be stronger.

Some empirical studies probe deeper into the issue by disaggregating social expenditures. Although the theoretical arguments point to a positive impact of health and education expenditures, the evidence supporting them is not as clear. We review two recent examples of such disagreement. Baldacci et al. (2004) analyse the relationship between social spending, human capital and economic growth for 120 countries between 1975 and 2000 by estimating a simultaneous equations model, a methodology that allows to take into account the cross-influences between the variables under analysis. The estimated model consists of four equations (growth, investment, education and health), with social spending on education and health as determinants of the availability of human capital in the form of education and health, respectively. The authors analyse in this way the mechanisms of transmission of such expenses, verifying that they effectively contribute to the accumulation of human capital in the countries under analysis. The results show a positive and significant impact of expenditures on education and health in human capital accumulation, which in turn is confirmed as a major influence of the growth rate of real GDP per capita. Hartwig (2012) estimates a growth regression to test the relationship between growth in education and health expenditures per capita, together and separately, and the growth of real GDP per capita in a sample of 18 OECD countries between 1970 and 2005. The only other determinant of growth considered is the rate of growth of investment in physical capital. The results regarding the influence of health and education expenditures growth on the growth rate of real GDP per capita depend on whether or not the influence of the investment rate is considered and the inclusion of Japan in the sample. In the first case, when the author considers the investment rate as an explanatory variable he does not find any influence for health and education expenditures on growth. However, the exclusion of Japan from the sample makes this influence negative.

An example of an earlier study that attempts a more detailed assessment of the effects of the WS on growth is that of Arjona et al. (2003). The authors start by analysing the impact of total social expenditure on the growth rate of real GDP per working age population of 21 OECD countries over the period 1970 to 1998. The results found using the Pooled Mean Group (PMG) method to estimate a standard



growth regression point to a negative impact of total spending on growth that becomes less negative if health expenditures and expenditure on the elderly are excluded. In any case, social spending has a moderate effect on output in the long-term. Next the authors disaggregate social expenditure into active and non-active, where the former includes spending with active labour market policies and the latter the remaining components. The sign of the estimated coefficients differ according to the type of social expenditure, positive and quantitatively important for active spending and negative for non-active.

Afonso and Jalles (2014) main objective is to assess the effects on long-term growth of several spending and revenue budgetary components in a sample of 155 developed and developing countries over the period 1970-2008. The authors apply several different estimation methods that allow them to deal with the econometric problems that usually affect empirical growth studies such as outliers, simultaneity, endogeneity, non-linearities and threshold effects. As far as the influence of the WS is concerned, Afonso and Jalles (2014) disaggregate public social spending according to the following categories: education, health, and social security and welfare. On the revenues side, they explicitly consider social contributions. The statistically significant coefficients on the spending side are those for education expenditures, that have a positive growth impact in the developing countries subsample, and those for social security expenditures that have a negative effect on the growth rate of OECD countries.

On a slightly different but yet related note, Furceri and Zdzienicka (2012) assess the short-term effects of social spending on output, consumption and investment for a sample of OECD countries from 1980 to 2005. The results point to a social spending multiplier of about 0.6, not much different from the one for total public spending, 0.5. Disaggregating social spending into nine policy areas revealed that only health, survivors and unemployment expenditures have a positive and statistically significant impact on short-term output growth. A curious result from a long-term perspective is that health spending is the only category that has a positive impact not only on consumption but also on investment.

## **4.2. Methodological Issues and Challenges Ahead**

The empirical assessment of the importance of the WS for economic growth implies the use of WS measures suitable on theoretical grounds for the estimation of growth equations. The most widely used measures of the WS relate to social spending but the impact of the WS also depends on its financing and on institutional features of specific WS programmes, which in turn can have quite different behavioural effects. For instance, total spending may be a misleading indicator if a large share of such expenditures goes to privileged groups in society.

Furthermore, if it is the generosity of benefit levels that is believed to have an adverse impact on economic behaviour, a high level of social expenditure does not necessarily imply a high level of generosity. Total spending may be high on account of a large dependent population, not on account of a generous WS. Other features of the design of WS programmes that can influence economic behaviour concern coverage, eligibility, and duration of the benefit. An illustrative example is the unemployment benefits that usually depend on contribution conditions<sup>12</sup>, are paid for a limited duration, and are monitored to check that the person is making genuine efforts to seek employment. Differences across countries in terms of these institutional features may change the predicted impact of the WS on growth and thus should be incorporated in the empirical analysis. A promising effort to measure and make comparable across countries and time periods some of these institutional features for specific programmes such as unemployment benefits and old age pensions is that of Scruggs et al. (2014) and the Social Policy Indicator Database (SPIN) produced by the Swedish Institute for Social Research (SOFI), the successor of the Social Citizenship Indicator Program (SCIP) (see Ferrarini et al. (2013)).

Selection bias is a well-documented problem in economic growth empirics (see Dowrick and Nguyen (1989)) since cross-country regressions depend heavily on data availability. If the sample is not representative of the population (the countries of the world) this will result in biased estimated coefficients. For the topic under analysis this might be an important problem since the databases available for macro cross-country analysis are composed of OECD and EU countries only (see Ebbinghaus (2012)).

Another common problem faced by empirical growth studies is that of model uncertainty due to the large number of variables with the potential to influence economic growth (see Brock and Durlauf (2001)) so that different empirical models lead to different conclusions concerning growth determinants (see Sala-i-Martin et al. (2004)). The selection of the control variables to include in the empirical model to assess the importance of the WS for economic growth is thus of crucial importance. Accounting for model uncertainty requires some form of robustness check that attempts to account for all possible combinations of explanatory variables. Concerning model specification, there may also be a saturation point for social expenditure beyond which it becomes counter-productive in terms of economic growth, in other words the relationship is probably non-linear. To the best of our knowledge, previous studies do not consider whether the way in which the proxies for WS size and composition enter

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<sup>12</sup> For example, contribution conditions may induce people to take jobs in order to requalify for subsequent benefit.

the empirical model (linear or non-linear) has any substantial impact on the respective estimated coefficients. Additionally, this threshold will probably be dependent on specific national circumstances and the specific design of the WS system.

The accurate assessment of the importance of the WS for growth has also to take into consideration the probable endogeneity of the WS size and composition variables, a problem common to most of the explanatory variables included in growth regressions. For instance, when growth rates are higher less people will be unemployed and so public expenditure with unemployment benefits will be lower. Richer states also tend to have larger welfare states on account of an income elasticity of demand for social expenditure that exceeds unity (see Arjona et al. (2002)). There is certainly the need for more detailed research to overcome the lack of proof for causality. One way to move forward in this direction is to apply the concerns of time series econometrics to groups of countries, using methodologies for cointegration and causality analysis specific for panel data as in Andrade et al. (2013) that study the importance of public expenditure on education and on health for the behaviour of output in different samples of countries defined according to the respective income levels.

Additionally, a more complete and policy informing analysis of the WS-economic growth relationship requires an evaluation of the transmission channels through which it might occur. However, the studies reviewed in this paper are mainly concerned with the identification of the sign and magnitude of the WS effect on growth, which although important does not shed light on the underlying mechanisms. Exceptions include Afonso and Allegre (2011) that estimate the impact of budget components on multifactor productivity, and Furceri and Zdzienicka (2012) that examine the effects of social spending on investment. Nevertheless, this evaluation should involve testing structural models more theoretically based.

## 5. CONCLUSIONS

This review suggests that the assessment of the growth impact of the WS is subject to a number of methodological issues and argues that some of the most important are: (i) social spending, the most commonly used proxy, may be an insufficient measure of WS size and composition, since institutional features are fundamental determinants of incentives, while taxation is needed to finance expenditures increases; (ii) the robustness of the growth determinants to be included in the estimated growth specifications should be evaluated using appropriate techniques, as well as the functional form of the relationship, questioning the usual assumption

of linearity of the WS-growth relationship; (iii) the potential endogeneity of WS variables included on the right-hand side of the regressions has not been sufficiently addressed, and more attention needs to be paid to estimation techniques that apply time series econometrics concerns to a panel data context; and (iv) the mechanisms that link the WS to economic growth have not been tested in a systematic way. Understanding the different mechanisms that connect the two variables and the circumstances under which they operate is of crucial importance for social policy design and implementation.

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# REGIONAL DEVELOPMENT POLICY NECESSARY FOR EU ACCESSION

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## **Abstract**

*The purpose of this paper is to depict the importance of regional policy and the proper way of its implementation in practice. Regional policy is one of the most important policies of the EU, and a vast majority of its budget is planned for it. EU created the regional policy for political, economic and migration reasons, aiming to develop all the regions equally and to increase Europeans' living standard. Proper understanding of regional development, as well as proper implementation of regional policy measures is an essential precondition for Macedonia's entrance in the European family. Without strong regional policy, this is not possible. That is why amendments in the legal framework concerning regional policy should be made, and institutions responsible for promoting regional policy should be influenced. The Macedonian case is emphasized so a clear picture on the country's position in the process of decreasing disparities between regions can be obtained. Also, it should depict the preparation process of Macedonian regions' opening toward the European market when Macedonia becomes a member of the EU.*

**Keywords:** regional development, regional policy, Bureau for regional development, institutional forms, centres for regional development

## **1. INTRODUCTION**

Regional development is a relevant topic across the entire European Union, which has long been known as "Europe of regions". Concerning Macedonia, it has just started to become a burning issue.

Europe advocates and pushes the notion of not only thinking more locally, but viewing development at a higher level – at the regional level. "Interregional

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disparities of individual regions are not only seen in the light of unemployment and available income, but are also included in the broader aspects of socioeconomic life, such as human resources, level of education, access to finance and technology<sup>3</sup>.” Although the European Union is one of the richest places in the world, yet there's a great non-equality between different regions within it. We can safely say that in the same country there is different development between its regions. This is the result of several factors including the geographical location, or social or economic change, or a combination of both factors. To overcome the consequences which World War II left across Europe, starting from 1982, the EU began establishing the first development agencies, which were intended to reemploy the local economic development and accelerate investments in the regions<sup>4</sup>. However, these development agencies have different roles depending on the needs and possibilities of the cities and regions of establishment. Europe today consumes a huge part of the budget of the regional and cohesion policy of its member states. Most of the regional spending is reserved for regions with a GDP below 75% of the Union average, to improve their infrastructure and development of human and economic potential<sup>5</sup>. In this regard, in all member states of the EU, research and innovations are largely funded, as well as sustainable development and professional training in less developed regions. A small portion of these funds go to cross-border projects and inter-regional cooperation.

Funding helps, for example, to improve the transport and Internet connections to remote regions, to strengthen SMEs in less developed areas, to invest in a cleaner environment and improve education and skills. EU funding also means investing in innovation, development of new products and production methods, energy efficiency and tackling climate changes.<sup>6</sup>

Republic of Macedonia, as a candidate country for EU membership, must perform harmonization of laws in accordance with the rules and standards of the European Union. In this direction has the regional and development policy gone as well, primarily by adopting the Law on Regional Development in 2007<sup>7</sup>, which forms the foundation for numerous strategic documentation, adopted at the national and

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<sup>3</sup> Slaveska Tatjana, Regional economic policy of the European Union and the Republic of Macedonia, Economy press, Skopje, 2000, p. 154.

<sup>4</sup> Clark Gerg, Huxley Joe, Mountford Debra ,Organising Local Economic Development – The role of Development Agencies and companies, OECD, 2010 p. 3

<sup>5</sup> Clark Gerg, Huxley Joe, Mountford Debra ,Organising Local Economic Development – The role of Development Agencies and companies, OECD, 2010 p. 3

<sup>6</sup> “One third of EU budget for regional development.” EUROPOLITICS Structural Funds 2014-2020 New rules, October 2011 No 4280.: 4-6.

<sup>7</sup> Law on Regional Development (Official Gazette of RM, No 63/07)

the local level. Also, of particular interest is the 3<sup>rd</sup> component of the instrument for EU pre-accession assistance, which concerns regional development of candidate countries for EU membership, in particular investments and associated technical assistance in regional areas, such as transport, environmental and economic development, for which implementation in the period 2007-2013 were provided 144 billion and 300 million euros.<sup>8</sup>

Considering the fact that before the adoption of the Law on regional development, the terms 'region', 'regional development' and 'regional policy' had not been clearly defined and regulated, and along with that there was no proper implementation of this policy. Thus the Republic of Macedonia will be faced with serious problems regarding the use of the IPA funds. The Law regulates the principles and goals of the policy makers to encourage balanced regional development, regional development planning, financing and resource allocation for balanced regional development, monitoring and evaluation of the implementation of the planning and projects and other issues regarding regional Development. Furthermore, based on the Law, at the end of 2008 and beginning of 2009 Centers for Regional Development were established, whose main task is participation in the development of the region by finding and applying for funding projects to boost economic growth and development of the region and highlighting its competitive value. All this contributed to setting the pillars of regional development in RM, but unfortunately, RM lacks its a consistent application and the expected results.

## 2. HISTORICAL DEVELOPMENT

Undoubtedly, the regional development in the Republic of Macedonia is closely related to the process of decentralization in Macedonia, which started in 2002 with the adoption of several laws, i.e. the Law on Local Self-Government<sup>9</sup>, the Law on Financing of Local Self-Government<sup>10</sup>, the Law on Territorial Organization of Local Self-Government<sup>11</sup> of the Republic of Macedonia etc. Today, we have already established 80 municipalities (local governments) and the City of Skopje, as a distinct unit of local government, which all have their own scope of authorities and responsibilities. Thus the guaranteed constitutional rights of citizens in local governments are realized. The territorial division of the Republic of Macedonia can

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<sup>8</sup> EU-PROGRAMS for SMEs in Macedonia / [editor Velimir J. Stojkovski], - Skopje University "Ss. Cyril and Methodius", 2010,

<sup>9</sup>Law on Local Self-Government (Official. Gazette of RM no.05 / 02)

<sup>10</sup>Law on Financing of Local Self-Government (Official. Gazette of RM No. 61/04)

<sup>11</sup>Law on territorial organization of local self-government of the Republic of Macedonia (Official. Gazette of RM No. 55 / 04)

simply be presented through the Nomenclature of territorial units for statistics (NTUS), adopted by the Government in 2001, and has undergone two changes in 2007 and 2014, as shown in the table below.<sup>12</sup> But though NTUS level 3, the Republic of Macedonia is divided into 8 regions: Vardar, East, Southwest, Southeast, Pelagonia, Polog, Northeast and Skopje region, these regions had, until 2007, no regulated legal status.

2001									
NTUS 1		NTUS 2		NTUS 3		NTUS 4		NTUS 5	
NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT
1	MK	1	MK	8	Statistical regions	34	Groups of municipalities	123	Municipality
2007									
NTUS 1		NTUS 2		NTUS 3		NTUS 4		NTUS 5	
NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT
1	MK	1	MK	8	Statistical regions	84	Groups of municipalities	1776	Settlement
2014									
NTUS 1		NTUS 2		NTUS 3		NTUS 4		NTUS 5	
NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT	NUMBER OF UNITS	UNIT
1	MK	1	MK	8	Statistical regions	80	Groups of municipalities	1776	Settlement

As it was mentioned, until the adoption of the Law on regional development, the terms 'region', 'regional development' and 'regional policy' had not been clearly defined. The 1994 Law on Promoting the Development of Underdeveloped Areas was enacted to encourage the development of areas which were considered to be economically less-developed in the period from 1994 to 1998<sup>13</sup>, which had the

<sup>12</sup> Nomenclature of territorial units for statistics of the Republic of Macedonia – NTUS, State Statistical Office 2008

<sup>13</sup> See Law on promoting the development of economically underdeveloped areas, Off. Gazette of RM no. 2/1994, 1994 out of force

following characteristics: hilly - mountainous areas, border areas and complex backward areas. Certain changes were made to the legal amendments of 1999<sup>14</sup>, where they were divided in Rural areas - 114 sites (out of 1003 settlements) and Specific areas, out of which hilly - mountainous areas - 476 sites (out of 1003 settlements) , Border areas - 159 sites (out of 1003 settlements) and extremely underdeveloped areas - 279 sites (out of 1003 settlements).

The Law on Balanced Regional Development<sup>15</sup> though it was prepared according to the European model of laws, however, the law has shown in many ways not applicable. The Law was passed without public debate in a short procedure, and in the Bureau was not included in its preparation. Today we are faced with serious difficulties in its implementation.

### **3. ANALYSIS OF THE STATUS SINCE 2009**

In order to develop the regional development policy in line with the EU requirements, the Republic of Macedonia started this process with the adoption of the Law on Regional Development in 2007, which was the basis for the adoption of the Strategy for Regional Development of the Republic of Macedonia 2009 - 2019<sup>16</sup>. Two action plans 2010-2012 and 2013-2015 were adopted for the implementation of the Strategy. In the course of the following years all the laws and acts for implementation of the policy were passed, such as the Decision on classifying regions according to their level of development, the Decision on determining the areas with specific developmental needs (at national level), the Programs for development of the planning regions (at regional level) and the Local development strategies (at local level). With this, the major measures on harmonization of the legislation with the European standards were completed.

The Republic of Macedonia is divided into eight regions, which have varying degrees of development. With the Decision<sup>17</sup> of the Government to classify the planned regions according to their level of development, resources are assigned to the regions. So far, they are divided in two time periods: 2008-2013 and 2013-2017. The proportions are shown in the graph below.

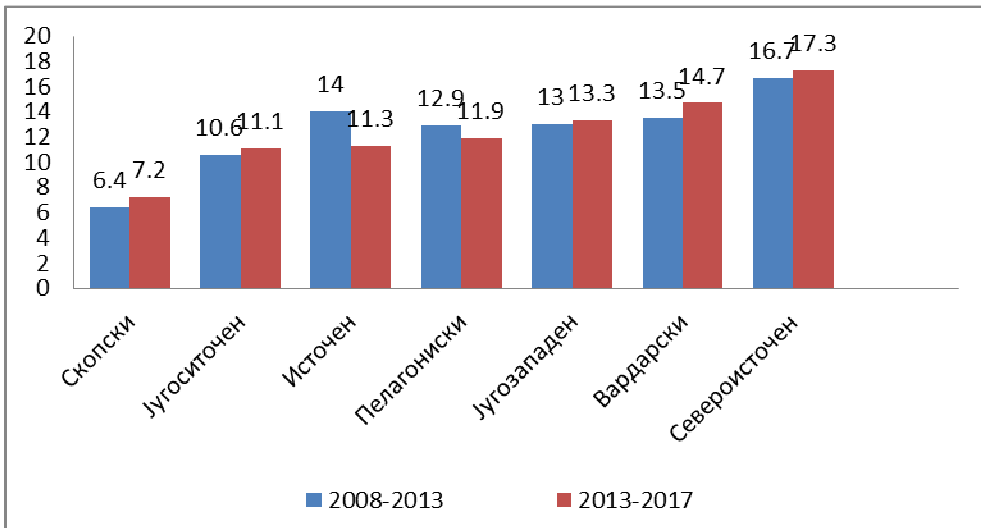
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<sup>14</sup>Law on amendment of the Law on promoting the development of economically underdeveloped areas, Off. Gazette of RM no. 39/99,

<sup>15</sup>Law on regional development (Off. Gazette of RM. 63/07)

<sup>16</sup>Strategy for Regional Development of the Republic of Macedonia 2009-2019 (Off. Gazette of RM no.119/09)

<sup>17</sup>Decision on classification of planning regions by their level of development for 2008-2012 Off. Gazette No. 162/98 and Decision on the classification of the planning regions by their level of development for 2008-2012 Off. Gazette No. 88/13 number)



However, if we analyze the degree of development of regions by GDP, we can clearly notice that there is a great discrepancy between the northeastern region in particular and Skopje.

BDP, by year, and regions												
	Structure of BDP, RM = 100%											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Republic of Macedonia	100	100	100	100	100	100	100	100	100	100	100	100
Vardar region	6,8	7,6	7,5	7,9	7,5	7,4	8,2	7,8	7,3	7,3	7,3	7,6
Eastern region	6,9	6,3	6,3	6,4	6,4	6,5	6,5	6,6	7,6	7,5	8,6	8,1
Southwest region	8,8	8,3	8,5	7,4	7,8	7,4	7,4	7	8,1	7,6	8	7,8
Southeast region	7,3	7,2	7	7,5	7,5	8	7,6	7,7	7	8	8,7	9,7
Pelagonia region	13,6	14,1	14,7	14,8	13,4	12,2	11,4	11,3	11,9	12,5	12,2	11,6
Polog region	7,4	6,7	6,9	7,8	7,3	7,4	7,5	7,2	7,2	7,2	7,2	7,3
Northeast region	5,5	4,5	4,6	4,8	4,4	4,3	4,5	4,4	5,2	4,5	4,4	5,5
Skopje region	<b>43,6</b>	<b>45,2</b>	<b>44,6</b>	<b>43,3</b>	<b>45,7</b>	<b>46,9</b>	<b>46,9</b>	<b>47,9</b>	<b>45,6</b>	<b>45,5</b>	<b>43,7</b>	<b>42,4</b>

Source: State Statistical Office

Data for the period 2003-2007, as revised in accordance with the revision of data on gross domestic product level of the Republic of Macedonia for the same period

What are the obstacles for application and proper implementation of Regional Developing? To give a proper answer to this question, we first have to define the institutional structure of the bodies responsible for the implementation of the objectives of the regional policy.

Therefore, according to the Law<sup>18</sup> the purposes of the regional development policy are:

- Balanced and sustainable development of the territory of the Republic of Macedonia, based on the model of polycentric development,
- Reduction of disparities between and within planning regions and improving the quality of life of all citizens,
- Increasing the competitiveness of the planning regions by strengthening their innovation capacity, optimal use and valorization of the natural wealth, human capital and economic characteristics of different regions,
- Preservation and development of the special identity of the regions, and their promotion and development,
- Revitalization of villages and development of areas with specific developmental needs, and
- Support of inter- and cross-border cooperation of the local government in order to encourage balanced regional development.

According to the Law<sup>19</sup>, there are the following policy stakeholders which encourage balanced regional development:

- Government of the Republic of Macedonia
- Council for Regional Development of the Republic of Macedonia
- Ministry of Local Self-government
- Council for Regional Development.

In planning the regional development and implementation of the planning documents for regional development, the Bureau for Regional Development and the Centers for Regional Development are the main implementers.

Relevant institutions for promotion of balanced regional development:

<b>Policy makers</b>	
<b>Council for Balanced Regional Development of the Republic of Macedonia</b>	National level
<b>Ministry of Local Government</b>	National level
<b>Council for Planned Regional Development</b>	Regional level

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<sup>18</sup>Also Article 3

<sup>19</sup>Also Article 15

<b>Operational institutions</b>	
<b>Bureau for Regional Development</b>	National level
<b>Centers for Development of planning regions</b>	Regional level

*Source: The Law on Balanced Regional Development (Official Gazzete of RM, No 63//07)*

First, based on the Law in late 2008 and early 2009 Centers for Regional Development were established, whose main task is participation in the process of development of the region by finding and applying for funding projects to boost economic growth and development of the region and highlighting its competitive value.

This, a network of institutions responsible for this policy was established. The results of these newly established institutions began to be seen in the last 2 years, mostly by submitting considerable regional projects to the Bureau of regional development as well as using European funds. The whole system which was set up with the Law and the new Strategy was new for all parties involved and a lot of time was lost on the needs for adequate staffing of both, the Centers and National institutions. The problem arises in that regional policy is a complex field and multi-sector policy. In a way there is a gap between the policy and the system under the Ministry of Local Government and the policies of the other ministries. The Strategy broadened the list of actors and with the Units of local government which have to apply with proposals for funding in order to maximally utilize the available financial resources for regional development, as well as other ministries that are relevant to the creation and implementation of policy and development of regional programs in which there is the term regional Development (Ministry of Finance, Ministry of Economy, Ministry of Transport and Communications, Ministry of Agriculture, Forestry and Water Management, the Ministry of Labor and Social Policy, the Ministry of Education and Science, Ministry of Environment and Physical Planning and the Ministry of Culture). So, good coordination is necessary among the basic carriers' policy and regional development ministries for harmonization of mutual programs and activities that can have an impact on the development of the regions.

The funds from the Ministry of Local Government and Regional Development Bureau are divided according to the Decision on classification of regions according to the degree of development of the regions<sup>20</sup> (the old decision was valid until

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<sup>20</sup>The decision to classify regions according to the degree of development of the region Off. Gazette, no 162/98)



2012, and during the period from 2013 to 2017<sup>21</sup>, a new one was passed), while other ministries share their own criteria without paying attention to balanced development. The Centers for regional development in almost all the programs of the ministries are not recognized as institutions which can apply for projects.

Consequently, the Bureau for Regional Development announced public call for proposals for funding of areas with specific developmental needs, villages and regional projects. For these projects, the local government units and legal entities that carry out projects in the region can apply. As applicants of projects of regional significance, the Centers and Regional Development can be observed. These funding means are allocated from the state budget, in the amount of 1% of GDP<sup>22</sup> (which has not happened yet, usually only 0.01% of GDP was distributed) for three programs:

70% for the development of regions, which are allocated according to their stage of development. For these funds the Councils of the planning regions can apply.

20% for financing of development projects in the areas with specific developmental needs.

10% for financing of development projects in the villages. The funds are awarded to local governments in areas that are designated for specific developmental needs, after they receive approval from the regional councils.<sup>23</sup>

In the period from 2009 through 2012<sup>24</sup>, the Bureau for Regional Development announced and carried out three public calls for gathering proposals of suggested projects where the Centers for development of the regions and the Units of local government for development of areas with specific development needs and development of villages participated. Hence 187 projects were funded to encourage balanced regional development. One of the main problems is that the right of use of funds established by the Law is 1% of the GDP or 21,732 million MKD, however in the past five years (2008-2012) from the application of the Law on Regional Development, the Ministry of Local Government and Bureau for Regional Development can only be accounted for 839.7 million MKD, which represent only 0.04% of the GDP.

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<sup>21</sup>The decision to classify regions according to the degree of development of the region Off. Gazette, no 88/13)

<sup>22</sup>Also Article 27

<sup>23</sup>Also Article 29

<sup>24</sup>In 2010 there was no Public Notice because the projects of 2009 were still being implemented.

"According to the estimates of the European Commission in the EU for regional incentives during the 80ies the member countries were spending from 7.9 to 10.8 billion pounds per year."<sup>25</sup> Compared with the Republic of Macedonia, the Law projected 1% of GDP for balanced regional development.<sup>26</sup> In 2009 the programs of the Ministry of Local Government and Regional Development Bureau paid only 188 million MKD, which means funds which were twofold cut by the rebalancing of the Budget. This fund cutting policy of the Government is a proof that they pay much less importance to the regional development policy. The observations of the European Commission in the government report on the NPAA program indicate the same.

On the other hand, a survey of the non-governmental sector indicates that in 2009 only 7% or 263.58 million MKD were projected to be realized directly by the means of the planning regions and municipalities through the submission of proposals to the Bureau of regional developments. For the remaining 93% of the funds which were intended to support projects with a regional development component, there is no explanation as to where and how they were spent.<sup>27</sup> Furthermore, this research suggests centralization of the regional growth in 2010, according to the asset allocation for regional development. Thus, in 2010, although 1.53% of GDP were set aside for this purpose, only 3.9% were provided to be realized by the planning regions and municipalities themselves, i.e. they could opt for spending these funds by submitting proposals to the Bureau of regional development.<sup>28</sup> On the other hand, according to the statistics of the Government, in accordance with the programs of the relevant ministries and other state institutions, for 2012 the allocated funds provided directly or indirectly promoting of regional development in the amount of 1.5% of GDP.

Starting from what is stated above, we are coming to the conclusion that despite the priorities and objectives of the polycentric and balanced development, the funds are not spent according to a unified way. Macedonia faces the problem of nonlinear coordination between ministries and the overlapping responsibilities. The justification by the linear ministries for not using the degree of development of regions refers to the specific area they cover. For example, the Ministry of Health

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<sup>25</sup>SlavevskaTatjana, Regional economic policy of the European Union and the Republic of Macedonia, Economy press, Skopje, 2000, p. 153, ". (Vickerman and Armstrong 1995 p. 220)

<sup>26</sup>See ZPPP

<sup>27</sup> The Decentralization in Macedonia slowed down or forgotten: the influence of organizational setting, the authorities of ULS and the policies for balanced regional development / (editors Fani Karanfilova Panovska, Ana Medarska, Kire Milovski). - Skopje: Foundation Institute Open Society - Macedonia, 2010 p.11-14

<sup>28</sup> Ibid.

cannot deliver across regions their programs and drug treatment for those suffering from diabetes according to the region's level of development, but according to the needs therapy for diabetes in a given region or municipality. This is quite true, but there are programs that can include this criterion.

#### **4. CONCLUSION AND RECOMMENDATIONS**

Regional development is a complex field in which different segments from different fields are interwoven. The efforts of the European Union are huge in the regional development policy. Today Europe is no longer seen as Europe of many countries, but as Europe of regions. Each Member State and those that aspire to join the EU, are trying various measures to make their regions be more competitive and economically stronger than the other regions in the EU. Depending on the state order, the countries treated regional policy differently. There are basically different bodies that adopt and implement regional policy, but all have the same goal and mission.

One very important thing that we should consider is that even if RM entered the European family, without strong economic regions willing to absorb European funds, it would be a great loss. Macedonia would pay a monthly membership fee to the Union, like any other state, and if it fails to exhaust the money intended for regional development, it would be at a loss, giving a lot and taking nothing, or next to nothing. First we need to overcome unfavorable polarized development, forcing the development of cities at the expense of the countryside. Economic activity is largely concentrated in and around the city of Skopje, which is a practice that soon needs to be abandoned. Equal opportunities should be given to all eight regions and thereby reduce migration village - city.

To begin properly developing new regional policy in our country, we should decide on one of the two approaches, top-down or bottom-up, where the endogenous development initiatives would be derived from. We could take the example of Greece, as an EU Member State, where most of the network of institutions for development are at regional level.<sup>29</sup> One of the fundamental principles of the EU regional policy is the principle of partnership between local, regional and national authorities in all the phases of the design and implementation of the policy of balanced regional development. In this respect, the changes should apply it to achieve the main goals of regional policy including balanced development of the whole territory of the Republic of Macedonia through polycentric development,

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<sup>29</sup>More widely discussed in Regional development of the Republic of Macedonia, Foundation Fridrich Ebert – regional office Macedonia, Skopje, 2003, p. 117-123.

reduction of disparities between regions and improvement of the quality of life, increase in the competitiveness of regions and revitalization of villages.<sup>30</sup> Setting a more flexible system of defining areas with specific development needs would help to achieve these goals in an environment of rapid economic change. Also, the regional planning system is too rigid, which does not give an opportunity neither to the regions nor the Government to intervene and propose policy changes that are needed. So it is necessary to emphasize the role of the main actors and their responsibilities. Regions need to build their financial strength, thus being able to draw funds from international resources by setting up good projects and building public-private partnerships.

For all the above, it is necessary to make certain changes in the Law on balanced regional development and have one tracking system, as to be able to distinguish which ministry (out of the 8 linear ones, which have programs and fund projects for regional development) supplies the funds, so as not to have duplication of projects and overlapping of finances. No state has not easily solved the problems with uneven development of parts of its territory, but one has to find the right way to invest in this policy. There is no successful recipe that Macedonia could just take over and succeed. So as key observations we would cite the following:

1. Firstly the legally defined means of the balanced regional development should be separated, and then the essence of this policy should be covered and explained through the media.
2. Secondly, a strategy for approval and spending of all the means projected for regional development should be created, so that there is no duplication of resources.
3. Thirdly, records need to be kept of all appropriations of all development programs.
4. Fourthly, the most logical solution in this situation in terms of regional policy would be for the Bureau to become an Agency, which will be a major implementation authority.

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<sup>30</sup> Ibid

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# GOVERNMENT EXPENDITURES EFFECTS ON ECONOMIC GROWTH IN THE REPUBLIC OF MACEDONIA

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Elizabeta DJAMBASKA<sup>1</sup>

## **Abstract**

*The main goal of the research is to evaluate the influence of public expenditures on economic growth in the Republic of Macedonia. Modern fiscal policy does not accept the view that public expenditures are a burden of the economy and are good only when they are in small amount. Generally accepted view is that public expenditures are useful for the state functions and for achieving certain economic and social goals. Many empirical studies confirm the positive effect of public expenditures on economic growth.*

*In this paper, we use neoclassical extended Solow's model, which assumes that total factor productivity is endogenous and determinate of consumption, total public expenditures, transfers and capital expenditures (public investment). The focus is based on the assumption that public investments and the changes in the structure of public expenditures significantly affect the movement of economic growth in the Republic of Macedonia.*

*Relationship assessment among variables is made by multiple linear regression analysis, using quarterly data for the period 2005-2013 year. The base theoretical model for setting the statistical model for empirical analysis is the production function by Coob Daglas and the extended Solow model with contributions of Romer (1990). The calculations of statistical parameters are obtained using the software package XLSTAT 2014.*

*The obtained results in the country confirm the theory of the positive impact of capital expenditure and increased employment on economic growth. In times of recession, the macroeconomic policy measures aimed at increasing employment and public investment expressed through public expenditure category are the driving force of the economy.*

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**Keywords:** *economic growth, public expenditures, capital expenditures, multiple regression, Republic of Macedonia*

## INTRODUCTION

The role and the scope of government expenditures raise a lot of controversial questions for the macroeconomic analysis. Economic globalization result with greater economic freedom and openness of the economies. This increases the level of government spending. The trend of increased government spending is evident in the late 60-ties in the developed countries (all 23 countries - members of the OECD). The increases of the government expenditures is also present in developing countries and transition economies.

A lot of research has been undertaken in an attempt to gauge the extent to which government spending affects economic growth. Empirical evidence generated points towards confirming the positive effects of increased level of government expenditures and economic growth. Here we must underline the conclusions that the positive influence on economic growth is depending on the structure of expenditures. Every increase of the expenditures does not have the same and always positive influence on economic growth. Its elusions to expect positive vibrations on economic growth by increasing the unproductive expenditures. But, theory and empirical evidence confirm that increased productive expenditures produce economic growth. Government expenditures for infrastructure like building roads, bridges, marine docs, airports, telecommunications system, education, science and innovations, health preventions and protections increases the economic potential of the country.

The main goal of this research is to evaluate the influence of public expenditures on economic growth in the Republic of Macedonia.

In the contrast to the multitude of previous studies conducted in this area, the originality of this study resides in three specific factors. First, the development of endogenous growth theory has provided many new insights into the sources of economic growth. The essence of the new theory is that growth is a consequence of rational economic decisions. Companies expand resources on research and development to secure profitable innovations. Individuals invest in education to develop human capital and increase lifetime earnings. Governments increase growth by providing public inputs, encouraging foreign direct investments, and enhancing educational opportunities. Through the aggregation of these individual decisions the rate of growth becomes a variable of choice, and hence a variable that can be affected by the policies of governments. It is striking that most recent



empirical research has focused on testing the neoclassical growth model, with revisions and extensions, rather than testing the empirical implications of endogenous growth models. Part of the explanation, suggested by Mankiw (1995), may be the emphasizing immeasurable variables, such as knowledge that can't be applied in these models. Another explanation arises from the intrinsic difficulty of evaluating models based on large technological externalities in an open economy setting because a crucial question is whether or not these large external effects of physical or human stock are internal to national economies. Hence, in this paper we use neoclassical extended Solow's model that assume that total factor productivity is endogenous and determinate of consumption, total public expenditures, transfers and capital expenditures. The focus is based on the assumption that public investments and the changes in the structure of public expenditures significantly affect the movement of economic growth in the Republic of Macedonia. Second, public expenditures effects on economic growth are main objective in a lot of studies. The findings of these analyses are quite contradicting. Some assume beneficial effects resulting from public expenditures on economic growth (Easterly and Rebelo, 1993; Canning and Pedroni, 2004), while others (Dar&Amir Khalkali, 2002; Gallaway&Vedder, 1998) claim that public expenditures hinders economic growth. The obtained results confirm the theory of the positive impact of capital expenditures and increased public spending on economic growth. And third, most of the studies are conducted for the developed economy and the SEE economies because they share key economic and cultural characteristics. The studies on this topics take the Republic of Macedonia in the group of other familiar economies (Bulgaria, Serbia, Croatia, Bosnia, Albania and Romania, Alexiou, 2009). The primary objective of this paper is to empirically evaluate the impact of the public expenditures on economic growth in the Republic of Macedonia.

## 1. REVIEW OF EMPIRICAL FINDINGS

The questions whether or not government expansion causes economic growth has distinctive theoretical approach. Economic theory proposes different levels of government spending referring to certain circumstances. Some occasions prefer lower level of government spending to enhance economic growth, while on other occasions higher level of government spending is more desirable. From an empirical perspective, the generated evidence become more confusing as a number of studies favor one or the other approach.

Barro (1991) in a cross section study of 98 countries for a period 1960 to 1985 concluded that the relation between economic growth and government consumption is negative and significant. In this research main variables are average annual growth rates in real per capita GDP and the ratio of real government

consumption to real GDP. Engen and Skinner (1992) in their pooled-cross section and time series data study of 107 countries (period 1970-1985) found that government spending, rather than tax rate have the greatest long-term negative impact on private sector productivity.

Another panel study by Fölster and Henrekson (1991, 2001) support the assertion that large expenditures negatively affect growth. The research rely on a panel study on a sample of rich countries over the period 1970-1995. Jong-Wha Lee (1995) produced further evidence on the relationship between government consumption and economic growth. More specifically, by using an endogenous growth model of an open economy, it was found that government consumption of economic output was associated with slower growth. In addition, the composition of investment and the volume of total capital accumulation were also thought to significantly condition economic growth.

In an attempt to investigate the relationship between government size and the unemployment rate Burton (1999) using a structural error correction model for twenty OECD countries from 1970 to 1999, found that government size measured as total government outlays as a percentage of GDP, played an instrumental role in affecting the steady-state unemployment rate, i.e. unemployment rises. Further evidence obtained using disaggregated government expenditures pointed towards a significant relationship between transfers, subsidies and the steady-state unemployment rate while government expenditures on goods and services was found to be insignificant.

There are empirical evidence also for the developed countries. Empirical study by Ghura (1995), is using pooled time-series and cross-section data for 33 countries in Sub-Saharan Africa for the period 1970-1990 and produce evidence that points towards the existence of a negative relationship between government consumption and economic growth. In that study the sample countries were classified into four groups: high-growth countries with growth rate above 2.0%, medium-to-low-growth countries with growth rates between 0% and 1,9%, weak-growth-countries with growth between -1,0% and -0,01% and very-weak-growth countries with growth below -0,9%. The conclusion is that the higher growth countries experienced higher investment ratios, higher export volume growth, higher life expectancy at birth, lower inflation rates and lower standard deviation of inflations which did not necessarily imply better terms of trade outcome. Another pooled cross-section/time series study conducted Grier and Tullock (1989). This research investigated empirical regularities in post-war economic growth using cross-section/time-series data on 113 countries. Among other results, they found that government consumption is negatively associated with economic growth. From the same study it also emerged that political repression is negatively correlated with

growth in Africa and Central and South America. Guseh (1997) in a study on the effects of government size on the rate of economic growth conducted OLS estimation, using time-series data over the period 1960-1985 for 59 middle-income developing countries. The yielding evidence suggested that increased government size has negative effects on economic growth, but the negative effects are three times as great in non-democratic socialist systems as in democratic market systems.

Contrary to the negative association between government spending and economic growth established by the aforementioned studies a growing body of literature attempts to redress the balance by suggesting that the state can actually, through implementing appropriate policies, nurture productive activities and reduce unproductive ones. Jones, Mannelli and Rossi (1991) and Glomm and Rovikunmar (1991) find large growth effects in models where government spending is a productive investment. Ram (1986) found strong and significant positive effect of government spending growth on output growth. Aschauer (1989) stresses the importance of distinguishing between government consumption and government capital accumulation such as infrastructure. His empirical work suggests that the government capital stock has a positive impact on productivity growth. In related work he finds a much smaller impact on output of government consumption (Aschauer, 1988). Alexiou (2007) using the OLS method on time/series data for the period 1970 – 2001, in a study for the Greek economy, after disaggregating government spending, reported evidence on the basis of which there is a positive association between the growth in the components of government spending and GDP growth. The same author (Alexiou 2009) applied two different data methodologies to seven transition economies in South Eastern Europe (SEE) Bulgaria, Serbia, FYROM, Croatia, Bosnia, Albania and Romania. His evidence indicate that four of the five variables used in the estimation (government spending on capital formation, development assistance, private investment and trade-openness) have positive and significant effect on economic growth. Population growth in contrast, is found to be statistically insignificant.

In sketch of the preceding exposition it became apparent that the relationship between government spending and economic growth is far from clear. Reviewing the empirical studies we can conclude that empirical results are sensitive and the relationship between government spending and economic growth is unclear and depends of a lot of factors.

## 2. REVIEW OF THE MACROECONOMIC SITUATION IN THE REPUBLIC OF MACEDONIA

Economic growth is the increase in the amount of goods and services produced by an economy over time. It is conventionally measured at the present rate of increase in real GDP. The rate of growth in Republic of Macedonia is in the focus of analysis. Figure 1 shows the trend of GDP. Republic of Macedonia experienced a decline in GDP in year 1990. This situation was typical for all economies in transition. Until 1995, the Macedonian economy experienced negative growth rates of GDP. In 1996 positive rates were achieved and this trend of positive growth rates continued until 2001. Due to the military conflict a decline came in economic activity with a negative growth rate of -4,5%. The trend of GDP growth started in 2002 and continued at a slow pace, and in 2007 reached the highest recorded value of 6,1% in the last 20 years. Surging growth, experienced a dramatic decrease in 2009 where the rate of growth in 2008 fell from 5% to negative 0,9% in 2009. This decrease was due to the great world financial crisis that began in 2008 in the United States and quickly spread to the countries of the European Union, and the repercussions felt almost all economies in the world.

**Figure 1. Rate of Economic Growth in the Republic of Macedonia**

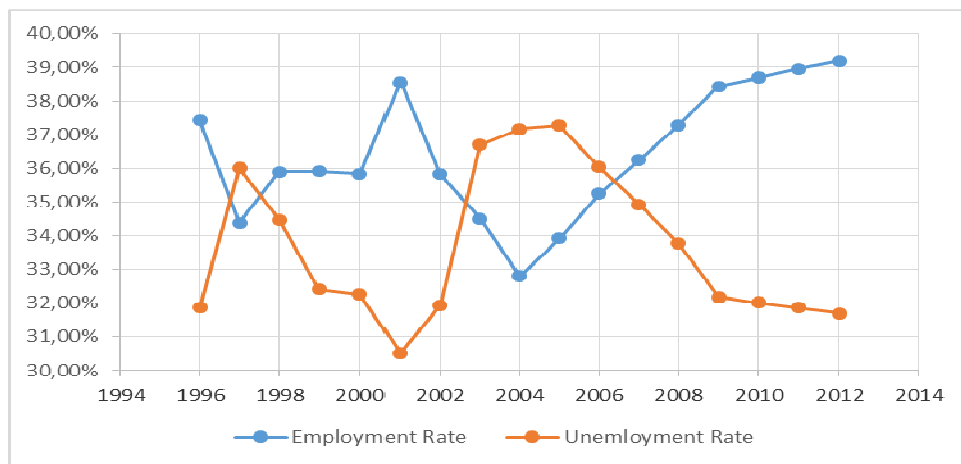


Source: State Statistical Office of the Republic of Macedonia, Statistical Yearbook 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013

To see the complete picture of the situation in the Macedonia economy, it is important to have in mind the movement of the unemployment rate. Data show that in the period since 1995, the achieved positive economic growth rates are not accompanied by a corresponding rise in employment. During this period,

employment had decreased by 1,6 percentage points (from 1996 to 37,4%; 2000 to 35,8%). Higher growth rates in 1999 of 4,1% and 4,5% in 2000 resulted in an increase of employment in 2001 to 38,6%, but the decline in economic activity in 2001 (-4,5%) returned the rate of employment in 2002 to the previous level of 35,8%. The trend of a slight increase in employment levels started from 2004 onwards. The highest level of employment in recent years, according to the methodology of the Labor Force Survey conducted by the State Statistical Office, is achieved in 2010 and it was 38,69%. This situation with employment levels is expected. It is because of the trend of a slight increase in the rate of GDP growth in the country, but primarily it is a result of the institutional and legal changes made in the field of employment in these years. Thus are the changes in employment law, introducing the concept of gross wages and fiscal policy measures that reduce the percentage amount calculated and paid for social security contributions on employee's wages. Another aspect is the active government programs for self-employment. These measures resulted in an employment rate increase in the 2007, 2008, 2009 and 2010.

**Figure 2. Employment and Unemployment Rate in the Republic of Macedonia (1996-2012)**

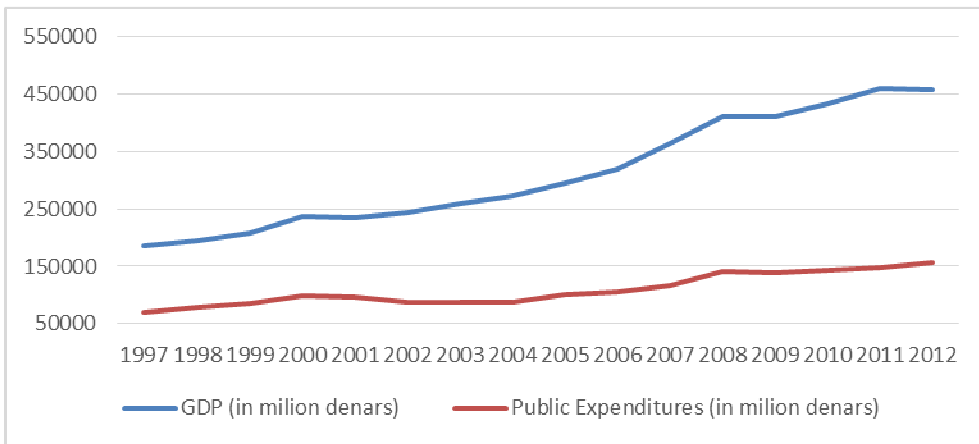


Source: State Statistical Office of the Republic of Macedonia, Statistical Yearbook 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013, Labor Force Survey, Statistical Review: Population and Social Statistics no. 2.4.06 (1999), no. 2.4.1.03 (2000), no. 2.4.2.08/410 (2002), no. 2.4.3.13/453 (2003), no. 2.4.5.02/494 (2004), no. 2.4.6.07/531 (2005), no. 2.4.8.06 (2007), no. 2.4.9.12/632 (2008), no. 2.4.10.04/651 (2009), no.2.4.11.09/692 (2010), no. 2.4.12.11/727 (2011) and no. 2.4.10.04/651 (2013).

\* The employment rate is calculated using the ILO methodology; the employment rate shows the participation of employees in the total working age population that is 15 to 79 years old

Trend of GDP and public expenditures in Republic of Macedonia in the period 1997 - 2012 can be notice from the data in the Figure no.3. Presented data on expenditures refer to the consolidated budget of Macedonia. The total expenditures includes expenditures of the central budget, expenditure budgets of the local authorities, expenditures of the Pension and Disability Insurance Fund expenditures for health insurance costs and the Employment Agency of the Republic of Macedonia.

**Figure 3. GDP and Total Expenditures Trend Line in the Republic of Macedonia in the period 1997-2012**

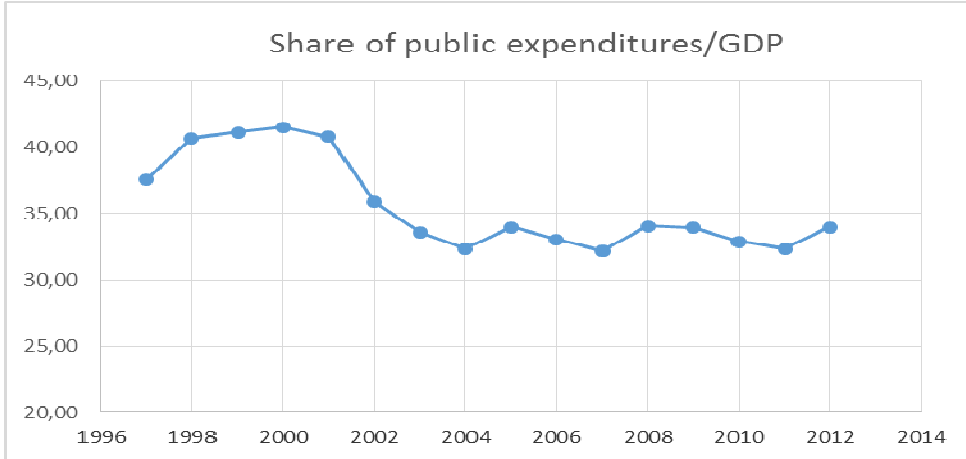


*State Statistical Office of the Republic of Macedonia, Statistical Yearbook 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2009 and 2010, Ministry of Finance Bulletin No. 2/2001, 3/200, 9-10/2003, March 2005, March-April 2007, July 2011; Statistics of National Bank of the Republic of Macedonia*

The data clearly show the increasing trend of growth of total public expenditures.

The calculation of the share of total public expenditure in GDP (Figure no.4) shows also an increase. Share of total public expenditure in GDP is the highest in the period from 1998 to 2000. From 2001 to 2004 decline, from 2005 to 2012 alternately rise and fall. However, the participation is around one third of GDP.

**Figure 4. Share of public expenditures of GDP in the Republic of Macedonia in the period 1997-2012**



Source: State Statistical Office of the Republic of Macedonia, Statistical Yearbook 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2009 and 2010, Ministry of Finance Bulten No. 2/2001, 3/200, 9-10/2003, March 2005, March-April 2007, July 2011; Statistics of National Bank of the Republic of Macedonia

### 3. ECONOMETRIC ANALYSIS OF GOVERNMENT EXPENDITURES EFFECTS ON ECONOMIC GROWTH IN THE REPUBLIC OF MACEDONIA

The theoretical model that is the basis for setting the statistical model for empirical analysis is the model of production function by Cobb Douglas. Equation represents the relationship between the production factors capital, labor and technology or total factor productivity and the level of realized total output.

$$Y = F(K, L, A) = K^\alpha L^\beta A$$

In this case the total factor productivity would be expressed as a function of expenditures. Variables that determine TFP that we take in consideration are the categories of public expenditures as total and separate categories as final consumption of households, government expenditures, transfers and capital expenditures. The function has the following nonlinear form:

$$Y_t = \beta_0 K^{\beta^1} L^{\beta^2} C^{\beta^3} G^{\beta^4} PExp^{\beta^5} T^{\beta^6} CapI^{\beta^7} U_t$$

Model is transformed into lin-log model with the following expression:

$$\ln Y = \beta_0 + \beta_1 \ln(K) + \beta_2 \ln(L) + \beta_3 \ln(C) + \beta_4 \ln(G) + \beta_5 \ln(PEX) + \beta_6 \ln(T) + \beta_7 \ln(CapI) + \ln(U_t)$$

- Y – Real GDP;  
 K – Physical capital;  
 L – Labor (number of employees and/or hours of work);  
 C – Final consumption of households (% of GDP);  
 G – Government Expenditures (% of GDP);  
 PExpe – Total public Expenditures (% of GDP);  
 T – Transfers (% of GDP);  
 CapI – Capital Expenditures (% of GDP);  
 $\beta_0$  – Free article;  
 $\beta_1 \dots \beta_4$  – Coefficients to be evaluated;  
 $U_t$  – Stochastic article

Gross domestic product is dependent variable in the model. The independent variables that determine the movement of the dependent variable are capital, labor, total public expenditures and separately private and government expenditures, transfers and capital expenditures as a share of GDP. The variable transfers use as a control variable. The estimated coefficients ( $\beta_1 \dots \beta_4$ ) define the elasticity of GDP and analyzed independent variables. Theoretical findings suggest positive values for all the coefficients of the independent variables.

$$(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5) > 0$$

The basic factors that determine economic growth are capital and labor. It is generally known that the contribution of physical capital and labor are positive. The core Cobb Douglas equation determines economic growth only through these two factors calculated with mathematical terms according to which the share of capital in economic growth is 1/3, while labor is accounted for 2/3.

Increased consumption stimulates increased economic activity. Government expenditures are particularly interesting category for growth. Productive expenditures that improve education, health care, research and innovation have positive impact on economic growth. There are no availability to analyze the impact of these categories separately. This leaves us only the opportunity to test the effects of total amount of public expenditures expressed as a percentage of GDP and separately some of the categories of expenditure. So, this indicator incorporates all expenses incurred and unproductive (expenditures for material



costs, wage administration, etc.) and not only stand the impact of productive expenditure. Therefore, in the table of influence is a sign of ambivalence (+/-). This however gives guidelines for further action.

Transfers as an independent variable do not affect the GDP variable. This conclusion is very logical. Transfers as a category of expenditures does not create new value in the economy. They represent a redistribution of already created income in the economy. In the regressions we include it as a control variable. Therefore it is assumed to have had both a positive and negative sign.

Capital expenditures have positive impact on economic growth. The structure of capital expenditures is very important. The amount of capital expenditures that refer to buildings structures are driving force for public investments. If these kind of capital expenditures are with bigger amounts the impacts on economic growth is positive.

**Table 1. Symbols, description and expected sign of the variables in the regression**

Symbol	Description of the explanatory variable	Expected sign in the regression
$K_t$	Physical capital	+
$L_t$	Labor, number of employees	+
$C$	Final consumption of households (as a percentage of GDP);	+
$G$	Government Expenditures (as a percentage of GDP)	+/-
$PExp$	Total public Expenditures (as a percentage of GDP)	+/-
$T$	Transfers (as a percentage of GDP)	+/-
$CapI$	Capital Expenditures (as a percentage of GDP)	+

*Note: "+" represents positive attitude, "-" a negative attitude, "0" and "+ and -" are theoretically ambiguous relationship with the dependent variable*

The calculation of the lin-log model is made with multiple linear regressions using the software package XLSTAT 2014. The database used in the regression consists of quarterly data for the period 2005 to 2013 for Macedonia. They are provided by primary and secondary sources of data from the State Statistical Office of the Republic National Bank of the Republic of Macedonia, Ministry of Finance of the Republic of Macedonia as well as the database for the Republic of Macedonia from International Monetary Fund, UNESE Statistical Division Database.

In estimating the parameters of statistical analysis model the method of least squares is used with the assessment. Significant assumptions that should be considered in the interpretation of the regression parameters are multicollinearity, heteroscedasticity and autocorrelation statistical errors.

The initial regression equation has a problem of high multicollinearity among all independent variables, except at C. This problem is evident with high coefficient of correlation and VIF parameters. The highest VIF shows variable total public expenditures (PExp) – 12,496, then labor (L) – 12,356) and capital (K) – 10,029. Overcoming the problem of multicollinearity means to exclude certain variables that have high VIF. In the new regression total public expenditures (PExp) and labor (L) are exclude. This regression annulated the negative impact of multicollinearity. Heteroscedasticity were not evident. The value of  $R^2 = 0,959$  are satisfying condition for accepting the results as reliable, but Dubin-Watson test showed the presence of autocorrelation (DW=0,708). Analysis are expanded with simultaneously excluding capital and adding labor as independent variable that could increase this percent of determination of dependent variable Y. Finally, the conclusion of the summarized results of the regressions are presented in the table 2.

**Table 2. Results from regressions**

Independent variables - X	(1)	(2)
K - Physical capital	0,879 (17,224)***	
L – Labor (number of employees and/or hours of work)		2,472 (11,353)***
C - Final consumption of households (% of GDP)	0,160 (1,465)*	0,061 (0,394)
G – Government Consumption (% of GDP)	- 0,204 (0,130)	-0,022 (-0,114)
T – Transfers (% of GDP)	-0,127 (0,095)	-0,264 (-1,854)
CapI – Capital Expenditures (% of GDP)	0,023	0,113

Independent variables - X	(1)	(2)
	(1,133)	(4,185)***
Number of observations (n)	36	36
$R^2$	0,959	0,916
Adjusted $R^2$	0,953	0,902
Durbin - Watson	0,708	2,127

Source: own calculations using the software package XLSTAT, 2014

Method of least squares  $R^2 = 0,916$  is an acceptable criterion for correctness of the model. The adequacy of the model is also verified with other criteria for evaluation such as: Akaike information criterion (AIC) with negative sign (-200,927) and Schwarz information criterion (SBC, -191,426). Mallow's Cp criterion is 6 that is the closes value to the number of analyzed independent variable (k-5). Testing autocorrelation obtained by Durbin-Watson test under the table of critical values of schedule of test-statistics confirm absence of autocorrelation. Diagram of distribution of residuals shows no presence of heteroscedasticity. (Annex number 1). The equation has the following form:

$$\ln(Y) = -21 + 2,47 \cdot \ln(L) + 6,132E-02 \ln(C) - 2,18E-02 \cdot \ln(G) - 0,27 \cdot \ln(T) + 0,11 \ln(\text{CapI})$$

The evaluation of the model by the method of least squares  $R^2$  shows that about 92% (0,916) of the variation in the dependent variable can be explained by variations of all independent variables included in the model. The results from the criteria for evaluation of the model, correlation matrix, and test for the multicollinearity and the estimated value for the parameters are presented in the annex number 1.

The results from regression (table 2, column no. 2) where the employment was independent variable shows that employment and capital expenditures are statistically significant. This results are very important for the conclusions of the research. Its confirmation of the theoretical assertion that public and capital expenditures have positive impact on economic growth in the Republic of Macedonia. Macroeconomic measures focused on increasing employment and public investment are driving force when economy is in recession. In this way economic activity is stimulate even if the employment and investment in private sector are on low level. The results show that increasing in capital investments for 1% would allow 4,2 (4,185) percentage point rise on GDP. The effect of employment are more statistically significant and 1% increase in employment would rise GDP approximately 11 (11,353) percentage point.

The results for transfers and government expenditures are very interesting. They open some questions that leave doubts. Government expenditures increase total consumptions in the economy and this reflects with positive impact on economic activity that would realize higher GDP. Government expenditures are not statistically significant. Statistical significance of the transfers in regression are 5%, but with negative sign. That's not typical and it's confusing.

According to these results, government expenditures have a negative impact on economic growth in the analyzed period in Macedonia. Special interests in interpreting the results of regression parameters cause the independent variable transfers. They were included only as a control variable. So, even when we predict to have ambiguous relationship with independent variable, we found out that transfers harm the economic growth. The increase of transfers for 5% will provoke decreasing on economic growth around 1,9 (1,854) percentage points.

## **CONCLUSION**

In the recent years, the economics of growth is the subject of intense theoretical and empirical research. Some of it has adopted and extended the neoclassical growth model as formalized by Robert Solow and Swan, while retaining the assumptions of constant returns to scale and exogenous technical progress. Others have taken more radical departures from the neoclassical model by bringing in increasing returns to scale and attempting to model technological change. That represents the endogenous growth theory. In both cases these efforts try to explain the process of economic growth in developed and developing countries.

Theoretical approach for this analysis is the new growth theory and extended Solow's model. This paper analyses the effects of government expenditures as determinants of total factor productivity in the Republic of Macedonia. The empirical analyses are conducted using the data for capital, labor, total public expenditures and separately private and government expenditures, transfers and capital expenditures as determinants of economic growth in Macedonia in the past period.

The results for capital and labor show great positive statistical impact on growth in Macedonia. This is not unexpected according to the fact that capital and labor are basic source of economic growth. The results from final regression shows that employment and capital expenditures are statistically significant. Thus increasing in capital investments for 1% would allow 4,2 (4,185) percentage point rise on GDP. The effect of employment are more statistically significant and 1% increase

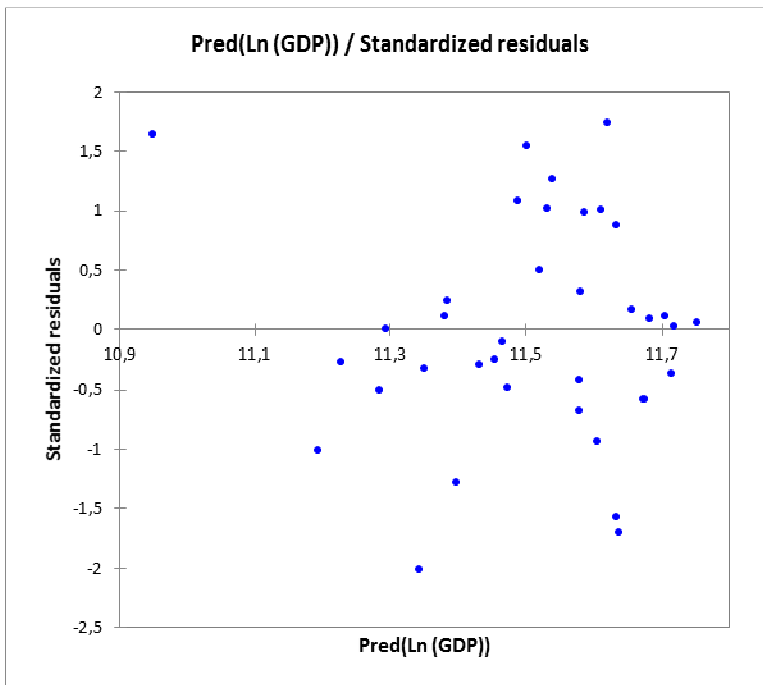
in employment would rise GDP approximately 11 (11,353) percentage point. Special interests in interpreting the results of regression parameters cause the independent variable transfers. We found out that transfers harm the economic growth. The increase of transfers for 5% will provoke decreasing on growth around 1,9 (1,854) percentage points.

The Republic of Macedonia had low rates of economic growth even negative in same periods. Macroeconomic policy measures should pay special attention to conventional growth factors – capital and employment. The level of capital is low and any slight increase positively affects economic growth in the country. Government expenditures register negative and statistically insignificant relationship with growth. This is a result of the large unproductive expenditures. Thus policy measurements should rely on structural changes in public consumption, increasing the share of spending for improving the educations, health protection, research and development instead of big share of expenditures for wages for administration and operating cost. The politics of public expenditures is successful and fosters economic growth if capital investments refer to infrastructure and energy projects, human capital investments, research projects and innovations.

**ANEX NO 1**

Goodness of fit statistics:

Observations	36,000
Sum of weights	36,000
DF	30,000
R2	0,916
Adjusted R2	0,902
MSE	0,003
RMSE	0,057
MAPE	0,352
DW	2,127
Cp	6,000
	-
AIC	200,927
	-
SBC	191,426
PC	0,117



**ANEX NO 2**

Correlation matrix:

Variables	Ln (L)	Ln (C%)	Ln (G%)	Ln(T%)	Ln (CapI %)	Ln (GDP)
Ln (L)	<b>1,000</b>	-0,655	-0,543	0,522	0,344	<b>0,921</b>
Ln (C%)	-0,655	<b>1,000</b>	0,837	-0,339	-0,158	<b>-0,565</b>
Ln (G%)	-0,543	0,837	<b>1,000</b>	0,029	-0,170	<b>-0,531</b>
Ln(T%)	0,522	-0,339	0,029	<b>1,000</b>	0,261	<b>0,382</b>
Ln (CapI %)	0,344	-0,158	-0,170	0,261	<b>1,000</b>	<b>0,521</b>
Ln (GDP)	<b>0,921</b>	<b>-0,565</b>	<b>-0,531</b>	<b>0,382</b>	<b>0,521</b>	<b>1,000</b>

Multicollinearity statistics:

Statistic	Ln (L)	Ln (C%)	Ln (G%)	Ln(T%)	Ln (CapI %)
Tolerance	0,401	0,159	0,160	0,388	0,831
VIF	2,491	6,294	6,241	2,575	1,203

Model parameters:

Source	Value	Standard error	t	Pr >  t	Lower bound (95%)	Upper bound (95%)
Intercept	-21,000	2,950	-7,119	< 0,0001	-27,024	-14,976
Ln (L)	2,472	0,218	11,353	< 0,0001	2,027	2,916
Ln (C%)	0,061	0,156	0,394	0,697	-0,257	0,379
Ln (G%)	-0,022	0,191	-0,114	0,910	-0,411	0,368
Ln(T%)	-0,264	0,143	-1,854	0,074	-0,555	0,027
Ln (CapI %)	0,113	0,027	4,185	0,000	0,058	0,168

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# THE USE OF FINANCIAL DERIVATIVES IN RISK MANAGEMENT PURPOSES OF NON-FINANCIAL FIRMS IN BOSNIA AND HERZEGOVINA<sup>1</sup>

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Aida HANIĆ<sup>3</sup>

## *Abstract*

*The financial system in Bosnia and Herzegovina is bank centered which follows the continental model, where banks play a leading role and in the case of BiH it means the bank participation of over 80%. The continental model assumes that banks are universal - financial supermarkets among others offer broadcasting services and sales of securities, finance and financial management. Previous research show that banks in BiH offer currency forwards, currency swaps and interest rate forwards which means that financial derivate market is organized as OTC market. Comparing to development countries, this market is not developed yet. The main reason can be found in the facts that BiH is a small country with economy in transition where non-financial firms are still not aware of the benefits in the use of these types of financial instruments and are focused on other ways of mitigating the risk. Also it is important to notice that most of the business operations are done in euro and because of the currency board regime, agency regulations on banks' net open position and a relatively small exposure to foreign currencies, except the euro, foreign exchange risk in BiH is low. Nevertheless, risk management is important for every firm so the main focus of this paper will be how BiH non-financial firms manage the risks that they are exposed to in terms of the use of financial derivate in their transactions.*

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**Key words:** *BiH, financial system, financial derivatives, non-financial firms, risk management.*

## INTRODUCTION

Derivatives are financial instruments whose value is based or derived from some underlying asset such as stocks, bonds, loans, interest rates, foreign exchange rates, commodities, mortgages and even weather disasters such as earthquakes or hurricanes. Latest research show that derivatives' trading is now worth \$600 trillion -- ten times more than the total economic output of the entire world. Statistically, 92% of the world's 500 largest companies use them to lower risk. Historically, derivatives were developed to solve real world issues that needed to be solved for business and according to some studies, development of derivatives is linked to the Hammurabi law from the period 1792 to 1750 BC. However, economic history takes the beginning of the 19th century as the development of derivatives, primarily commodity derivatives, where it is necessary to emphasize the London Metal Exchange - LME and one that is still the most popular; the Chicago Stock Exchange or (CBOT - Chicago Board of Trade). 70s bring the emergence of financial derivatives that were created on the basis of experience with commodity derivatives.

There are three basic kinds of derivative securities: forwards and futures; swaps; and options but today there is a large number of derivatives that were developed from this basic types. Futures contracts and options are mostly traded on the stock exchange while forward contracts, swaps and various types of options are traded in OTC market's between financial institutions and their corporate clients. Although the primary function of derivatives is to mitigate the risks, on the financial market many investors use these instruments for speculative activities in order to make profits. That is why many economists believe that derivatives are to blame for the emergence of the global financial crisis in 2008, and some go so far as to argue that derivatives should be "expelled" from the financial markets because of a high degree of risk. However, it is important to note that the problem did not originate in derivatives as financial instruments but in the way they have been used especially in desire for quick financial gain ignoring the early warning signs that have appeared before the crisis. Bosnia and Herzegovina doesn't have market of derivatives. There are some types that are been offered on the market by banks but according to the developed countries it is insignificant. In this paper the authors show the use of this financial instruments in development countries, how emerging economies are using this types of financial instruments, and what are the reasons that Bosnia and Herzegovina and other transition countries from the region are not using and don't have the development market of financial derivatives.

## 1. DERIVATIVES MARKET IN ADVANCED ECONOMIES

Derivative securities (derivatives) are most simply defined as contracts whose value is derived from another underlying instrument where the principal never changes owners what means that the trade of basic instrument is being arranged such as the revise of cash flows, compensation of credit risk, the price difference etc. Derivatives market can be organized as exchange-traded derivatives and over-the-counter derivatives (OTC). The notion amount outstanding in the (OTC) derivatives market worldwide exceeds \$640 trillion, with a collective gross market value of over \$27 trillion. The exchange-traded market has another \$60 trillion in outstanding notional. The growth of derivatives usage over the last two decades has been rapid in both advanced economies and emerging markets; in both OTC contracts and those that are exchange-traded; and across all underlying classes, including interest-rate, currency, equity, and the most recent addition, credit.<sup>4</sup>

Financial markets are very volatile. That includes that people who are trading with foreign currencies, oil and other commodities are expose to significant risk because all this elements are linked to such fluctuating prices. To reduce this risk, modern finance provides a method called hedging. Derivatives are widely used for hedging. According to that, there are several reasons to use derivatives:<sup>5</sup>

1. They help in transferring risks from risk adverse people to risk oriented people.
2. They help in the discovery of future as well as current prices.
3. They catalyze entrepreneurial activity.
4. They increase the volume traded in markets because of participation of risk adverse people in greater numbers.
5. They increase savings and investment in the long run.

Although derivatives are used for hedging, some people use it to speculate as well. In that term, there are some disadvantages of derivatives:<sup>6</sup>

1. **Raises Volatility:** As a large number of market participants can take part in derivatives with a small initial capital due to leveraging derivatives provide, it leads to speculation and raises volatility in the markets.

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<sup>4</sup> Rangarajan K. Sundaram, „*Derivatives in Financial Market Development*“, International Growth Center (2013) p.2

<sup>5</sup> <http://blog.ipleaders.in/types-of-derivatives-and-derivative-market/> (accessed: September, 26.2014).

<sup>6</sup> <http://financenmoney.in/advantages-and-disadvantages-of-derivatives/> (accessed on September, 26. 2014.)

2. **Higher number of Bankruptcies:** Due to leveraged nature of derivatives, participants assume positions which do not match their financial capabilities and eventually lead to bankruptcies.
3. **Increased need of regulation:** Large number of participants take positions in derivatives and take speculative positions. It is necessary to stop these activities and prevent people from getting bankrupt and to stop the chain of defaults. In that case it is necessary to note that various economist considers derivatives are the main reason for global financial crisis in 2008. According to “*The Financial Crisis Inquiry Commission’s (FCIC)*” derivatives market is a \$600 trillion national value market that is completely unregulated and dark with enormous risk and reckless leverage especially in the case of CDS<sup>7</sup>. But before the crisis the benefits of financial derivatives were not only felt in industrialised countries, but also in the developing world. Credit default swaps meant that governments which had previously had problems issuing debt could borrow more cheaply.<sup>8</sup> Also many economists consider that derivatives as a financial instruments were and are not a problem but the way that investors used them to gain more profit taking more risky investments.

Nevertheless, how derivatives are important we can conclude from the report „*The Financial Development Report 2012*“ by World Economic Forum that defines seven pillars included in the „Index“ (Financial Development Index) highlighting the use and development of derivatives market in the sixth pillar;

1. Institutional environment: encompasses financial sector liberalization, corporate governance, legal and regulatory issues, and contract enforcement
2. Business environment: considers human capital, taxes, infrastructure, and costs of doing business
3. Financial stability: captures the risk of currency crises, systemic banking crises, and sovereign debt crises
4. Banking financial services: measures size, efficiency, and financial information disclosure
5. Non-banking financial services: includes IPO and M&A activity, insurance, and securitization

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<sup>7</sup>Credit Default Swap - A swap designed to transfer the credit exposure of fixed income products between parties also referred to as a credit derivative contract, where the purchaser of the swap makes payments up until the maturity date of a contract. A CDS is considered insurance against non-payment. A buyer of a CDS might be speculating on the possibility that the third party will indeed default.

<sup>8</sup>[http://www.economist.com/blogs/freeexchange/2009/01/derivatives\\_and\\_development](http://www.economist.com/blogs/freeexchange/2009/01/derivatives_and_development) (accessed on September, 28. 2014.)

6. **Financial markets: encompasses foreign exchange and derivatives markets, and equity and bond market development.** *Derivatives markets are an important aspect of this pillar because they can significantly improve risk management and risk diversification. More developed derivatives markets can enhance the confidence of international investors and financial institutions and encourage these agents to participate in these markets.*
7. Financial access: evaluates commercial and retail access

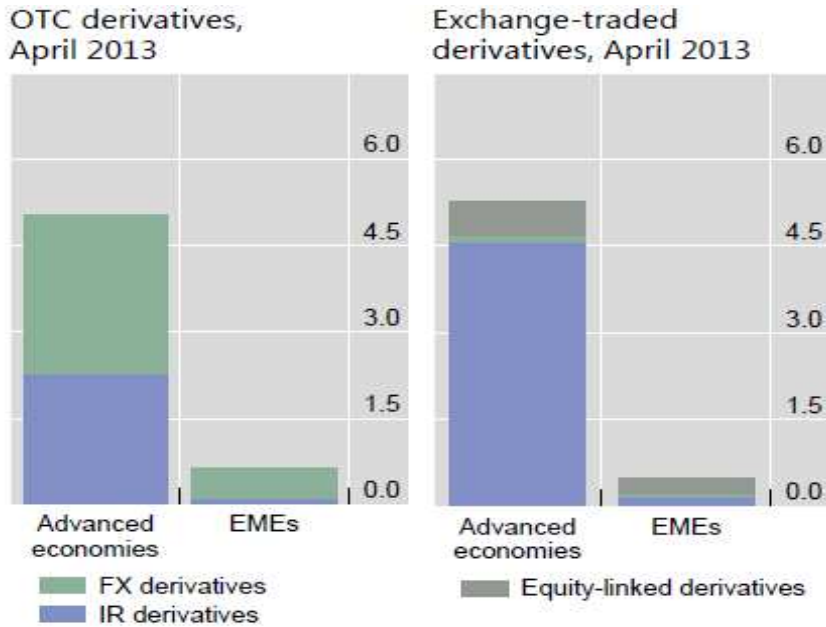
The results of the report conclude that the top 10 economies in overall Index ranking, that includes this 7 pillars, are represented in table below.

**Table 1. Top 10 economies in overall Index ranking**

Country/Economy	Rank (2012)	Rank (2011)
Hong Kong	1	1
United States	2	2
United Kingdom	3	3
Singapore	4	4
Australia	5	5
Canada	6	6
Japan	7	8
Switzerland	8	9
Netherlands	9	7
Sweden	10	11

*Source: The Financial Development Report 2012*

According to the report of the Bank for International Settlements, "*BIS Quarterly Review*" from April 2013, derivative markets in the 32 countries analyzed had a value of 1.1 trillion USD, which is about 4% of the GDP of the countries analyzed. Derivatives in advanced economies are used for the most part to trade interest rate risk (around 66% of overall turnover) with FX and equity market derivatives turnover accounting for only 28% and 6%, respectively.

**Picture 1. Derivatives turnover in advanced economies****Table 2. OTC market FX turnover in advanced economies**

	2007.	2010.	2013.	Growth 2010. – 2013.	Global share
<b>Advanced economies</b>	5,984.4	7,173.4	9,599.2	33,8	179,6
<b>US dollar</b>	2.845,4	3.370,0	4.652,2	38,0	87,0
<b>Euro</b>	1.231,2	1.550,8	1.785,7	15,1	33,4
<b>Japanese yen</b>	573,4	754,2	1.231,2	63,3	23,0

Source: BIS Quarterly Review

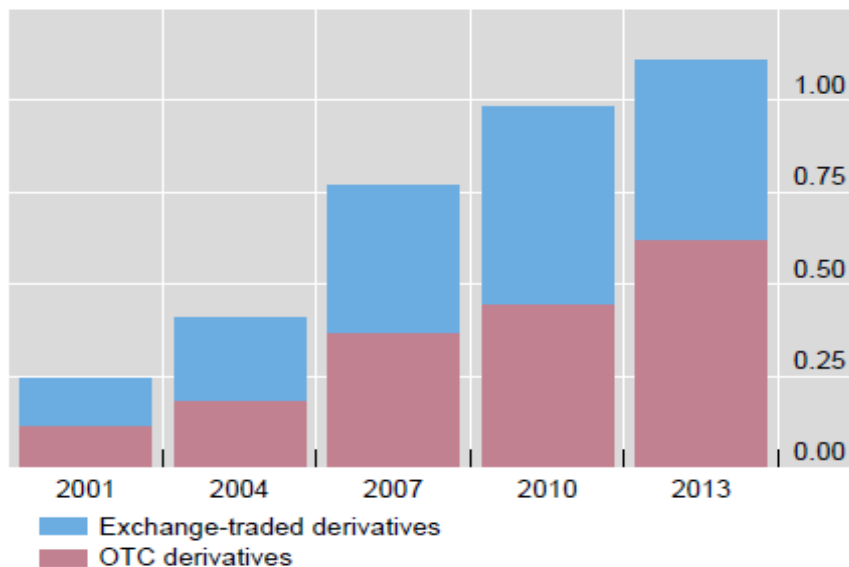
## 2. DERIVATIVES MARKET IN EMERGING ECONOMIES

Generally derivatives markets are small in emerging markets. Mostly this market is form like an OTC market, and globally compared to 2010 had a growth of 40% and a realized profit from 380 billion USD in 2010 to 535 billion in 2013. It is

important to notice the participation of IRD<sup>9</sup> in the total value of the OTC market, which in the period 2010 - 2013 had an increase of one third of the daily average USD 84 billion of realized income and a share of 15% in the value of the OTC market. On the other hand, as compared to developed countries, this percentage is lower by 4% and earnings in developed countries has a share of 19% in value of the OTC market. Less participation IRD reflects less the depth and liquidity of the money markets of emerging countries.

**Picture 2. Derivatives turnover in emerging markets**

**Derivatives turnover in emerging markets**



In contrast, most represented derivatives in emerging countries in the field of FX contracts where the most significant activities in currencies such as Chinese renminbi, Mexican peso, Turkish lira and Russian rouble.. This emphasizes the higher level of importance and the exposure to foreign exchange rate in developing countries than developed countries. Although this market is developing really fast

<sup>9</sup> IRD – interest rate derivatives is a financial instrument based on an underlying financial security whose value is affected by changes in interest rates. Interest-rate derivatives are hedges used by institutional investors such as banks to combat the changes in market interest rates. Individual investors are more likely to use interest-rate derivatives as a speculative tool.



in emerging countries, the highlights of derivatives market in emerging countries can be found in following:<sup>10</sup>

1. Emerging market countries can benefit from derivative products because in many emerging market countries, the growth of institutional investors, including pension funds and insurance companies, has outstripped issuance of investible domestic assets creating a supply/demand imbalance. Derivatives can help fill this gap.
2. Emerging market countries face several challenges in developing derivative markets. These include relatively underdeveloped markets for the underlying assets; lack of adequate legal, regulatory, and market infrastructure; and restrictions on the use of derivatives by local and foreign entities.
3. In many emerging market countries, legal codes and accounting rules are silent on all or certain types of derivatives, fail to identify the regulatory jurisdiction over derivatives, or make derivative contracts unenforceable.
4. Regulators in emerging market countries should develop appropriate policies on the operational and credit risks of trading derivatives. Regulators often fear that derivatives will increase, rather than reduce, risk and, as a result, they adopt a conservative stance.
5. It is unclear whether exchange-traded or OTC derivatives are preferable for emerging market countries.
6. Exchange-traded derivatives reduce counterparty risk and make price and information transparency more accessible to a wider range of market participants, but they require cash market liquidity to develop. On the other hand, OTC derivatives are not so dependent on cash market liquidity, but entail more counterparty risk and are less accessible.
7. In some emerging markets, capital account restrictions have shifted derivatives trading by foreign investors to offshore markets. This has several implications. It reduces the ability to monitor the transactions, and limits many smaller investors, such as small- and medium-sized companies, from hedging their risks, due to higher transaction costs and limited market access.

Emerging economies have become very important participants in international financial flows, leading to greater demand for their products as well as for their currencies, which affects the further development of derivatives markets in these countries where they generate high daily turnover of trading, especially on the OTC market. However, although the market is constantly increasing in relation to

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<sup>10</sup> OECD/World Bank/IMF, *Use of Derivatives for Debt Management and Domestic Debt Market Development*, (Paris, 2007), p.5

developed countries that percentage is still small, which means that further development is still required.

### 3. FINANCIAL SYSTEM OF BOSNIA AND HERZEGOVINA AND THE USE OF DERIVATIVES

Monetary policy in Bosnia and Herzegovina is based on the principles of currency board where Convertible Mark (KM) is permanently tied to the euro at a ratio of 1 euro = 1.955830 KM. The currency board is applied in a rigid form, which means that the central bank uses only management functionality required reserves. In 2013 in Bosnia and Herzegovina there was a slight recovery in economic activity. According to the CBBH11 data, nominal GDP in 2013 amounted to BAM 26.12 billion being an increase of 1.5% compared to the previous year. Using the consumer price index (CPI) as the deflator, real GDP growth in the 2013 is estimated at 1.61%.

**Table 3. Macroeconomic indicators in BiH in 2010. – 2013.**

	2010.	2011.	2012.	2013.
Nominal GDP (mil. of BAM)	24.750	25.474	25.900	26.297
GDP per capita (mil. of BAM)	6.440	6.634	6.745	6.862
Public debt ( in % of GDP)	25,40	25,60	27,50	28,30

Source: CBBIH

If we consider the structure of BiH financial system, it is important to notice that the country has a bank-centric financial system which follows the continental model and includes the participation of banks about 80%. Continental model assumes the model of universal banks - financial supermarkets that offers broadcasting services and sales of securities, financing and financial management.

**Table 4. Share of financial institutions in BiH financial system (in %)**

Sector	2011.	2012.	2013.
Banks	86,04	86,31	87,13
Investment funds	3,28	3,23	3,00
Insurance and reinsurance companies	4,43	4,77	4,86
Microcredit organizations	3,09	2,77	2,65
Lasing companies	3,15	2,91	2,36

Source: Agency for insurance in BiH – annual report

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<sup>11</sup> Central Bank of Bosnia and Herzegovina

Analyzing this structure we can conclude that the financial system is not sufficiently developed nor sufficiently diversified. BiH has a capital market, with the two exchanges (Sarajevo Stock Exchange - SASE and Banja Luka - BLSE), but there is no developed money market.

**Table 5. Turnover by trading months in first semester 2014 on SASE**

Month	Turnover (KM)	Number of trades securities	Number of trades	% of overall
January	5.098.608	3.526.559	624	1,69%
February	41.173.630	3.674.929	721	13,69%
March	57.074.968	7.195.652	798	18,97%
April	43.457.236	4.818.304	690	14,45%
May	110.848.284	3.742.254	583	36,85%
June	43.175.708	4.789.448	530	14,35%
<b>Total</b>	<b>300.828.434</b>	<b>27.747.146</b>	<b>3.946</b>	<b>100,00%</b>

Source: SASE

When it comes to the impact of financial markets on the efficiency of investment in the economy of the country, it is necessary to point out that the dominant source of financing companies still represent a commercial bank loans, and that alternative financing instruments, such as securities, have a negligible role. The law that regulates the derivative markets, in Federation, the Law on the Securities Market only defines derivatives and financial derivatives emphasizing that this market is regulated only as a mandatory trading on exchanges that in BiH still does not exist but only in form of OTC market where banks offer their customers, for now, only three types of derivatives: currency forwards, currency swaps and interest rate swaps. It is important to note that not all banks offer all three forms of derivatives, but the offer is created in relation to the volume and the size of the banks themselves. Also because of fixed exchange rate, companies are not interested in the use of financial derivatives, but when it comes to mitigate the price risks, especially in case of exporters, then the derivative must be taken into account

In order to evaluate the demand for financial derivatives market of Bosnia and Herzegovina, (Kozarević & Jukan, 2011) did a research in the banking sector in BiH in terms of the type of derivative that are offered and do the companies in BiH use this type of financial instrument. The sample included 29 commercial banks, of which 19 in FBiH and 10 in RS noting that 10 banks in BiH (FBiH 6 and 4 in RS) offer derivative products to its customers. The biggest interest amongst the bank clients is for currency forwards. The research show a low supply of derivatives (34.48%), but also a low demand because the results show that bank which is the

largest provider of derivatives in the financial market of Bosnia and Herzegovina, concluded only 10 contracts related to the derivative of the average value of around 750.000,00 KM or EUR 383,600.00. It is important to notice that the dominant users of derivatives are non-financial firms involved in production and distribution of oil and oil derivatives, furniture production companies, trading companies (especially trading companies that import from China), gas trading and supplying companies, and IT companies.<sup>12</sup>

Interest rate swap (IRS) is the most used derivatives by the companies in BiH. It means the exchange of one interest rate for the second stream without simultaneous exchange of principal. Coupon Swap (plain vanilla) is a substitute payments under fixed interest rate for payments under variable interest rates and vice versa. It is characteristic that in these derivatives exchange only interest flows while equity is used to calculate payments based on interest rates, exchange interest flows is done in predetermined periods during the swap and common variable interest rates are EURIBOR and LIBOR with maturities of three, for six months and one year. Businesses that commonly used interest rate swaps are companies that are already in debt, and have loans with variable interest rates. At the same time companies are aware of the risk of the possibility of rising interest rates and that such a way of borrowing funds become too expensive. Companies can protect themselves from rising interest rates, so as to replace its payments under floating rate payments at a fixed interest rate, and thus protect their businesses from adverse movements in interest rates. For example: a company borrows 1 million for a period of 4 years at a variable interest rate. Variable interest rate is three-month EURIBOR and fixed of 1.00%. The Company believes that it will be a rise in interest rates and wants to protect itself from the risk and fixed costs - has a two-year interest rate swap. The Bank provides a quotation for a fixed interest rate for two years from 2:45%.

The company pays the loan - 3m EURIBOR + 1.00%  
The company receives in interest swap - 3m EURIBOR  
The company pays the interest rate swap - 2:45%  
Net cost - 3:45%

This transaction is very simple and can help companies to protect themselves from risk exposure but the companies in BiH are still not aware of all benefits that derivatives offer. Also policymakers need to create the financial conditions for development of derivatives and their especially in terms of education so participants in financial market don't consider derivatives something that is

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<sup>12</sup>Emira Kozarević, Meldina Kokorović Jukan & Beriz Čivić, *The Use of Financial Derivatives in Emerging Market Economies: An Empirical Evidence from Bosnia and Herzegovina's Non-Financial Firms*, Research in World Economy (Vol. 5, No. 1; 2014).

complicated or the activity as undesirable speculation. FX market is very risky and this segment of the market requires a high degree of caution, taking the company's past experience, investment objectives, investment conditions, and considering that the BiH economy is small and mostly import-oriented, bh. companies are not important participants in international trade so that the volume of their transactions is significantly small compared to the large companies that use derivatives for the reduction of risk.

Bosnia and Herzegovina is not the only country with the lack of derivatives market. The same situation is in the neighborhood Serbia where there is no derivatives market. The law does not prohibits the development of this instruments and derivatives market but the current structure does not have the infrastructure for development of derivatives market. That means that transition countries still have a long path in including their financial systems in the world financial system.

## CONCLUSION

Derivatives are an important financial tool of modern markets. To derivatives were able to exist in the financial market is necessary to secure financial infrastructure and a stable financial system. Derivatives are instruments that are widely used around the world. In addition to the basic functions of hedging, derivatives are used and for speculative purposes with the goal of quick profits. The derivative markets on a global level, are particularly organized as OTC, and it has a value of over 640 billion dollars. On the other hand use of these tools is growing every day especially in developing countries, particularly in the area of OTC markets. In April 2013, derivative markets in developing countries had a value of 1.1 trillion USD, which is about 4% of the GDP of the countries analyzed compared to 10.3 trillion value of this market in developed countries with a value of 24% of GDP. The most used are currency derivatives. When it comes to countries in transition, especially Bosnia and Herzegovina, derivative markets exists in the form of OTC where banks offer customers three types of derivatives: currency forwards, currency swaps and interest rate swaps. Reasons for lack of markets in BiH can be found primarily in the fact that the Law on Securities Market only defines derivatives and states that trading are on the stock exchange in order to completely omitting the OTC. Also even the company itself are not yet fully aware of all the benefits that derivatives offer during participation in international flows in order to minimize risk. Also because of the existence of the currency board companies are not inclined to protect against foreign exchange risk but must be taken into consideration price risk. Bh. companies are not important participants in international trade compared to large companies. Banks in BiH that offer derivatives to operate on the basis of

its size and capital value, which means that not all banks offer their customers the possibility to conclude such agreements.

In the future, the hope is that the banks do more especially in the field of education of its employees in this area and that the company will offer new types of derivative securities as banks in BiH are very liquid and have the ability to offer these types of investments and their development, but it is necessary is to create a financial architecture that will be the basis for further development.

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# DIMENSIONS OF THE WELFARE STATE AND ECONOMIC PERFORMANCE: A COMPARATIVE ANALYSIS

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## **Abstract**

*In recent years the desirability of an extensive Welfare State, especially in European countries has been increasingly questioned on the grounds that economies with less social intervention by the Government are more competitive and productive. But even if countries are heated by fiscal austerity measures, changing the composition of the Welfare State might foster growth by intervening in domains that are productivity enhancing. Education and health are the most striking examples given their role as sources of human capital, a fundamental ingredient in many growth models. An interesting research question is thus to empirically assess the impact of public expenditures on education and health on human capital indicators and real income for three groups of countries: a group of high income OECD economies, the EU before the enlargement and the EU enlargement group, the answer to which can have important implications for Welfare State policy design in the EU and its OECD partners. Our empirical study is innovative in the sense that we consider cross-sectional dependence not only at the level of unit-root tests but it is also explicitly incorporated in a panel ECM technique that provides the identification of long-run relationships by using the DOLS estimator with cross-sectional dependence corrected and the estimation of short-run relationships by applying Fixed-Effects and Mean Group Pooled estimators and by including the ECM term in the appropriate regression. The data used comes from the World Development Indicators for 1960-2012. Long-run*

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*equations show evidence of a positive direct or indirect influence of (public) education expenditures and of (public, private or total) health expenditures on output for the three groups of countries pointing out that the composition of the Welfare State expenditures matters for growth. Causality relationships exhibit mixed results concerning policy variables within and between country groups and OECD\_w exhibits social discretionary policy variables that might be used to foster economic growth.*

**Keywords:** *education, health, public expenditures, economic growth, OECD*

**JEL Classification:** I18, I28, H51, H52, O40

## 1. INTRODUCTION

There is a long-standing debate in the economic literature on the influence of the Welfare State on economic performance and controversies still remain on the sign of this relationship. For some authors, according to (Hoareau-Sautieres and Rasclé, 2005), public social spending is an impediment to a good economic performance because: it discourages savings and investment; its funding uses scarce resources and introduces distortions in economic activity; it hampers job creation and increases unemployment, and it is more inefficient than the market in covering certain social responsibilities. Arguments in the opposite direction suggest that the Welfare State cannot be understood only in terms of the economic costs that it entails since the services it offers have important benefits, namely in terms of output and productivity growth as well as generating positive externalities. An often cited author in defense of the Welfare State, Peter Lindert (see e.g. <http://ideas.repec.org/f/c/pli466.html>), argues that the Welfare State has, among others, allowed countries to achieve higher levels of equality without leading to a slowdown in output growth, a situation which the author designates as the "free lunch puzzle" ((Lindert, 2002, Lindert, 2004); (Lindert, 2006a)). According to the same author, the adverse effects of state intervention in economic performance result from other forms of action such as the design of the legal framework and the regulation of certain markets ((Lindert, 2006b)).

From an economic growth perspective, two important dimensions of the Welfare State are public expenditures on education and health, to the extent that lead to the accumulation of human capital, which plays a central role in growth models, both exogenous and endogenous. Human capital can be described as "(...) the knowledge, skills, competencies and other attributes embodied in individuals that are relevant to economic activity" ((OECD, 1998): 9). A healthier and more educated population/workforce corresponds in principle to a higher availability of



human capital in the economy, thereby improving productivity and increasing in this way output ((Mankiw et al., 1992); (Lucas, 1988)). In advanced economies it increases the respective innovation capability ((Romer, 1990); (Jones, 1995); (Jones, 2005)) and in those that are below the technological frontier it allows the diffusion and transmission of knowledge in order to process new information and implement successful technologies developed by the leaders ((Nelson and Phelps, 1966); (Abramovitz, 1986); (Benhabib and Spiegel, 1994); (Benhabib and Spiegel, 2005)). Investment in education and health can thus generate substantial returns over time, not just at the individual level, but especially for the economy as a whole, and the Welfare State can play a crucial role in this dynamic process.

The main objective of this work is to contribute to the debate on the economic impact of the Welfare State by focusing on two of its dimensions, the provision (directly or indirectly) of education and health services, and assessing their importance for long-run macroeconomic performance. We first test for the presence of panel unit roots and in this way check the resilience of health and education variables, correcting for the presence of cross-sectional correlation. In addition, applying growth regressions, we estimate long-run relationships and analyze causality between education and health variables and output, as well as with different social indicators. We consider three samples of countries listed in the World Development Indicators database of the World Bank for the period (maximum) from 1960 to 2012. The first group (EU\_1) corresponds to the countries belonging to the European Union before the enlargement, the second group (EU\_2) corresponds to the enlargement countries and the third group (OECD\_w) corresponds to the wealthier OECD countries and none of the three groups has countries in common. Countries included in the three samples are developed countries according to the World Bank classification nonetheless the three groups present different levels of income which allows us to consider the influence of the level of income in terms of possible differences in the impact of education and health on economic growth.

The remainder of this work is structured as follows. Section 2 contains a brief review of the economic literature on the relationship between the Welfare State and economic growth, with particular emphasis on the systematization of some empirical results on the effects of public spending on education and health. In section 3 we review the issue of panel causality from an econometric point a vue by inspecting empirical literature that has applied the concept. In section 4 we describe the data used and the methodology of analysis, followed by section 5 with the presentation and discussion of the results obtained. Finally, section 6 outlines the main conclusions.

## **2. THE WELFARE STATE - ECONOMIC GROWTH NEXUS: THEORY AND FACTS WITH A FOCUS ON PUBLIC EXPENDITURE ON EDUCATION AND HEALTH**

The concept of Welfare State is difficult to establish since its design and implementation can take many different forms, as can be seen in the different models adopted by European countries. For instance, in OECD countries, Adema, and Fron Ladaique (2011) point to an average public social expenditure<sup>4</sup> of 19.2% of GDP in 2007 and 22.5% in 2009, the most important items relating to pensions (representing on average 7% of GDP in 2007) and health spending (on average 6% of GDP in 2007). However, the figures for each country can vary greatly: in the cases of Mexico and South Korea public social expenditure corresponds to 7% of GDP, while in France it represents 28% and in Sweden 27%, values for the year 2007. In general, we can define the Welfare State as a state in which the government uses a significant portion of national resources to provide services that benefit individuals or families who meet certain criteria, i.e. they are intended to be consumed individually, as opposed to collective consumption goods such as national defense or internal security<sup>5</sup>. The services associated with public social spending can be directly provided by the state, such as education and health, or may take the form of transfers, such as pensions or unemployment benefits, which allow individuals and families to have access to certain services essential to their subsistence with a decent quality of life.

Following the economic crisis that hit the world economy in 2007-2008 and the ensuing public fiscal sustainability problems faced by many European countries, the relationship between the Welfare State and economic performance returned to the policy agenda and public discussion, although this is not a recent debate within the economic literature (see e.g., (Barr, 1992); (Atkinson, 1995); (Hassler et al., 2003); (Lindert, 2004)). In broad lines, the fundamental question that has been asked is whether Welfare State and sustained economic growth are incompatible goals, i.e. whether it is necessary to reduce the first to stimulate the second. One of the main arguments used in defense of the reduction of the size of the Welfare State is based on its negative effects on incentives. On the one hand, income taxes used to finance the Welfare State discourage a larger effort from workers and investment in innovations by firms since the government will retain part of their earnings and profits, respectively. Moreover, unemployment benefits discourage labor supply, since they guarantee an income for the unemployed workers and also

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<sup>4</sup> According to the OECD definition, public social spending includes the amounts spent by governments with pensions, social benefits and health.

<sup>5</sup> See *A Glossary of Political Economy Terms*, Paul M. Johnson, Department of Political Science, Auburn University ([http://www.auburn.edu/~johnspm/gloss/welfare\\_state](http://www.auburn.edu/~johnspm/gloss/welfare_state)).

serve as a protection to active workers, which are thus discouraged from higher working effort. But the potential costs of the Welfare State can be neutralized or even compensated by their respective benefits. Thus, the Welfare State does not necessarily hamper economic performance, particularly as far as output growth in the long run is concerned. It is not possible to determine universally whether the Welfare State as a whole stimulates or reduces economic growth. There will be some measures that have a positive influence, while others will have a negative impact, which makes empirical analysis fundamental to identify the existing relationship<sup>6</sup>. One way to move forward in the understanding of this relationship has been through applied studies that investigate the relationship between certain dimensions of the Welfare State and economic growth, in particular the study of the relationship between public spending on education and/or health and output growth<sup>7</sup>.

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<sup>6</sup> This debate is part of a wider one on the optimal size of government in terms of economic growth. For instance, BARRO, R. 1990. Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, 98, S103–S125., argues in favour of the existence of productive public expenditures, those that contribute to an increase in investment in the economy, and unproductive ones, with the former allowing the acceleration of economic growth. DEVARAJAN, S., SWAROOP, V. & ZOU, H.-F. 1996. The composition of public expenditure and economic growth. *Journal of Monetary Economics*, 37, 313-344., conducted an empirical study on the impact of the composition of public expenditure on economic growth based on two classifications: economic category (current and capital expenditures) and functional (education, health, defence, transport and communications, etc.). Based on the latter classification, the authors were not able to find any relationship between expenditures on education and health and the growth rate of real GDP per capita in the 43 countries analysed between 1970 and 1990. ANDRADE, J. S., DUARTE, M. A. & BERTHOMIEU, C. 2006. Le Rôle de la Consommation Publique dans la Croissance: le cas de l'Union Européenne. *Économie Appliquée*, 2, 29-64., on the other hand, concluded that in the EU between 1960 and 2002 the optimal size of government was still far from being reached.

<sup>7</sup> Examples of recent empirical studies that take a more aggregate perspective of the Welfare State by considering the impact of public social spending as a whole on economic growth include FICA, T. & GHATE, C. 2005. The welfare state, thresholds, and economic growth. *Economic Modelling* 22, 571– 598., IM, T., CHO, W. & PORUMBESCU, G. 2011. An Empirical Analysis of the Relation Between Social Spending and Economic Growth in Developing Countries and OECD Members. *The Asia Pacific Journal of Public Administration*, 33, 37-55. and DING, H. 2012. Economic growth and welfare state: a debate of econometrics. *MPRA Paper No.*, 39685. FICA, T. & GHATE, C. 2005. The welfare state, thresholds, and economic growth. *Economic Modelling* 22, 571– 598., use as an indicator of the size of the Welfare State spending on public transfers relative to public investment spending and conclude, for the 19 developed countries studied between 1950 and 2001, for a negative impact of the expansion of the Welfare State on economic growth. Im, Cho and Porumbescu (2011) compare the influence in developed and developing countries over the period 1990-2007, using as a proxy for the Welfare State public spending

The Welfare State can play a very important role in terms of economic growth to the extent that public spending on education and health provide the services necessary for the accumulation of human capital, a key ingredient in modern growth theory. In what is known as the augmented Solow model, (Mankiw et al., 1992) introduce human capital as an input into final goods production, along with physical capital and labour, with its accumulation explained by the decisions of economic agents in terms of consumption and savings. In a neoclassical framework, the authors show that differences in human capital availability are key in explaining the differences in income levels across countries, with higher human capital accumulation also leading to faster growth, at least in the short to medium-run. But in growth models known as endogenous, the main source of growth is not capital accumulation but technological change, and human capital is also considered fundamental for knowledge production. In the models of (Romer, 1990), (Jones, 1995) and (Jones, 2005), for instance, human capital is essential for the production of new ideas, while in the models of (Nelson and Phelps, 1966), (Abramovitz, 1986), (Barro and Sala-i-Martin, 1997) and (Rogers, 2003) human capital is a key determinant of the ability to absorb new technologies by economies more distant from the technological frontier. For these economies to be able to carry out imitation activities and thus recover from their technological backwardness, they need a workforce that can incorporate, adapt and use new technologies. (Benhabib and Spiegel, 1994) pioneer empirical study of the different mechanisms of transmission of human capital – both as a factor of production of final goods and as a crucial input in the creation of new ideas (inventions), but also for the imitation and absorption of existing technologies - concluded that the relative importance of these different channels depends mainly on the level of development of countries, with the role of human capital in the generation of technological change more important for advanced economies, as expected.

Human capital accumulation can occur through different sources such as formal education, training, learning-by-doing or health care, according to the (OECD, 1998). A more educated and healthier worker can work more efficiently and effectively, can think better, becoming more productive, and devote more time to productive activities. The source of human capital that has most often been investigated in empirical growth studies is formal education, with the majority of studies confirming its importance for economic growth, although some unresolved issues remain (see e.g. (Sianesi and van Reenen, 2003)). As for the influence of health status indicators on economic growth, the empirical analysis are scarcer,

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on social protection, education and health relative to GDP. The results point to a positive correlation in developing countries, which becomes negative in developed countries. Finally, Ding (2012) analyses the OECD countries from 1980 to 2005, considering the impact of social spending, as officially defined, on the growth rate of real GDP per capita. The author found a negative relationship between these variables.

pointing in any case to the existence of a positive correlation (see e.g. Bloom, Canning and Sevilla (2004)). In this sense, public expenditure on education and health can be an important vehicle for human capital accumulation and contribute positively to economic growth<sup>8</sup>.

The empirical analysis of the relationship between education and health spending and economic growth has relied on the estimation of growth regressions in which the dependent variable is the growth rate of real GDP, total or per capita, and expenditure on education and/or health services appear as the main explanatory variables, along with a number of other independent variables, the so-called control variables, which have proved to be important in explaining output growth in previous empirical studies (see (Sala-i-Martin, 1997); (Doppelhofer et al., 2004); (Durlauf et al., 2005)). These studies explore information for a wide range of countries over different time periods. An example of a recent study that follows this approach is (Beraldo et al., 2009) who analyse the simultaneous impact of expenditure on education and health on output growth and also differentiate between the impact of public and private expenditures. The sample includes 19 OECD countries over the period 1971-1998. Both variables show a positive influence on the rate of growth of output, but stronger in the case of health expenditures. Another interesting result concerns the greater influence of public spending on health and education relative to private spending.

A methodological problem that can be assigned to the previous study is that it does not properly take into account the possibility of reverse causality, i.e. the fact that output growth could lead economies to spend more on health and education<sup>9</sup>. The

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<sup>8</sup> Another transmission mechanism from public spending on education and health to economic growth emphasized by some authors is that of inequality. AGHION, P., CAROLI, E. & GARCÍA-PEÑALOSA, C. 1999. Inequality and economic growth: the perspective of the new growth theories. *Journal of Economic Literature*, 37, 1615-1660. and BARRO, R. J. 2000. Inequality and growth in a panel of countries. *Journal of Economic Growth*, 5, 87-120., contain a review of this literature suggesting that less inequality stimulates growth. Accepting this view, universal access to education and health care systems allowed by public expenditure in these sectors will lead to a more equal distribution of income, especially in the presence of imperfections in the credit market, and thus will have a positive effect on the growth rate of output through this channel. For instance, SYLWESTER, K. 2002. Can education expenditures reduce income inequality? *Economics of Education Review*, 21, 43-52. arrives at a negative correlation between public expenditure on education and inequality in income distribution for a set of around 50 countries between 1970 and 1990

<sup>9</sup> BALTAGI, B. H. & MOSCONE, F. 2010. Health care expenditure and income in the OECD reconsidered: Evidence from panel data. *Economic Modelling*, 27, 804-811., test for the influence of the level of income on health expenditures for a sample of 20 OCDE

approaches followed to incorporate this hypothesis include studies focusing on the situation of single countries, exploiting only time series information, and studies that apply the concerns of time series econometrics to groups of countries, using methodologies for cointegration and causality analysis specific for panel data. In this latter context, Erdil and Yetkiner (2009) focus on the study of the direction of causality between the growth of real GDP per capita and real expenditure on health per capita growth for a set of 75 countries between 1990 and 2000, split according to income levels. The estimation of a VAR model with two variables and panel data allows the authors to conclude for the existence of causality in both directions for 46 out of the 75 countries analysed. In the group of high income economies, composed of 24 countries, the influence that seems to prevail is the positive impact of health expenditures on output, which the authors attribute to the greater dependence of these countries on human capital given the more advanced technologies they use in production activities. In the case of middle and low-income countries the sense of causality that stands out is the opposite one from output to health spending, also with a positive sign. Wang (2011) focuses on the influence of (total) health expenditures on output growth in 31 OECD countries between 1986 and 2007. The panel cointegration tests carried out indicate the existence of a long-run relationship between total GDP and, alternatively, three measures of health expenditure: total expenditures, per capita expenditures, and individual health care expenditures. The author goes on to estimate the relationship between output and health expenditures applying FMOLS (fully modified ordinary least squares) that allows to take into account the possible endogeneity of health expenditures, concluding for the existence of bi-directionality between these and output. The application of a Granger causality test for panel data also leads to a positive influence from health spending growth to output growth, but negative from the second to the first. Finally, Wang (2011) tries to identify the existence of differences in the impact of health spending growth on output growth according to the distribution of the two variables using the method of quantile regressions. From this analysis the author concludes that in countries with low output growth rates the growth of health spending has a negative impact on output growth. In countries with higher output growth rates (over 5 %), the sign of the relationship changes to positive. On the other hand, considering the impact of output growth across the distribution of health expenditures growth, the impact is negative when health expenditures growth is either rather low or rather high. Hartwig (2008) also tests in the context of panel data for the existence of Granger causality between the growth of real GDP per capita and the growth of health spending per capita for 21 OECD countries between 1970 and 2005 by estimating a VAR model. The results support the existence of a negative influence of the growth of health spending on output

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countries over the period 1971-2004, and conclude that real GDP per capita causes per capita health expenditures, but the respective income elasticity is lower than one.

growth, while output growth has a positive influence on health expenditures growth.

(Hartwig, 2012) applies a methodology similar to that in Hartwig (2008) but he estimates a growth regression to test the relationship between growth in education and health expenditures per capita, together and separately, and the growth of real GDP per capita in a sample of 18 OECD countries between 1970 and 2005. The only other determinant of growth considered is the rate of growth of investment in physical capital. The results regarding the influence of health and education expenditures growth on the growth rate of real GDP per capita depend on whether or not the influence of the investment rate is considered and the inclusion of Japan in the sample. In the first case, when the author considers the investment rate as an explanatory variable he does not find any influence for health and education expenditures on growth. However, the exclusion of Japan from the sample makes this influence negative.

The question of the direction of causality can also be addressed based on the individual situation of each country, i.e. by exploring the information of the relevant time series. (Devlin and Hansen, 2001) provides an example of such an approach for 20 OECD countries, concluding that in six of the countries analyzed between 1960 and 1987 there is no confirmation, according to the Granger causality test, that real per capita health expenditures and real GDP per capita influence each other. In eight countries the causality occurs from health expenditures to output, in another eight countries causality occurs only in the opposite direction, and thus in only two countries, Denmark and Iceland, is there a simultaneous influence. (Maitra and Mukhopadhyay, 2012) analyze in turn a group of twelve developing countries in Asia and the Pacific between 1981 and 2011 (maximum), trying to identify causality relationships between public expenditure on education, public expenditure on health and output. Also in this case the results differ depending on the country in question. In nine countries public spending on education has a positive influence on output, while the positive influence of public spending on health occurs in only five countries. In one case public spending on education has a negative influence on output and in three countries the impact of public spending on health on output is also negative. An interesting result highlighted by the authors is that the positive impact of public spending on education and health on output is not immediate, i.e. it takes some time before they produce the desired effect on GDP, and the lags are generally higher in the case of education.

Another empirical approach is that of (Baldacci et al., 2004) who analyze the relationship between social spending, human capital and economic growth for 120 countries between 1975 and 2000 by estimating a simultaneous equations model, a

methodology that allows to take into account the cross-influences between the variables under analysis. The estimated model consists of four equations (growth, investment, education and health), with social spending on education and health as determinants of the availability of human capital in the form of education and health, respectively. The authors analyze in this way the mechanisms of transmission of such expenses, verifying that they effectively contribute to the accumulation of human capital in the countries under analysis. The results show a positive and significant impact of expenditures on education and health in human capital accumulation, which in turn is confirmed as a major influence of the growth rate of real GDP per capita.

From the empirical studies reviewed, regardless of the empirical approach applied, it is clear that it is possible to find different impacts of public spending on education and health on economic growth depending on the level of development of countries. The studies that focused on developed countries, as is the case of most OECD countries, seem to indicate the existence of a negative relationship, while studies with samples from developing countries or analyzing wider samples and respective subsamples point to a relationship with the opposite sign. However, even within groups of countries with the same level of development, the behavior is not homogeneous. This study seeks to contribute to clarify the sign of the relationship between both types of public expenditure and output growth as well as the sign of the relationship between education and health indicators and education and health expenditures in the context of the three samples already mentioned. Additionally, it intends to clarify the causality relations between the main variables of interest of our study.

### **3. PANEL CAUSALITY INSIGHTS FROM THE LITERATURE**

In what follows we present a critical review of the empirical literature on panel causality from an econometric point of view, a crucial issue for our empirical analysis, as we will see later on.

(Nair-Reichert and Weinhold, 2001) studied the links between investment and economic growth and proposed a variant of the fixed effects model with instrumental variables applied to dynamic models ((Hsiao, 1989) and (Weinhold, 1999)). But this methodology does not solve the problem of co-integration. (Al-Iriani, 2006) used GMM estimators applied to first difference values of energy consumption and output even, as is the case, the variables do not reject the presence of a unit root and the authors tested also a cointegration relation between them. (Canning and Pedroni, 2008) applied FMOLS (fully modified OLS) (Pedroni, 1999) and (Pedroni, 2004) to output and infrastructure stock in a first



stage and after they estimate ECM relations. They followed the Granger representation theorem (Engle and Granger, 1987) that cointegrated series can be represented by a dynamic error correction model. The theorem implies that at least one of the short-run adjustment factors ( $\lambda$ ) must be non-zero. The results of these short-term estimations are after analyzed in terms of causality and these estimations use only stationary variables. The authors considered heterogeneous coefficients and they applied mean group estimators.

(Leea and Chang, 2008) analyse the relationship between tourism and output and after studying the order of integration of the variables, they estimated in a first stage a cointegrated heterogeneous system and in a second stage they estimated a dynamic ECM with heterogeneous equations. Long run and short run exogeneity are also tested but the issue of cross-sectional dependence is not addressed in the paper. (Lin and Ali, 2009) implemented two methodological alternatives after studying the degree of integration of military spending and inequality. In the first approach they considered the variables as if they were stationary and they used them without transformation. In the second approach the authors considered that the order of integration is one and under this hypothesis they used the first differences of the variables. They applied dynamic heterogeneous models without any ECM and the issue of cross-sectional dependence is not analyzed. This last omission matters in a study involving military spending. (Baltagi and Moscone, 2010) studied income elasticities of healthcare expenditures and proposed to correct cross-sectional dependence by introducing a spatial error term structure and also a model based on the Common Correlated Effects (CCE) build by (Pesaran, 2006). They admitted two hypotheses in terms of the coefficients: heterogeneous coefficients on the intercept and on the cross-sectional term, temporal effects. (Hartwig, 2010) studied the relationship between health care expenditures and output using five-year growth rates. He presents a vast survey of studies on causality relationships between different variables and growth. Admitting that the variables are stationary (recall that they are growth rates) the author recommends the use of one-step and two-step System GMM but cross-sectional dependency and cointegration relations are not taken into account. (Bangake and Eggoh, 2011) used cointegration, DOLS, methodology to test the no-exclusion of causality between finance development and output, variables that are proved to be  $I(1)$ . They introduce in the equations control variables. The non-exclusion of the adjustment variable of the ECM is taken as representing long run causality, the coefficient of the lags as short run causality and both non-exclusion as strong causality. The authors use heterogeneous coefficients admitting that there are no reasons to accept homogeneous coefficients. They take the same lag for all the variables in the ECM dynamic equations. (Chu, 2012) for oil consumption and output, (Chu and Chang, 2012) for nuclear, oil consumption and output, and (Kar et al., 2011) for financial development and economic growth address non-causality by using the SUR

methodology assuming heterogeneous coefficients. They claim that this methodology solves the problem of cross-sectional dependence as well as the problem of unit root in the variables.

(Gries and Redlin, 2012) undertook a causality analysis of trade openness and growth. They applied GMM methodology to the estimation of two dynamic ECM equations where the coefficient of each independent variable (in levels) is set equal to 1. They corrected the small-sample bias of (Banerjee et al., 1998) but they lost information about the long and short run coefficient values. (Çaglayan and Sak, 2012) implemented what they called a three stage process for the study of causality between output and tourism. If the unit root variables are cointegrated the analysis of the ECM dynamic equation will be informative about the presence of causality. If the variables are not cointegrated a system of equations in first differences will be used. The authors consider heterogeneous coefficients with mean group estimators. (Akkemik and Göksal, 2012) presented a list of 47 studies about causality between energy consumption and income. They were very critical to the use of homogeneous dynamic methods applied in the majority of those studies. They recommend the correction of the omitted variable bias by the inclusion of other variables correlated with the dependent variable. The study of the order of integration of the variables was performed but the authors limited their analysis to dynamic homogeneous and heterogeneous models without any reference to cointegration.

(Dumitrescu and Hurlin, 2012) proposed a mean group (Granger, 1969) non-causality test. This test was applied to originally stationary data. (Chen et al., 2013) studied causality between output per capital and infant mortality rate by using fixed causal and random causal analysis as well as mean group estimators. They admit homogeneous and heterogeneous regression coefficients. The question of non-stationary variables is not considered. (Ahamada and Coulibaly, 2013) proposed to use a methodology attributed to (Kónya, 2006) for studying the causality from remittances to output. This methodology consists in the estimation of heterogeneous coefficients by the use of SUR methodology with correction of cross-sectional dependence. (Chang et al., 2013) for the causality between energy consumption and output have taken into account the existence of cross-sectional dependence and apply the SUR methodology to obtain dynamic systems of two equations with heterogeneous coefficients. The reference to the order of integration of the variables, energy consumption and output, or to non-stationary estimations is not made. (Nazlioglu et al., 2011) studied the causality links between foreign direct investment and growth. They tested for cross-sectional dependency but they have limited their empirical estimations to SUR methodology and applied to individual equations Wald tests for the non-causality. They also applied the methodology of (Toda and Yamamoto, 1995) to the individual economies. In fact, it is not a panel

analysis but a time series analysis without the study of stationarity and the corresponding Ganger tests.

(Yalta and Yalta, 2012) studied financial liberalization and capital flight and they used a time-stationary VAR model but they proposed to solve the problem of endogeneity estimating a model with first differences by GMM and applied to these equations nullity tests of the coefficients. The question of unit root or stationarity of the variables as well as the long-run behavior of the variables is not considered. (Yilgör et al., 2014) for the study between defense and economic growth considered the presence of cross-sectional dependence in the unit root test and concluded that the variables are I(1) and they tested also the non-exclusion of cointegration relation with the (Pedroni, 1999) test. Finally, they applied the Granger traditional tests to the variables in levels, i.e., to variables with unit root.

Summing-up: the literature on panel causality reveals that the majority of studies apply methods that deal with sectional heterogeneity but stationary methods are dominant, even when unit root analysis is implemented. Both the SUR method of estimation and the GMM dynamic system are frequently applied in the revised literature but the problem is that those methods are inappropriate to solve cross-sectional dependence and are inadequate to non-stationary variables. In some papers, besides the presumably cause and effect variables, control variables are added in order to improve model specification, yet the information content of those models with and without the causal and control variables is not provided.

#### 4. DATA AND METHODOLOGY

Our database was built from the WDI (World Bank) for the period 1960-2012 and is an unbalanced panel. Table 1 below presents our notations (1), the WDI notation (2) and definitions (3).

**Table 1. Database variables**

(1)	(2)	(3)
x	NE.EXP.GNFS.ZS	Exports of goods and services (% of GDP)
gfc	NE.GDI.FTOT.ZS	Gross fixed capital formation (% of GDP)
py	NY.GDP.DEFL.ZS	GDP deflator (base year varies by country)
yrpc	NY.GDP.PCAP.PP.KD	GDP per capita, PPP (constant 2005 international \$)
es	SE.SEC.ENRR	School enrollment, secondary (% gross)
et	SE.TER.ENRR	School enrollment, tertiary (% gross)

(1)	(2)	(3)
eep	SE.XPD.TOTL.GD.ZS	Public spending on education, total (% of GDP)
hepr	SH.XPD.PRIV.ZS	Health expenditure, private (% of GDP)
hep	SH.XPD.PUBL.ZS	Health expenditure, public (% of GDP)
mi	SP.DYN.IMRT.IN	Mortality rate, infant (per 1,000 live births)
leb	SP.DYN.LE00.IN	Life expectancy at birth, total (years)

Note: (1) our notation; (2) WDI notation and (3) WDI variable name

We study 3 groups of economies (Table 2) that we identify by Eu\_1, Eu\_2 and OECD\_w. The first group (Eu\_1) corresponds to the European Union before the enlargement process, the second group (Eu\_2) to the countries of the enlargement and the third one (OECD\_w) to wealthier OECD countries minus the OECD countries belonging to the other groups.

**Table 2. Groups of Countries**

Eu_1	Austria, Belgium, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Netherlands, Portugal, Sweden
Eu_2	Bulgaria, Cyprus, Czech R., Estonia, Croatia, Hungary, Lithuania, Latvia, Malta, Poland, Romania, Slovenia, Slovak R.
OECD_w	Australia, Canada, Switzerland, Israel, Iceland, Japan, S. Korea, Norway, New Zealand, U.S.A.

The variables of these groups have different characteristic values in terms of the coefficient of variation and also in terms of the median, as we can see in Table 3. For exports (x) the second group has a higher median value than the other two groups.

There are not great differences concerning median investment (gfc) and median GDP inflation (dpy). Inflation stability is obvious for Eu\_1 compared with the two other groups. In terms of GDP per capita Eu\_1 is the most homogeneous and Eu\_2 has a median value half of the other two groups. For education and health (es, et, eep, hep and hepr), Eu\_2 has lower median values than the other groups. The infant mortality rate (mi) and life expectancy (leb) are relatively more stable for the second group but the values for the median are clearly worse than for the other two groups.

**Table 3. Some descriptive Characteristics of the Variables in the Different Groups**

Var	Eu_1		Eu_2		OECD_w	
	VC	Med	VC	Med	VC	Med
x	0.506	28.03	0.302	49.46	0.411	28.42
gfc	0.163	21.58	0.198	23.00	0.201	23.60
dpy	0.700	0.038	2.480	0.041	2.360	0.043
yrpc	0.148	25428	0.348	12948	0.305	27294
es	0.135	98.97	0.068	90.78	0.135	95.65
et	0.202	34.74	0.431	23.76	0.470	40.02
eep	0.238	5.09	0.236	4.41	0.220	5.35
hep	0.191	6.78	0.237	4.78	0.248	6.24
hepr	0.303	2.13	0.470	1.88	0.672	2.49
mi	0.803	8.80	0.537	14.55	0.558	8.10
leb	0.047	74.98	0.039	70.90	0.058	75.86

*Note: notations: Var- variable; VC- coefficient of variation; Med – median*

Our empirical strategy points out to a coherent methodology to be implemented, that might overcome the drawbacks of the empirical literature about panel causality already outlined and discussed in section 3 above. More specifically, we intend to analyse long-term relations between variables in order to desintagle group behaviour and to use suitable estimators and models for non-stationary variables and at the same time to be able to control for problems of sectional dependence.

Our empirical methodology is implemented in two steps. The first includes (A) and (B) and the second (C). We start with (A) the study of the stationary characteristics of the variables taking into account the phenomena of cross-sectional dependence. Then we perform (B) the estimation of long-run relations by non-stationary methods that includes state and policy variables. Our benchmark model has only state variables and it is compared to models with state and policy variables. This last model is justified and retained if the associate level of information is higher than the one of the benchmark model. Finally, at the second stage (C) we obtain the 'error correction mechanism' (ECM) from the long-run relations and the dynamic short term equations that allow to test for the existence of weak-exogeneity. If we cannot reject the null of the weak-exogeneity hypothesis which means that the dependent variable of the short-run model will not be caused by the other variables in the long-run relationship.

In what follows we consider in more detail the tests and models estimated. (A) We apply unity root tests with the presence of cross-sectional dependence. We use an ADF test applied to panel data with the null hypothesis (H0) as the presence of unit root in all series against the alternative at least one of the series is stationary. This test is built as a combination based on the inverse of the Normal distribution of the significance levels of the ADF tests, (Choi, 2001). For N fixed individuals and T observations sufficiently numerous ( $T \rightarrow \infty$ ), in the case of H0:

$$Z = \frac{1}{\sqrt{N}} \cdot \sum_{i=1}^N \Phi^{-1}(p_i) \xrightarrow{d} N(0,1)$$

In this formulation the test assumes cross-sectional independence. (Costantini and Lupi, 2013) propose cross-sectional dependence correction based on (Hartung, 1999) and (Demetrescu et al., 2006) and a suitable formula for test computation (Demetrescu et al., 2006) is used:

$$\hat{Z}_H = \frac{\sum_{i=1}^N \Phi^{-1}(p_i)}{\left\{ N \cdot \left[ 1 + \left( \hat{\rho}^* + 0.2 \cdot \sqrt{\frac{2}{N+1}} \cdot (1 - \hat{\rho}^*) \right) \cdot (N-1) \right] \right\}^{1/2}}$$

Where  $\hat{\rho}^*$  is a convergent estimator of  $\rho$ , and  $\Phi^{-1}(p_i)$  denotes the common correlation:

$$\hat{\rho} = (1 - (N-1)^{-1}) \cdot \sum_{i=1}^N \left( \Phi^{-1}(p_i) - N^{-1} \cdot \sum_{i=1}^N \Phi^{-1}(p_i) \right)^2$$

We apply this test without or with trend. We also test the covariate augmented Dickey-Fuller test (CADF) proposed in(Costantini and Lupi, 2013) and based on (Hansen, 1995) and (Hanck, 2013). Originally it tests the presence of a unit root in panel data with or without sectional correlation, (Pesaran, 2004). This test performs better than the ordinary ADF test. Following (Hansen, 1995) demonstration it benefits from a power test gain when a stationary variable is included in the augmented equation. The new equation is now, at the individual level:

$$a(L) \cdot \Delta Y_t = \delta \cdot Y_{t-1} + b(L) \cdot \Delta x_{t-1} + e_t$$

Where  $a(L)$  and  $b(L)$  are polynomial lags,  $\Delta x$  is the added covariate and the errors ( $e$ ) have the normal characteristics. (Costantini and Lupi, 2013) suggest using as a stationary variable, the average of the first difference, applied to all individuals or the first difference of the first principal component of the variable. This change allows a superior power test when compared to the usual averages of ADF tests. The correction of cross-sectional correlation assumes the significance level of the (Pesaran, 2004) test less than a typical value, 10% is considered an acceptable choice. We use a test based on (Hartung, 1999) and (Demetrescu et al., 2006) that automatically corrects the sectional correlation with the threshold at 10% and having as covariate the first difference of the variable under study. We will also perform the above mentioned tests with a constant and with a constant and trend. These 4 tests will be identified by Zh, Zh(t), pCADF and pCADF(t), respectively, where (t) stands for the presence of a trend.

(B) We start our analysis of the long-run relations between our variables of interest by considering an equilibrium model between state and policy variables (1)

$$Y_{i,t} = \alpha + \beta_j \cdot X_{i,t} + \gamma_l \cdot Z_{i,t} + \dot{\alpha}_{i,t} \quad (1)$$

where  $X$  is a  $(k \times 1)$  set of state variables,  $\beta_j$  a  $(1 \times k)$  set of corresponding coefficients and  $Z$  and  $\gamma_h$  a set of  $(l \times 1)$  and  $(1 \times l)$  policy variables and coefficients, respectively;  $i$  and  $t$  denote individuals and time indices.

We begin with a benchmark equation (1) that considers only state variables ( $(py)$ ,  $(x)$ ,  $(gfc)$ ) and takes  $(yrpc)$  as the dependent variable and then we built equations (2), (3) to jointly inspect the influence of the two dimensions of human capital, - education (secondary and tertiary levels) and health (life expectancy and infant mortality both at birth) on  $(yrpc)$ . Then we inspect the influence of the social policy variables, - education expenditures and health expenditures on  $(yrpc)$ . The former gave rise to equation (4) and the latter to equations ((5), (6), (7), (8), (9)) in order to assess the influence of (public, private and total) health expenditures on  $(yrpc)$  equations. Since our main aim is to test the variables education expenditures and health expenditures as social policy variables in equations (10), (11), (12) and (13), we have also estimated their impact on education ( $(es)$ ,  $(et)$ ) and on the welfare variables ( $(mi)$ ,  $(leb)$ ).

To estimate equation (1) we have to consider the presence of cross-sectional correlation and variables integrated of order 1. So we have included the individual (sectional) averages of each of the variables on equation (1),  $\bar{W}^a$ , to solve the first problem (Pesaran, 2006), and we have added lags and leads of order  $s$  of the first

difference of the independent variables to follow (Saikkonen, 1991) proposition to apply DOLS,  $\Delta W$ , with  $s=1$ . Our estimated parameters  $\beta_j$  and  $\gamma_h$  correspond to the expected long-run parameters equation (1a).

$$Y_{i,t} = \alpha + \beta_j \cdot X_{i,t} + \gamma_l \cdot Z_{i,t} + \sum_{h=-s}^s \phi_l \cdot \Delta W_{i,t} + \omega_m \cdot \bar{W}_{i,t}^a + \dot{\alpha}_{i,t}^* \quad (1a)$$

where  $W$  is formed by the sets  $X$  and  $Z$  and  $\bar{W}^a$  by  $W$  and  $Y$ .

The second stage (C) of methodological implementation consists in the estimation of of the dynamic short-run equation and in testing weak causality.

With  $\dot{\alpha}_{i,t-1} = ECM_{i,t}$  from equation (1) we can define our dynamic short-run equation:

$$\Delta Y_{i,t} = \alpha_i^* + \lambda \cdot ECM_{i,t} + \sum_{l=1}^{k+h} \theta_l(L) \cdot \Delta W_{i,t} + \mu_{i,t} \quad (2)$$

where  $\theta_l(L)$  represents a lag polynomial of some order. We have simplified our estimations imposing a degree of one. We admit two hypotheses for the short-run dynamic behavior. Under the first one, intercept heterogeneity behavior is considered to take intoaccount institutional differences and other omitted variables important to the equilibriumpath. Our second hypothesis admits that the equilibrium path for long-run values depends too heavily on institutional variables to only assume intercept heterogeneity, so we admit heterogeneity of all the coefficients. Under the first hypothesis we perform estimations with the Fixed Effects estimator and under the second we use the Mean Group Estimator. The concept of (Granger, 1969) causality needs the presence of sta-tionary variables so our second stage is appropriate to this analysis but we limit our research to what is sometimes called 'long-run causality' (weak-exogeneity).

## 5. RESULTS

The results for the unit root tests can be found in Tables 4, 5 and 6. All the variables were transformed in logs. The first difference is identified by the prefix 'd'. The statistics corrected for cross-sectional dependence are in italics and



correspond to the majority of cases. For all the variables in every group we cannot reject the unit root for the variable in levels and we reject the unit root for the first difference.

**Table 4. Unit Roots for Eu\_1**

<b>Var:</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
x	1.05		-1.19		-0.07		-3.18	***
dx	-6.09	***	-5.96	***	10.19	***	-4.44	***
gfc	-0.69		-1.15		-2.36	***	-2.54	***
dgfc	-7.44	***	-9.98	***	-10.78	***	-8.90	***
py	-1.05		-1.36		0.94		1.80	
dpy	-0.33		-0.80		-1.80	**	-1.73	**
yrpc	-0.46		4.00		0.16		3.75	
dyrpc	-6.35	***	-5.72	***	-1.94	**	0.68	
es	-0.80		1.19		-0.99		-1.14	
des	-5.01	***	-4.51	***	-7.85	***	-9.07	***
et	1.29		0.23		2.19		-0.78	
det	-10.70	***	-8.74	***	-8.28	***	-6.68	***
eep	-0.79		-0.27		-5.99	***	-1.06	
deep	-12.26	***	-10.71	***	-8.49	***	-6.90	***
hepr	0.08		-0.72		1.90		-1.31	*
dhepr	-2.34	***	-1.79	**	-6.51	***	-7.07	***
hep	2.08		-2.24	**	0.75		-3.96	***
dhep	-2.90	**	-1.56	*	-7.28	***	-6.78	***
mi	1.70		0.41		1.93		-1.71	**
dmi	-1.38	*	-0.69		-3.02	***	-3.06	***
leb	8.15		-0.08		5.04		-0.01	
dleb	-18.40	***	-20.40	***	-7.57	***	-21.50	***

**Table 5. Unit Roots for Eu\_2**

<b>Var:</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
x	-2.60	***	-2.32	**	-2.75	***	-2.67	***
dx	-5.59	***	-4.78	***	-7.40	***	-7.99	***
gfc	-0.89		-0.53		-4.24	***	-4.36	***
dgfc	-10.76	***	-9.30	***	-7.45	***	-2.50	***
py	-5.19	***	-4.81	***	-0.26		-3.34	***
dpy	-8.35	***	-6.10	***	-4.51		-4.23	***
yrpc	0.24		2.16		0.08		-1.29	*
dyrpc	-1.90	**	-1.66	**	-2.53	***	-2.09	**
es	-1.57	*	-2.27	**	-4.36	***	-5.89	***
des	-11.34	***	-9.32	***	-8.94	***	-5.96	***
et	2.84		0.41		-6.82	***	-3.46	***
det	-5.78	***	-4.00	***	-3.54	***	-5.49	***
eep	-1.09		-1.89	**	-2.54	***	-1.52	*
deep	9.57	***	-7.60	***	-4.26	***	-3.00	***
hepr	-0.38		-1.34	*	0.77		-3.90	***
dhepr	-3.25	***	-2.85	***	-8.40	***	---	
hep	-0.98		-0.67		-1.93	**	-1.17	
dhep	-4.03	***	-1.56		-7.64	***	-6.19	***
mi	5.93		0.10		1.54		-3.31	
dmi	-0.09		0.09		-1.47	*	-1.87	**
leb	8.42		3.84		5.08		0.04	
dleb	-14.68	***	-15.04	***	-9.94	***	---	

**Table 6. Unit Roots for OECD**

<b>Var:</b>	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
x	-2.18	**	-3.01	**	-1.14		-2.16	**
dx	-7.00	***	-6.55	***	-13.09	***	-11.25	***
gfc	-2.63	***	-1.63	*	-1.98	**	-1.95	**
dgfc	-4.39	***	-4.10	***	-11.26	***	-9.60	***
py	-1.47	*	1.60		-2.41	***	-3.84	***
dpy	-3.59	***	-4.94	***	-7.37	***	-6.17	***
yrpc	0.73		-0.12		1.42		-1.36	*
dyrpc	-2.93	***	-2.72	***	-7.90	***	-6.97	***
es	-0.79		-0.01		-1.45	*	-0.86	
des	-8.85	***	-7.55	***	-6.04	***	-4.81	***
et	0.21		0.48		4.05		0.35	
det	-10.35	***	-9.48	***	-6.41	***	-5.77	***
eep	-0.18		-0.58		-2.82	***	-4.01	***
deep	-11.31	***	-9.84	***	-8.80	***	-8.37	***
hepr	1.04		-1.10		-0.56		-1.72	**
dhepr	-2.81	***	-2.27	***	-12.41	***	-4.96	***
hep	0.41		-1.28		0.49		-3.26	***
dhep	-3.04	***	-2.78	***	-8.67	***	-7.36	***
mi	-1.46	*	3.02		-1.88	**	-0.98	
dmi	-0.25		-0.93		-1.80	**	-1.94	**
leb	3.71		-2.52	***	2.59		-1.15	
dleb	-14.80	***	-14.24	***	3.81		-17.90	***

According to the description presented in the previous section, the results of the estimation of long run relations with variables integrated of order 1 above are in Tables 7, 8 and 9. The overall conclusions in terms of long-run behavior are the following: education and health matters for output growth and education expenditures are important for the level of education and expenditures in health are important for welfare.

In all the Tables (7, 8 and 9) our benchmark equation is the first. For EU\_1, Table 7, our baseline equation (1) for output (*yrpc*) has as state variables, prices (*py*), exports (*x*) and investment (*gfc*). Equations 2 and 3 outline the importance of

human capital, respectively secondary level, (*es*), and life expectancy at birth, (*leb*) and tertiary level, (*et*), for output<sup>10,11</sup>. Those equations have a better level of information (BIC) than our baseline equation which means that the models with these education and health variables fit better data than the baseline equation.

The equation (4) with education expenditures, *eep*, has a negative sign but its BIC value is worse than the baseline equation and so we do not retain this equation. The output equations (5-9) with health expenditures express the positive effect of these expenditures on output taken in isolation or taken together. The level of information is better for these equations than for the baseline one. In terms of the explanation of education indicators, *es* and *et*, (10-11), we can observe a positive effect of education expenditures (*eep*) and output (*yrpc*). Furthermore, education (*et*) and health expenditures (*hep* and *hepr*) exert a positive influence on the infant mortality rate and the later variables on life expectancy. Private health expenditures are always less important for welfare (*mi* and *leb*) than public health expenditures.

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<sup>10</sup> Notice that we have also estimated equations (2) and (3) with the welfare variable, infant mortality at birth, (*mi*), instead of (*leb*) but the coefficient was never statistically significant for all the three country groups.

<sup>11</sup> In the case of equation (3) we started by estimating an equation with (*leb*) included but as the coefficient was not statistically significant we then estimate the equation reported that includes only the education indicator (*et*), and we adopted the same procedure to equations 2 and 3 in the case of the other two country groups whenever justifiable.

Table 7. DOLS estimation for Eu\_1

Var.	Eq. Nr.	Const.		py		X		gfc		es		et		leb		eep		hep		hep r		he pt		yrp e		see/bic
yrpc	1	1.417	*	0.252	**	0.457	**	0.189	**																	0.080
		0.766		0.022		0.026		0.047																		-4.900
	2	-3.920	**	0.099	**	0.061	*	0.172	**	0.112	*			4.391	**											0.061
		1.181		0.020		0.033		0.039		0.035				0.314												-5.264
	3	0.601		0.082	**	0.119	**	0.129	**			0.315	**													0.064
		0.697		0.022		0.034		0.044				0.023														-5.224
	4	0.588		0.223	**	0.530	**	0.198	**							-0.159	**									0.077
		0.815		0.024		0.032		0.054								0.042										-4.832
	5	2.600	**			0.087	**											0.378	**							0.061
		0.348				0.039												0.046								-5.332
	6	3.334	**			0.152	**													0.234	**					0.068
		0.482				0.042														0.047						-5.120
	7	-0.231		0.623	**			0.082	*											0.070	*					0.047
		0.707		0.044				0.043												0.036						-5.76



For the enlargement European group of (EU\_2) the baseline equation is the same and all equations with education and health variables increase the level of information over the state variables. For this group education expenditures (*eep*) have a positive sign and the BIC value is better than for the baseline equation. Contrary to EU\_1, equation (3) includes also the wealth indicator (*leb*), statistically significant at 1%. The results for education and wealth are similar to those of the EU\_1 group with the exception of the equation for infant mortality rate (11) where a relation with education (*et*) is not found, but the opposite occurs with the output

Table 8. DOLS estimation for Eu\_2

Var.	Eq. Nr.	Const.	py		x		gfc		es		et		leb		eep		hep		hep <sub>r</sub>		hept		yrpc		see/bic		
yrpc	1	0.942	0.043	** *	0.410	** *	0.162	**																	0.185		
		0.598	0.010		0.072		0.080																		-3.101		
	2	-3.333	0.034	** *	0.128	** *	0.223	** *	0.904	** *			5.222	** *												0.108	
		3.394	0.006		0.048		0.057		0.120				0.437													-4.003	
	3	-2.377			0.112	** *	0.333	** *			0.252	** *	2.519	** *												0.096	
		2.443			0.040		0.043				0.019		0.502													-4.328	
	4	1.444	** *	0.042	** *	0.454	** *	0.311	** *					0.510	** *												0.169
		0.596		0.010		0.076		0.090						0.073												-3.151	
	5	-0.876	**		0.431	** *											0.792	** *								0.157	
		0.392			0.070												0.142									-3.425	
	6	-0.685	**		0.298	** *												0.416	** *							0.141	
		0.349			0.068													0.049								-3.638	
	7	-0.772	**																		1.251	** *				0.154	



		0.38 4																	0.1 27				- 3.58 1
	8	- 0.70 4	**											0.61 1	** *	0.42 5	** *						0.13 9
		0.34 3												0.12 6		0.04 7							- 3.66 5
<b>es</b>	9	1.11 0	**										0.1 07	** *							0.17 1	** *	0.06 7
		0.50 4											0.0 27								0.02 3		- 5.19 5
<b>et</b>	10	0.37 4											0.8 96	** *							1.89 9	** *	0.31 4
		0.80 5											0.1 27								0.10 7		- 2.10 3
<b>mi</b>	11	7.67 4	** *											- 0.34 4	**	- 0.11 1	*				- 0.89 5	** *	0.15 4
		0.93 9												0.15 0		0.06 4					0.08 8		- 3.35 4
<b>leb</b>	12	- 0.85 9	** *											0.02 9	**	0.01 0	**				0.05 2	** *	0.01 2
		0.25 2												0.01 4		0.00 5					0.00 7		- 8.50 3

See the Note to Table 7.

For the OECD\_w group, the baseline equation for output retains only the prices ( $py$ ) and exports ( $x$ ) as state variables and not the investment as for the other two groups. For the output equations we have a gain of information with education and health variables. Concerning equations (2) and (3), OECD\_w exhibits opposite results if compared with those of the EU\_1 group since ( $leb$ ) is only included in equation (2). The results are similar to the first and second groups with the exception that we don't find any relationship for education expenditures ( $eep$ ) when added to our state variables. The results for education and health are also similar to those of the first group with the exception that we cannot compare the effects of private and public health expenditures because we cannot reject the null of these jointly variables in equations (10 and 11).

**Table 9. DOLS estimation for OECD\_w**

Var.	Eq. Nr.	Const.		py		x		es		et		leb		cep		hep		hepr		hept		yrpc		sec/bic	
yrpc	1	-2.125	***	0.216	***	0.439	***																	0.166	
		0.404		0.022		0.060																			-3.404
2		-3.350	***	0.137	***	0.253	***	1.015	***															0.147	
		0.496		0.022		0.061		0.135																	-3.559
3		-8.861	***	0.020	*					0.127	***	5.052	***												
		0.905		0.012						0.029		0.383													
4		-0.368		0.240	***	0.074	**									0.431	***							0.051	
		-0.326		0.033		0.036										0.046									-5.479
5		0.445		0.268	***	0.322	***											0.372	***					0.063	
		0.306		0.038		0.042												0.079							-5.040
6		-0.654	**	0.250	***	0.234	***													0.501	***			0.047	
		0.327		0.031		0.027														0.057					-5.621
7		-1.525	***	0.268	***	0.137	***									0.293	***	0.245	***					0.040	
		0.298		0.026		0.031										0.043		0.059							-5.815
es	8	1.129	***											0.187	***								0.213	***	0.060
		0.189												0.031										0.022	
et	9	2.307	***											0.638	***								1.428	***	0.183

Var.	Eq. Nr.	Const.		py		x		es		et		leb		cep		hep		hepr		hept		yrpc		sec/bic	
		0.473												0.099									0.064		-3.185
<b>mi</b>	10	-2.664	***					-0.675	***							-0.498	***								0.125
		0.470						0.176								0.111									-3.806
<b>leb</b>	11	1.452	***																	0.065	***	0.095	***		0.011
		0.254																		0.018		0.018			-8.626

See the Note to Table 7.

When we compare the different coefficients we must be aware that the state variables retained for the output equations are the same for EU\_1 and EU\_2 but not for OECD\_w. In terms of education we see that for EU\_2 and for the OECD, (*es*) is clearly more important than (*et*) but not for EU\_1 where the opposite occurs. The three groups show marked differences concerning the human capital indicators to include into the baseline equations. Only EU-2 exhibits a relationship between the wealth indicator (*leb*) and (*yrpc*) independently of the education indicator included in the baseline equation ((*es*) or (*et*)). For EU\_1 the above mentioned relationship only exists with (*es*) and for the OECD\_w group with (*et*).

For all the groups health public expenditure is more important than the private component. In terms of education for (*es*) the effects of expenditures are higher for OECD\_w and for (*et*) the effects are higher for EU\_2 than for the other two groups. Concerning infant mortality rate the equations are not directly comparable but we can say that the effects of health expenditures are significantly higher on EU\_1, than in the remaining groups. The same applies to life expectancy.

We have in Tables 10, 11 and 12 the results for the short-run behavior and  $\lambda$  is negative and statistically significant for EU\_1 and OECD\_w meaning that for all the dynamic short-run equations estimated (from 2 to 12) the variables under study are cointegrated. In what concerns the country group EU\_2, the variables are cointegrated except in the cases of equation 10 for both FE and PMG estimators and of equation 11 in the case of the FE estimator.

We will interpret now the causality relations between our variables of interest for the three groups of countries. Take for example Table 10, the results in it are associated with long-run equations for EU\_1, Table 7. The first column has the number of the long-run equation after the baseline equation.  $dY$  refers to the equation of the first difference of the dependent variable and  $dX1$ ,  $dX2$  and  $dX3$  to the equations of the policy variables and eventually *yrpc*, if independent variable, following the order of the variables of the associated equation in Table 7. For instance, if we take equation (2) the null of  $\lambda$  of the equation with  $dY$  as dependent variable is rejected at the 1% level of probability for both the estimation methods (FE and PMG) and the null associated to short-run equation for  $dX1=es$ , is not rejected for both estimation methods. But the null associated with the short-run equation for  $dX2=leb$ , is rejected for both estimation methods. These results mean that in the cointegration relation between the variables of equation (2) (*es*) is weak exogenous and (*leb*) is endogenous. In the former case the disequilibrium values do not affect the short run behavior of (*es*) and so the causality goes from (*es*) to (*yrpc*). In the later case, on the contrary, (*lep*) is caused by (*yrpc*). In our conclusions about causality we take the 5% as the limit for rejection of nullity.

When we reject at 10% we simply ignore if the variable can be considered as weak exogenous or endogenous.

The remaining equations in Table 10 as well the results in Tables 11 and 12 follow. Tables 10.A, 11.A and 12.A give us a *resume* of the causality relations between the variables under study. Recall that we have investigated so far the best specification for the (*yprc*) equation aiming at testing either the influence of human capital (both education and health dimensions of human capital) and education expenditures variables or human capital and health expenditures upon *yprc*, after controlling for the usual growth control regressors. Then we tested the influence of education and health expenditures upon education indicators and welfare variables, respectively in order to disentangle in a more accurate way the influence of social policy variables on social variables such as education and health variables. We will present the causality results following the above mentioned order.

**Table 10.A. Causality Relations Associated with Eu\_1**

	Fixed Effects		PMG	
	WE	Non-WE	WE	Non-WE
yprc	es(2), et(3), hepr(6,7)	hep(5),hept(8),hepr(9), hep(9),leb(2)	es(2)	hep(5), hept(8), hepr(7,9), hep(9),leb(2)
et	yprc(11)	eep(11)	eep(11), yprc(11)	
mi		et(12), hep(12), hepr(12)		et(12), hep(12), hepr(12)
leb	hep(13)	hepr(13)		hep(13), hepr(13)

**Table 11.A. Causality Relations Associated with Eu\_2**

	Fixed Effects		PMG	
	WE	Non-WE	WE	Non-WE
yprc	es(2), et(3), hepr(6,8), leb(2,3)	eep(4), hep(5,8), hept(7)	et(3), leb(2,3)	es(2), eep(4),hep(5,8), hepr(6), hept(7)
es	yprc(9)	eep(9)	eep(9), yprc(9)	
et	et(10)	eep(10), yprc(10)	et(10), eep(10)	yprc(10)
mi		et(12), hep(12), hepr(12)	hep(11), hepr(11), yprc(11)	
leb	hep(12), yprc(12), hepr(12)		hepr(12), yprc(12)	hep(12)

**Table 12.A. Causality Relations Associated with OECD**

	Fixed Effects		PMG	
	WE	Non-WE	WE	Non-WE
<i>yrpc</i>	<i>es</i> (2), <i>et</i> (3), <i>hepr</i> (5,7), <i>hep</i> (7), <i>hept</i> (6), <i>leb</i> (3)	<i>hep</i> (4)	<i>es</i> (2), <i>hepr</i> (5,7), <i>hep</i> (7), <i>hept</i> (6)	<i>hep</i> (4), <i>et</i> (3), <i>leb</i> (3)
<i>es</i>	<i>eep</i> (8)		<i>eep</i> (8)	
<i>et</i>	<i>eep</i> (9), <i>yrpc</i> (9)		<i>eep</i> (9)	
<i>mi</i>	<i>es</i> (10), <i>hep</i> (10)			<i>hep</i> (10)
<i>leb</i>	<i>hept</i> (11), <i>yrpc</i> (11)		<i>hept</i> (11), <i>yrpc</i> (11)	

For EU\_1 (Table 10.A) and OECD (Table 12.A) (*es*) is weak exogenous in equation 2 for both FE and PMG estimators but for EU\_2 (Table 11.A) it is (*et*) that is weak exogenous in equation 3 for both FE and PMG. These results indicate that for the two samples with higher per capita income levels (OECD and EU\_1), the education variable (*es*) is a policy variable since it is not caused by (*yrpc*), what might be the consequence of the compulsory nature of this educational level for these two groups of countries. In what concerns EU\_2, the fact that (*es*) is not weak exogenous but (*et*) is might be explained by the fact that these countries traditionally with highly educated people under the socialist *regime* suffered simultaneously a huge decrease in per capita income and a considerable increase in income inequality during the transition period towards a market economy. In what concerns the welfare indicator (*leb*) and using comparable human capital proxies, (*leb*) is weak exogenous for EU\_2 and OECD\_w, whatever the estimators used. But if we compare EU\_1 with EU\_2 using equation 2 we observe opposite results: (*leb*) is endogenous for EU\_1 and weak exogenous for EU\_2.

If we turn now to the results that allow us to identify the causality relations between (*es*) and (*eep*) and (*et*) and (*eep*) in order to ascertain whether (*eep*) might be classified as a policy variable, we find mixt results that are sensitive to the estimators used. The only exception is the OECD group for which public spending in education is weak exogenous for both relations above mentioned and for both estimators, i.e (*eep*) is not caused by (*es*) or by (*et*). In what concerns the remaining groups, public spending in education is only weak exogenous for EU\_2 and using PMG estimator in the framework of equation (9).

We address now the causality relations between (*yrpc*) and health expenditures whose results might be observed associated to equations (5) to (9) for EU\_1, equations (5) to (8) for E\_2 and equations (4) to (7) for OECD. For this last group and for both estimators, public, private and total health expendiditures (% of GDP) are weak exogenous, meaning that these variables are not caused in the long-run by

real GDP per capita. As far as the other two samples are concerned, we observe opposite results – the variables (*hep*), (*hept*), (*hepr*) and (*hep*) are not weak exogenous meaning the in the long-run they are caused by real GDP per capita.

When we inspect the causality relations between output health variables that measure population health well-being and health expenditures, we observe that for the equations where (*leb*) is the dependant variable (*hep*) is weak exogenous for EU\_1 and for both estimators, whereas (*hepr*) and (*yrpc*) are weak exogenous for EU\_2 and for both estimators. Finally, for the OECD sample (*hept*) and (*yrpc*) are weak exogenous for both estimators. When we look to the results concerning the equations where (*mi*) is the dependant variable, what we observe is that they are sensitive to the estimators used except for EU\_2 where (*hep*) and (*hepr*) are not weak exogenous.

## 6. CONCLUDING REMARKS

Our empirical study is innovative in the sense that we consider cross-sectional dependence not only at the level of unit-root tests but it is also explicitly incorporated in non-stationary estimations. And this methodological choice is crucial if we take into consideration the phenomenon of globalization at the level of information and free circulation of capital and technology otherwise panel analysis will be biased and will exhibit size distortions.

Our study is really a panel study in the sense that we impose homogeneous coefficients. Many authors tend to consider heterogeneity models what is not very different from making time-series estimations without benefiting from specific methodologies applied to time-series. But according to our approach what we want to inspect is the global behavior of groups of countries and not the behavior of individual countries. The concept of (Granger, 1969) causality needs the presence of stationary variables so our second stage is appropriate to this analysis but we limit our research to what is sometimes called 'long-run causality' (weak-exogeneity). Our long-run models with policy variables only make sense if the degree of information obtained with them is higher than the one associated to the model with only states variables. So our analysis also offers insights to the robustness of our conclusions.

Our results about the long-run equations posit to a positive direct or indirect influence of (public) education expenditures and of (public, private or total) health expenditures on output and hence demonstrate that the Welfare State is growth enhancing for the three groups of countries under study. But these finds are not in line with evidence from other cross-country studies that point out to a negative sign



for developed country samples. Several reasons might explain the difference, namely the methodology used that for the reasons stated above we claim to be more robust. In accordance to the literature review, we find also that the levels of schooling matter, exerting a different influence in the long-run output depending on the group of countries considered.

Although the literature finds mixt results concerning the influence (sign and magnitude) of health expenditures depending on countries' income levels, we found that for our three samples the influence of health expenditures on the output equations is similar – public, private and total health expenditures influence positively the output but public health expenditures exert a stronger influence. In what concerns the equations of the welfare variables both public and private health expenditures influence the mortality and life expectancy at birth for EU\_1 and EU\_2, besides per capita real gdp. As for the OECD\_w, the influence upon the variables mentioned is only exerted through total health expenditures. Public health expenditure is again the health expenditure that has a stronger influence on the welfare variables (EU\_1 and EU\_2).

In line with the literature, our results point out to causality relationships that are sensitive to estimators and country groups. When a variable is weak exogenous it means that although there is a long-run relationship between the two variables in the short-run, the weak exogenous variable causes the other variable but not the inverse. According to this definition, social policy variables that are weak exogenous are truly discretionary policy variables that might be used as policy instruments in the short-run in order to positively influence directly or indirectly the output. According to our results the OECD\_w group undoubtedly exhibits discretionary policy variables that might be used to foster directly or indirectly economic growth and welfare, but not the other two groups. This means that growth enhancing policies in the short-run will not be caused by social educational and health policies for EU\_1 and EU\_2. This is something that should be changed in the near future for EU\_1 and EU\_2, because for these two groups social policy variables too have a positive influence in long-run output and on welfare.

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# FINANCING ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECTS IN WESTERN BALKANS BY RAISING CAPITAL ON FINANCIAL MARKETS

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## *Abstract*

*The efficient use of energy creates benefits including cost reduction, greater competitiveness of companies, modernisation of and increase in production as well as the reduction of monthly expenses. Becoming more energy efficient can generate significant savings in the public sector allowing municipalities to reduce the cost of public services. Externalities such as the decrease in air pollution and CO<sub>2</sub> emissions reduce the health risks, affect the global warming and help to meet national targets of Energy Community Treaty commitments. By examining the functioning of a Western Balkans targeted public private partnership, namely Green for Growth South East Europe fund, we analysed the financing mechanisms of energy efficiency and renewable energy projects that are available to households, companies and public sector in Serbia.*

**Key words:** *financing terms, energy efficiency, renewable energy, Western Balkans, SICAV*

## 1. INTRODUCTION

One of the political and economic priorities in the Western Balkans is improving energy efficiency and increasing the use of renewable energy. The efficient use of energy by industry results in costs reduction, greater competitiveness of companies, modernisation of production by replacing old equipment, increase in production and a range of products as well as the expansion of export opportunities. On the side of the households the energy efficiency helps to reduce monthly expenses, increase the heating area at home and reduce the use of air conditioning. Becoming

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more energy efficient can generate significant savings in the public sector. Municipalities can reduce costs of providing municipal services, such as utilities, transport and waste management. The public companies can reduce the public buildings heating and cooling that would generate significant savings. At the country level energy efficiency and renewable energy is of great importance since it reduces the import of energy thereby increasing energy security. As externalities, the reduction of air pollution and CO<sub>2</sub> emissions reduce the health risks, affect the global warming and help to meet national targets, Energy Community Treaty commitments as well as the EU accession obligations. By examining the functioning of a Western Balkans targeted public private partnership, namely Green for Growth South East Europe fund (hereafter: GGF), we analysed the financing mechanisms of energy efficiency and renewable energy projects that are available to households, companies and public sector.

## **2. ENERGY COMMUNITY TREATY**

The Energy Community Treaty that was signed between the EU and the countries of the Western Balkans in 2006 provides guidelines for the energy policy. The Treaty established the so called Energy Community which extended the EU electricity and gas internal energy market to South East Europe on the basis of a legally binding framework.

According to the Energy Community (Energy Community, 2013), the principles of the Treaty establishing the Energy Community coincide with that of the European Steel and Coal Community. The Treaty tries to balance the commercial, political and social interests of all parties involved. The stable and continuous energy supply contributes to the process of enhanced economic development and social stability. According to Article 2, the task of the Energy Community is to:

- create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks,
- create a single regulatory space for trade,
- enhance the security of supply of the single regulatory space,
- improve the environmental situation in relation to Network Energy and related energy efficiency, foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space,
- develop market competition on a broader geographic scale and exploit economies of scale.

From the beginning, the priority was to place the Energy Community into an adequate institutional setting with clear decision-making and support structures as a



precondition for making sure that all parties involved are committed to the work of the Energy Community. The Secretariat as an only permanent institution administers all activities of the Energy Community in Vienna. The Secretariat's tasks range from the review of Treaty implementation process to ensuring that the budget is spent in line with the Energy Community's Working Programme. The Secretariat employs 23 staff members in 13 different European countries.

Article 3 of the Treaty establishes a three-tier structure which is described as the Treaty's concentric circles (The structure is explained in detail by the Energy Community on its website <http://www.energy-community.org/>). The inner-most circle which is referred to as the "Extension of the *acquis communautaire*" addresses the Contracting Parties alone which have agreed to implement core parts of the EU *acquis communautaire*, both sector-specific and general. The second circle i.e. "Mechanism for operation of Network Energy Markets" addresses the Contracting Parties as well as seven EU Member States connected to the region, namely Austria, Bulgaria, Greece, Hungary, Italy, Romania and Slovenia. Creating mechanisms for long-distance transportation is one of the priorities defined in the Treaty. It also urges the harmonization of market designs, mutual recognition of licenses, promoting development in the areas of renewable energy sources and energy efficiency, as well as providing a framework for safeguard measures in the event of a sudden crisis. The third circle of the Treaty "The Creation of a Single Energy Market" addresses the Contracting Parties as well as the entire European Community. The creation of a single energy market is in favour of the free movement of network energy and allows for further measures to be taken with a view to creating a single energy market. An external energy trade policy is also established and provides for a mechanism of mutual assistance between the Parties in the event of energy disruption.

In February 2008 European Council identified priorities for Serbia within the Stabilisation and Association Process which include both legislation and its implementation. Serbia should fulfil the obligations arising from the Energy Community Treaty as regards the full implementation of the *acquis* on the internal gas and electricity market and on cross border exchanges in electricity. Apart from that, environmental audits on energy plants must continue, addressing the worst polluters. The medium term priorities include the adoption and implementation of a long-term strategy for an environmentally sustainable energy policy. Establishing a competitive regional energy market is to be continued together with the fulfilment of regional and international commitments.

The Work Programmes of the Energy Community Secretariat include several areas also focusing on capacity building of Directive 2006/32/EC on energy end-use efficiency and energy services. Capacity building for the directives'

implementation requirements depends on the available regional energy efficiency support mechanisms. In this paper we analyse one of the largest available mechanisms for Western Balkans, namely the Green for Growth South East Europe fund.

### **3. AVAILABILITY OF FUNDS**

The available funds for energy efficiency and renewable energy can be classified in several categories such as loans, technical assistance funds, guarantees and grants. From the point of view of the targeted location, the funds could be divided into regional and country specific funds. International financial institutions such as the European Bank for Reconstruction and Development, European Investment Bank and World Bank provide funds for energy efficiency related loans usually through commercial banks in all Western Balkan countries or in rare cases direct financing. The bigger loan funds such as EBRD facilities are approved with technical assistance and grant component which encourages the borrower to implement its contractual obligations in due time. Kreditanstalt für Wiederaufbau (KfW) Bank has played an active role in raising, approving and providing funds to local banks for financing energy efficiency projects to households, industries and public sector. As a leader in setting targets for reducing energy use, increasing energy efficiency, and expanding the production of renewable energy the European Union also approves funds for technical assistance and grants in collaboration with EIB, EBRD and KfW.

The Western Balkans countries are to improve energy efficiency and increase the use of renewable energies. Households and SMEs have a significant energy saving potential. According to the World Bank (2010) residential sector has the savings potential of 10% to 35%, while the industrial sector has the potential of 5% to 25%. Public sector has the largest savings potential between 35% and 40%.

Apart from providing bilateral credit lines to local banks for energy efficiency and renewable energies KfW and EIB together with the European Commission and the German Ministry for Economic Cooperation and Development initiated in year 2009 the Green for Growth Fund Southeast Europe, which was designed to support the region in making use of its energy savings. Compared to the Western European countries, energy intensity and greenhouse gas emissions are substantially higher in the Western Balkans. As elaborated by the World Bank (2010) potential for saving energy is high, and renewable energies could be of great important in the region. The use of this potential depends on the awareness of the population, local companies and the financial sector. Households and companies should have access

to medium and long-term financing so that the energy saving potential can be used and renewable energy projects could be implemented.

As intended by KfW and EIB, GGF targets the financing of investments in Western Balkans, Turkey and Armenia. The fund is primarily used to provide loans through local banks to private households, small and medium-sized enterprises and municipalities so as to enable them to finance eligible investments in energy efficiency and renewable energies. Direct loans are available for small and medium-sized projects in the field of renewable energies Energy Service Companies (ESCOs).

In the form of a public private partnership, the mission of the GGF is to contribute to improving energy efficiency and promotion as well as the use of renewable energies. GGF uses a layered risk-return structure by providing dedicated financing to businesses and households. Most of the financing is done through the partner financial institutions. On the other hand, certain projects are financed directly.

The targeted reduction of energy consumption of GGF's investments is 20%. Alternatively a 20% reduction in CO<sub>2</sub> emissions is to be accomplished. The targeted energy consumption and CO<sub>2</sub> emissions reductions are to be achieved by financing financial institutions (local banks, non-bank financial institutions such as microfinance institutions and leasing companies). The banks and non-bank institutions use the funds to provide loans to households, businesses, municipalities and public sector for energy efficiency measures or renewable energy projects. The direct financing to non-financial institutions is possible. The non-financial institutions include energy service companies, renewable energy companies or projects, small scale renewable energy and energy efficiency service and supply companies. The direct financing is approved only if the energy saving and emissions targets or other technical criteria of GGF are met. International financial institutions, such as EBRD, EIB, WB and EC are already active in the area of energy efficiency and renewable energy in the Western Balkans. The GGF is intended to be complimentary to existing programmes and funding sources. One of its objectives is to contribute to further innovations in financing and expanding industries in the region.

#### **4. GGF FUND STRUCTURE**

The GGF (previously called SE4F) was created in December 2009 and from the beginning it was structured as a Luxembourg based investment company with variable shared capital (SICAV). As an open-ended investment fund shares in the fund are bought and sold based on the fund's current net asset value. The assets of

the SICAV consist of loans to partner institutions in the beneficiary countries of Western Balkans and Turkey. The investment fund shares reflect the risk assumed by the donors and other investors.

Its liabilities consist of four types of securities: notes, senior A, mezzanine B and Junior C shares. The C shares are fully subordinated to all other classes of securities issued and are the so called first loss tranche. The B shares only suffer a net loss to the extent that the C shares are depleted, followed by the A shares and notes. Private investors mainly invest in A shares or notes, while C shares are reserved for public donors only. B Shares are to be issued to a limited extent for international financial institutions exclusively. The duration of the shares varies from 3 to 18 years except for C shares that have an unlimited maturity. The European Investment Fund, KfW, German Ministry of Economic Cooperation and Development, EIB, EBRD, German private banks, the International Finance Corporation of the World Bank are the investors of GGF. The technical assistance funds are financed by the European Commission, Austrian Development Bank and the German Ministry of Economic Cooperation and Development. The fund manager is private and consists of a consortium of Oppenheim Asset Management and Finance in Motion as the fund advisor.

In our paper, we focused on the downstream side of the fund to analyse the process of financing the loans and technical assistance out of the fund, rather than how the funds are managed on the investment vehicle side. GGF highlights that its governance structures and private management facilities have been designed with the intention to expedite decisions on investments and assistance for end users.

## **5. GGF FUND ALLOCATIONS AND FINANCING TERMS**

The main objective is to help the countries of Southeast Europe achieve 20% savings in energy or 20% savings in CO<sub>2</sub> emissions. These investments and the development of financial products are expected to contribute to the countries' capacity to meet the obligations they have assumed under the European Community Treaty. The fund's objectives also comprise additional development financing for energy efficiency and small renewable energy projects to broaden the financial base for these kinds of investments in the Southeast European Region. The use of savings potential depends on the awareness for which reason GGF's objective is to increase awareness of energy efficiency and renewable energy investments among companies and private households. Raising funds through SICAV allows the broadening and deepening of the financial sector which serves the development needs of end users. The investment company structure also has the objective of attracting additional private capital for energy efficiency and

renewable energy investments in the region by offering investors an attractive financial return in line with market expectations. The target partner institutions (financial institutions) in the region that are ready to finance energy efficiency needs of SMEs and private households play an important role. GGF target partners include some of the more difficult financing propositions such as housing associations and ESCOs. As a result complex financing arrangements are feasible by providing guarantees, direct financing for larger borrowers and equity financing. The emphasis is on loan financing which is focused on the private sector. Providing technical assistance and grants (incentives, subsidies) are built in as possibilities. A comprehensive approach is applied for measures and assistance when proving that energy savings are achieved and concessional finance well used.

The analysis of on-lending so far as presented in Annex 1 shows that the fund has established itself in Serbia, Croatia, Bosnia and Herzegovina, Macedonia and Albania with the total allocated amount of EUR 95 million as of September 2013. GGF extended its activities to Turkey, Armenia and Ukraine. As far as technical assistance is concerned, more than 20 projects have been approved in Western Balkans and Turkey. The technical assistance projects specifically designed to the requirements of the individual institution (see Annex 2).

From the end user point of view we analysed financing terms of GGF fund as offered by commercial banks in Serbia. As of September 2013 GGF have signed a credit line to support energy efficiency improvements with three Serbian banks. The energy efficient appliances and equipment are the ones which have a high degree of efficiency, i.e. small losses during the transformation of one form of energy into another. The users of such equipment are able to make a significant primary energy savings, thus influencing the quality of their own housing and contributing to the protection of the environment. These loans are designed for all individuals and are used to finance the construction works and purchase of equipment that would improve the energy efficiency of buildings, but it has to achieve a minimum savings of 20%.

Funds may be used for replacement of heating system (replacing old heating systems and modern systems for traditional boilers central heating system and more efficient modern condensing boilers), installation of solar thermal systems for domestic hot water, replacing conventional heating system heat pump, insulation of external walls and roofs, replacement of external doors and windows (fitted with double glazed windows and installation of pre-insulated doors), installation of thermostatic radiator valves (instead of manually regulated valve) as well as the replacement of pumps for heating the new electronically controlled pumps.

There are two loan models for energy efficiency: 1) dinar denominated loans for energy efficiency and 2) EUR denominated loans for energy efficiency. The payback period of dinar denominated loans is from 6 to 60 months with the interest rate of 18% per annum. The loan amount ranges from RSD 20.000 to RSD 800.000 with no down payment. Promissory notes are the required collaterals. Comparisons with other types of loans such as consumer loans could be made by analysing the financing terms of similar dinar denominated loans. According to the National Bank of Serbia the average interest rates on one to five year dinar denominated loans from January to July 2013 ranged from 26% to 29% per annum (National Bank of Serbia, 2013). One can conclude that there is a significant difference between the GGF financed loan interest rates and consumer loan rates of approximately 10% per annum.

Regarding the GGF financed EUR denominated loans the loan amount varies from EUR 200 to EUR 8.000 with 30% down payment and fixed interest rate of 8.5% or variable interest rate of 6M EURIBOR + 5.9% per annum. The offers made by banks in Serbia varied creating the interest rate differential of nearly 2% for the same type of loan and loan purpose. Promissory notes are the required collateral with the loan application processing fee of approximately 1%. According to the National Bank of Serbia, average interest rates on consumer EUR denominated loans from January 2013 to July 2013 ranged from 8.5% to 13%. The analysis indicates that the difference between GGF financed energy efficiency loans and average consumer loans that can be used for purchase of energy efficiency equipment and appliances was from 0.1% to 8.5%. Throughout the observed period the consumer loans were up to 50% more costly than the GGF financed energy efficiency loans allowing the citizens, companies and public sector to reduce the financial burden of investing in energy efficiency.

## **6. CONCLUSION**

We analysed the availability of funds for energy efficiency and renewable energy projects in Western Balkans and focused on financing terms and conditions of Green for Growth South East Europe fund. The available funds for energy efficiency and renewable energy can be classified in several categories such as loans, technical assistance funds, guarantees and grants. Depending on the countries of operation, the funds could be divided into regional and country specific funds. International financial institutions such as the European Bank for Reconstruction and Development, European Investment Bank and World Bank provide funds for energy efficiency related loans usually through commercial banks in all Western Balkan countries or in rare cases direct financing. The bigger loan funds such as EBRD facilities such as Western Balkans Sustainable Energy

Efficiency Facility are approved with technical assistance and grant component which encourages the borrower to implement its contractual obligations in due time. Kreditanstalt für Wiederaufbau (KfW) Bank has played an active role in raising, approving and providing funds to local banks for financing energy efficiency projects to households, industries and public sector. The European Union also approves funds for technical assistance and grants in collaboration with EIB, EBRD and KfW.

The GGF was created in December 2009 and from the beginning it was structured as a Luxembourg based investment company with variable shared capital (SICAV). As an open-ended investment fund shares in the fund are bought and sold based on the fund's current net asset value. The analysis of lending imply that the fund has established itself in Serbia, Croatia, Bosnia and Herzegovina, Macedonia and Albania with the total allocated amount of EUR 95 million as of September 2013. As far as technical assistance is concerned, more than 20 projects have been approved in Western Balkans and Turkey.

GGF have signed a credit line to support energy efficiency improvements with three Serbian banks. These loans are designed for all individuals and are used to finance the construction works and purchase of equipment that would improve the energy efficiency of buildings, but it has to achieve a minimum savings of 20%.

The dinar denominated and EUR denominated loans for energy efficiency are the loan models applied by the local banks. The payback period of loans is from 6 to 60 months with the interest rate of 18% per annum for dinar denominated loans and 6M EURIBOR + 6% for EUR denominated loans. Relative to the average interest rates on comparable loans the GGF financed credit line allows citizens, companies and public sector to apply and payback the loan with the interest rate that can be up to 30% lower than the average interest rate. Assuming that objective of reducing the energy use by 20% is achieved, the borrower has an incentive to apply for a loan, implement the investment and reduce its energy use related costs thereby being capable of servicing the outstanding debt. At the national and regional level, the increase of investment in energy efficiency and renewable energy will help to meet national targets of Energy Community Treaty and reduces the import of energy thereby increasing energy security

**ANNEX 1: GREEN FOR GROWTH FUND LOAN ACTIVITIES IN WESTERN BALKANS**

<b>Country</b>	<b>Activity</b>	<b>Financial institution/Consultant</b>	<b>Allocated amount EUR million</b>
Serbia	Loans	Banca Intesa, Komercijalna banka, Čačanska banka	34,0
Bosnia and Herzegovina	Loans	NLB Razvojna Banka and Financial Institution	16,5
FYRo Macedonia	Loans	Halkbank (Export and Credit Bank)	5,0
Albania	Subordinated Loan	BKT	10,0
Croatia	Loans	Privredna Banka Zagreb	25,0
<b>Total</b>			<b>90,5</b>



## ANNEX 2: TECHNICAL ASSISTANCE PROJECTS FINANCED BY GGF

Country	Activity	Project Name	Objective
Serbia	Impact analysis & energy audits	Energy Audits & Conceptual Project Designs	The GGF Technical Assistance Facility is supporting the Partner Institution in assessing the energy savings and CO2 emission reduction effects of non-standard EE/RE measures implemented by the bank's clients. The TA Facility is further supporting the bank's clients by providing assistance for the development of conceptual project designs. The conceptual project designs consist of technical analyses for more complex EE/RE measures with the objective of preparing a technical basis by which the client will be enabled to order the equipment and services to implement EE/RE measures.
Serbia	Research & Analysis	Environmental & Social Impact Study Energana Fuzine d.o.o.	In order to measure the environmental and social impacts of a biomass co-generation plant (CHP power), the GGF Technical Assistance Facility supports a potential Partner Institution in developing an Environmental and Social Impact Study (ESIS).
Serbia	Impact analysis & energy audit	EE/RE Lending Support Package	In order to support the institution's EE/RE lending activities in the SME and corporate sector, it is foreseen to support the bank with a TA package that covers the delivery of energy audits, EE/RE Training with a focus on the SME sector, and ongoing consultant support with regard to EE/RE measures in the SME sector.
FYR Macedonia	Capacity Development of Financial Institutions	Strengthening EE Lending to Businesses	The project was designed to strengthen the capacity of the bank with regard to EE lending to the SME sector and is currently in preparation. The Consultants shall analyze potential gaps and weaknesses of the procedures, processes, structures of the Bank and to present solutions.

FYR Macedonia	Impact analysis & energy audits	Energy Audits	The EA services are being delivered to ensure the proper monitoring of the energy savings and CO2 emission reduction effects of the non-standard EE investments financed through GGF funds.
Bosnia and Herzegovina	Capacity Development of Financial Institutions	Strategy, Product and Marketing Concept Development for EE Lending	The GGF Partner Institution will be supported in its efforts to introduce EE lending operations. The project involves EE strategy, product and marketing concept development.
Bosnia and Herzegovina	Impact analysis & energy audit	Energy Audit Services	EA services are funded by the TAF in order to support the bank in monitoring and reporting the energy savings and CO2 emission reduction effects of the non-standard EE investments financed through a GGF loan. The Consultant will also conduct training for the Bank's staff as well as provide continuous help desk support.
Bosnia and Herzegovina	Impact Analysis & Energy Audits	Energy Audits & Conceptual Project Designs	Under the scope of the project, the GGF Technical Assistance Facility supports the bank in establishing procedures to verify the energy savings and CO2 emission reductions effects of non-standard measures financed by the bank with GGF funds. In addition, conceptual project designs will be offered to a number of clients of the bank. The conceptual project designs consist of technical analyses for more complex EE/RE measures with the objective of preparing a technical basis by which the client will be enabled to order the equipment and services to implement EE/RE measures.
Bosnia and Herzegovina	Monitoring & reporting system	Implementation of Monitoring & Reporting System	In order to enable one of the Fund's Partner Institutions to monitor and report on energy savings and CO2 emission reductions resulting from the EE loans provided by the bank to its clients, the GGF Technical Assistance Facility supports the bank with the implementation of a monitoring and reporting tool and provided training for staff in handling the tool.

Albania	Capacity Development of Financial Institutions	Environmental & Social Gap Analysis and Enhancement of Procedures	Under the scope of the project, the TAF supports the Bank in conducting the E&S Gap Analysis for a small hydro power plant project, as well as in upgrading the E&S procedures. The Consultant will further support the Bank through an on the job training to ensure the proper implementation of the updated procedures. The project is expected to be started in Q1 2013.
Albania	Capacity Development of Financial Institutions	EE Strategy, Product and Marketing Concept Development	The TAF is supporting the Bank in EE Strategy, Product and Marketing Concept Development. The tender process was started and will be finalized in January 2013. The selected Consultant will work closely with the core team of the Bank in order to ensure the successful launch of an EE focused loan product. The work is expected to be started in Q1 2013.
Albania	Impact analysis & energy audit	Energy Audit Services	The aim of this project is to support the Bank by performing EAs in order to verify the energy savings and CO2 emission reductions effects of non-standard measures financed by the Bank with GGF funds. The Consultant selected to conduct this project will also provide the Bank with continuous help-desk services.
Turkey	Capacity Development of Financial Institutions	Strengthening Energy Efficiency Lending	The TAF is supporting the bank in improving its capacities for EE lending through the revision of its EE lending procedures with the objective to identify potential enhancements. Consultants visited the PI in Q4 2012 and developed draft procedures which are currently under review by the bank. Once the procedures are approved by the institution, a training for the bank's staff will follow.
Turkey	Capacity Development of Financial Institutions	Environmental & Social Procedures	The GGF TAF, in accordance with its mission of strengthening the E&S Management of the Fund's Partner Institutions is supporting a bank in verifying its E&S Procedures and providing recommendation to increase adherence to the Fund's E&S standards.

Bosnia and Herzegovina, FYR Macedonia, Republic of Serbia	Research & Analysis	Follow-up Study on Identification of the Energy Saving Potential of Agricultural Equipment	In order to support partners across the region, the GGF is constantly complementing the existing base of eligible standardised EE-measures with high saving potential. Considering the significance of agriculture for economies in the GGF target region and estimating the potential for EE investments in the respective sector as high, especially via replacement of outdated agricultural equipment and machinery used in production, the Fund has commissioned this study.
Various	Capacity Development of Financial Institutions	RE Project Finance Workshop Series	The GGF Technical Assistance Facility supports financial institutions in developing their internal capacities for RE lending through a RE project finance workshop, in order to provide selected financial institutions with an initial overview of the RE technologies, regulatory framework, project development cycles and basic RE project finance principles.
Various	Awareness Raising & Market Enabling	EE Showsace Series	The project shall analyze the EE potential of exemplary SME clients of up to four Financial Institutions – which are considered as potential PIs of the Fund - thus assisting them in discovering areas and identifying possible clients for future EE lending. Following a pre-qualification public tendering, the restricted tender was opened to short-listed companies. The activities are expected to be started in Q1 2013.
Various	Research & Analysis	Desk-Study on Certification Systems for New Buildings	The GGF Technical Assistance Facility is currently updating the desk-study on certification systems for the construction of new buildings in the GGF target region.

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# FORECASTING FDI INFLOWS IN SOME BALKAN COUNTRIES APPLYING LINEAR TREND

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## *Abstract*

*Attracting foreign investors should be one of the priorities for transitional countries that are currently affected by the effects of global economic and financial crisis which considerably has slowed down transformational processes in their economies. In the above circumstances, Balkan countries need a secure financial support, first of all manifested in the form of foreign direct investments (FDI), in order to overcome the current very difficult economic situation and in some of them accelerated the process of European Union integrations. The object of this research is FDI inflows in Bulgaria, Croatia, Romania and Serbia in the past twenty years, manifested former variation as well as future tendencies in development of analyzed phenomena. The primary aim of this paper is to prove that variations of analyzed phenomena in observed period are statistically significant and that tendency of development apropos trend is expressed. Using statistical method of linear trend, useful data on average annual increase of FDI in mentioned countries will be reached as well as the standard deviation values of analyzed data from the trend line, the expected value of FDI inflows in 2012 and the confidence interval in which mentioned value could be found.*

*The results show that defined null hypothesis is rejected and alternative hypothesis is accepted with 95% probability, which means that time series regarding FDI inflows in analyzed countries between 1992 and 2011 shows a developmental tendency, i.e. trend. Considering the nature of original data of analyzed time series a linear trend is determined and it is concluded that observed time series exhibited a tendency almost straight in its motion. By monitoring the value variations of the observed phenomenon during a sufficiently long period of time, it is possible to notice the character of its behaviour and, by using linear trend method, to forecast the future direction of its movement. Research is completed with conclusion that in*

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2012 the value of FDI inflows can be expected in the amount of 5378, 7974•10<sup>6</sup> US\$ in Bulgaria, 3529, 4632•10<sup>6</sup> US\$ in Croatia, 6338, 9710•10<sup>6</sup> US\$ in Romania and 3177, 6053•10<sup>6</sup> US\$ in Serbia, provided that the observed phenomenon behaves according to linear trend in that year as well.

**Key words:** *Balkan countries, Inflows, Foreign Direct Investments (FDI), Statistical method, Time series, Trend*

**JEL Classification:** *F, F4, F47*

## I. INTRODUCTION

The current events in the global economic scene have provided plenty of facts, based on which one could feel a premonition of the upcoming implementation of drastic measures that will influence changes of the economic situation in many European countries. Balkan countries, with their turbulent past, constant controversial events and current unstable situation have become a frequent subject of many scientific research papers. Many scholars believe that it is necessary to consider the possibilities for improving the current position and take the necessary measures in order to overcome consequences of the global economic crisis.

In the abovementioned circumstances, Balkan countries, among other things, need a secure financial support which should primarily be manifested in the form of foreign direct investments (in proceed of paper as FDI). Accented prerequisites for attracting foreign investors are: implementation of fair privatization, liberalization of trade flows and the establishment of macroeconomic stability in each country. In the post-crisis period, the inflow of fresh capital that is otherwise a deficient element in the economies of transitional countries represents the initial factor of economic development and an important condition for economic recovery. There is no doubt that foreign capital brings enormous benefits to host countries because it enables the achievement of political and economic stability, strengthening the legal and institutional framework, the introduction of new technological knowledge, the improvement of business environment as well as promotion of managerial and organizational skills of the workforce. FDI accounts for an 11 percent of global GDP and more than 80 million jobs worldwide (UNCTAD, 2010).

The importance of FDI for the current recovery and further development of some Balkan countries like Croatia and Serbia, particularly in the decision regarding question of integration to the European Union, has encouraged us to devote ourselves to the forecast of FDI inflows and to research tendencies of their previous motion. This paper strives to highlight the vast range of possibilities

regarding the application of statistical methods for analyzing the movement of certain economic flows and to point out the linear trend method as a suitable measure for testing development tendencies of a researched occurrence.

According to Taylor (2001) statistical study can be a simple research that allows us to gain insight into an unfamiliar situation, or it could be a perfect analysis designed to provide a numerical confirmation or rejection of a widely accepted opinion. By applying appropriate calculations, analyzing the obtained results and their graphical presentation, it is possible to discover the average annual changes of FDI inflows, their expected values as well as the confidence interval in which that value could be found. The conveyed researches may assist in defining the future investment strategies in analyzed countries, the promotion of investment environment and motivating the creators of economic policy to attract larger amounts of FDI.

## **II. NECESSITY AND INSUFFICIENCY OF FDI IN TRANSITIONAL COUNTRIES**

In many Balkan countries, a few decades ago began the process of transforming centrally-planned into market oriented economies; this process has not yet been finalized because its forecasted flow has been disturbed by frequent economic instabilities. Transitional countries in particular have been affected by the recent crisis waves, primarily because of their sensitivity; due to the process they have been going through, lack of financial potential for enabling economies and the inability to independently, without external support and assistance, overcome the arising difficulties. The characteristic for the abovementioned countries is to gravitate towards accelerated integration into the European streams and harmonizing political and legal frameworks, increasing investment in infrastructures and enhancing other competitive factors in order to obtain an influx of fresh capital from abroad.

Foreign investments are becoming an important motivating factor in the process of continuing economic transformation in overcoming the consequences of the crisis. Long time ago, the United Nations have taken the view that FDI are such investments that involve agreement of partners, providing long term interests and implementation of control by the company from one country over the company which is a resident of another country. In this way, the company that invests acquires ownership control over the company into which invests its capital, and which is located in another country outside of its homeland. It is undeniable that the largest share in total world investments flows belongs to the "Triad Countries": USA, Japan and the EU. Investors from the USA have several methods available



for investing abroad. The most obvious method is direct purchase of securities on capital markets in other countries (Bodie, et al., 2009).

Especially in recent decades, FDI have become a very attractive form of investing funds, since they provide multiple benefits for both investors and host countries. The experiences of a large number of transitional countries have shown that FDI are a more favourable form of inflow of necessary accumulation, compared to conventional loans in international financial market. Direct inflow of foreign capital into transitional countries improves their economic situation, encourages economic activities, increases employment and productivity, increases export and stimulates economic recovery. It is pretty obvious that foreign investments are necessary to intensify the economic development of countries in transition but the problem of their insufficiency is often presented due to very small values of FDI inflows.

It is known that the first investment boom in the world followed after the global oil crisis in the late seventies, while the following occurred under the influence of rapid development of information and telecommunication technologies and investment in the developed countries, whereas the last one, which is particularly interesting for this analysis began in the nineties. This period is characterized by a significant share of developing countries, especially in inbound investment flows. The USA were the largest individual source of global FDI in the period from 1990 until 1998, while in 1999 United Kingdom became the largest investor in the world. Inbound investment flows then recorded a growth of 24% and a value of 316 billion dollars, while outbound investment flows grew at a rate of 35% and reached a value of 338 billion dollars (Đurić, et al., 2000). The time period from the nineties until now, also known as the third investment boom, is the subject of this research, because it characterizes the commencement of investing in Balkan economies, which became more intense in time.

In order to attract foreign investors, all of countries must establish political stability, implement fair processes of privatization, and minimize commercial risk. FDI has a very positive impact on the overall atmosphere, creating the necessary conditions for sustainable long-term economic development of the country (Savić, 2007). However, the real facts can not be ignored because they show that FDI often cause uncontrolled exploitation of domestic, especially non-renewable resources, influence the growth of unemployment and the creation of technological dependence on foreign companies and sometimes form a model of consumption that generally does not correspond to the level of development of the host country. It is important to properly assess whether a certain investment will have more beneficial rather than harmful effects, and to make the final decision on that ground. Even so, the abovementioned is a privilege that is available to developed

countries, because poorly developed transitional countries, in pursuit of intense economic growth, often accept all foreign investors without taking into account the coming consequences.

### III. OVERVIEW OF THE CHANGES IN THE VALUE OF FDI INFLOWS IN SOME BALKAN COUNTRIES IN THE PERIOD BETWEEN 1992 AND 2011

One of the basic characteristics of transitional countries is the low level of domestic capital accumulation, which causes the need for intensifying the inflow of foreign investments in order to achieve initial growth. Serbia and other countries of the Balkan region are competing in attracting large amounts of investments, primarily by establishing liberal FDI laws, reducing corporate income tax, and abolishing trade barriers and investment restrictions. FDI inflows in Central and Eastern Europe was negligible until 1990 because the value of total inflow was about 500 million dollars, mostly invested in Hungary (Classens, et al., 1998). Intensive investments in other countries of the region began in 2000, and ever since the FDI inflows have been continuously growing, while that growth is currently slowed down due to economic and financial instability in the world, resulting as a consequence of the global crisis. FDI inflows in this region were strongly affected by the crisis. After the period of rapid growth of FDI inflows in 2008, all countries of the region have experienced a reduction in direct investments mainly due to the impact of global economic crisis (Penev and Marušić, 2011). The abovementioned events can be clearly seen in the review of FDI inflows in analyzed countries, which is presented in Table 1.

**Table 1. Inflows of FDI in million US\$ since 1992 by 2011**

Years	Bulgaria	Croatia	Romania	Serbia
1992	42	13	77	126
1993	40	118	94	96
1994	105	110	341	63
1995	90	102	419	45
1996	109	479	263	0
1997	490	543	1215	740
1998	535	953	2031	113
1999	825	1452	1027	112
2000	1016	1051	1057	52
2001	809	1313	1158	177
2002	923	1071	1141	563
2003	2089	1989	2196	1516

Years	Bulgaria	Croatia	Romania	Serbia
2004	3397	1179	6436	1024
2005	3920	1825	6483	2078
2006	7805	3468	11367	4878
2007	12389	4997	9921	4373
2008	9855	6180	13909	2955
2009	3385	3355	4844	1959
2010	1601	394	2940	1329
2011	1864	1494	2670	2709

Source: <http://unctadstat.unctad.org/TableViewer/TableView.aspx>

If we recall the war during the nineties, imposed sanctions and accompanying instabilities, it becomes clear why Croatia and Serbia have for quite a while been completely unattractive to foreign investors. For example, Serbia was constantly avoided by western investors during the reign of the previous political regime, so the significant investments in its economy began after 2000 when the country established a democratic government, initiated the privatization of state sector and partially created the conditions for rapid economic recovery. Those years brought first major FDI inflows from the Netherlands, Austria, Germany, Greece, Slovenia, the United Kingdom, Cyprus, France, Switzerland and other countries. Most were invested in the banking sector, telecommunications, industry etc. One may notice that a record inflow of FDI was achieved in 2006, with their value being 4878 million US\$, mainly due to the sales of Mobtel, Hemofarm, Vojvodjanska Banka and Panonska Banka, as well as the sale of third mobile operator license. Although this result is encouraging, that was not the real picture. Inadequate infrastructure, lengthy and complicated processes of obtaining construction permits and registration of companies are still discouraging factors for foreign investors.

FDI in Croatia had been relatively low until 2006 when it began its rapid growth and reaching a maximum in 2008. Foreign investors would choose to invest in Croatia because of it's an advantageous geographical location along to Adriatic Sea, good quality of infrastructure, skilled workforce and its recent accession to the EU. Still week points in Croatia are the current account imbalance, a significant private foreign debt and trade deficit as well as very slow legal and administrative systems. Interested foreign investors are especially worried of corruption, inefficient government bureaucracy, restrictive labour regulations, inadequate tax rates and regulations, policy instability and presence of crime and theft. According to WTO from 2004 to 2008 the largest foreign investor in Croatia was Austria with a 27, 9% share in total FDI inflows, followed by Netherlands (23%), Hungary (13,4%), Germany (7,3%) and Slovenia (5,3%).

Cheap and skilled labour force, liberal labour code, low taxes, no dividend taxes and favourable geographic location are main advantages of Romania that attracted many foreign investors. From 2004 onwards FDI in Romania has increased dramatically and top investors was from Austria (Erste Bank and OMV), France (Gaz de France and Orange), than from USA (Ford), UK (Vodafone), Hungary (MOL), Italy (ENEL), Finland (Nokia) and etc.

After year 2000 Bulgaria has become one of the most attractive investment locations in South-East Europe and according to recent surveys among foreign investors this country is placed in the top three investment destinations in the region together with Romania and Croatia. Bulgaria attracts investors with stable political environment, macroeconomic and financial stability, strategic geographic position, highly skilled workforce and with infrastructure subsidies for large investments as well as government support for priority investment projects. Some of the major investments have been done by companies from Germany (Aurubis, Liebherr, Schneider Electric and Siemens), Greece (Hellenic Petroleum, OTE and Viohalco), Austria (EVN and Palfinger), Belgium (Melexis and Solvay), Spain (Roca and Keros), USA (Hewlett Packard and Johnson Controls), Switzerland (Nestle), UK (Shell), Sweden (SKF), Italy (Unicredito) and many others.

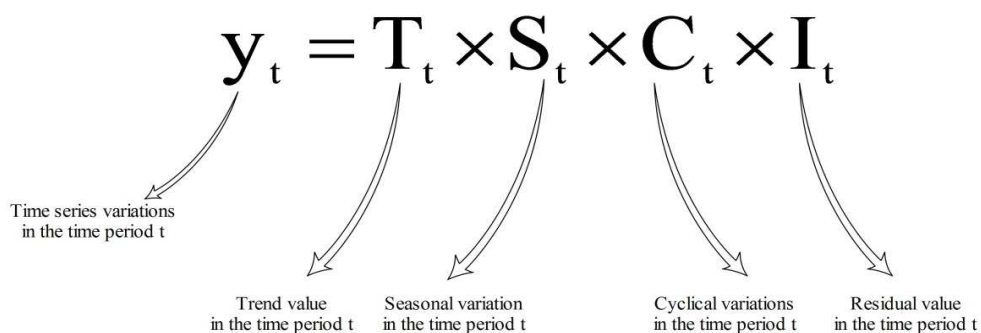
Since Bulgaria and Romania become full members of the European Union in 2007, the boom in FDI inflows was shortly appeared and unfortunately soon interrupted by the occurrence of the global economic crisis. In 2009 in Bulgaria FDI inflows fell by more than 6000 million US\$ and in Romania even for 9000 million US\$ compared with movements in the previous year. The decline continued in the coming years, although much weaker intensity.

#### **IV. DEFINING RESEARCH GOALS AND POSSIBILITY OF USING STATISTICAL METHODS IN ANALYZING OBSERVED TIME SERIES**

The primary goal of this research is forecasting the future movement of FDI inflows in some Balkan countries, relying on information on the movement of these flows in the past. In order to accomplish this goal, the application of statistical methods is opted in the research of movement of this phenomenon and analyzing its development trends. Nikolić (2011) emphasize that roots of statistics date back in ancient times, and the best proofs of this are population censuses from several thousand years BC in Egypt and China. The application of statistics has found a place in almost every sphere of human activities, and that is the reason why statistics in contemporary world is considered a scientific field comprising several independent statistical disciplines (Mladenović, et al., 2007).

Quantitative indicators of FDI inflows that are used are very suitable for this study, because the variation of analyzed phenomenon were observed during a sufficiently long period of time. Quantitative forecasting methods use historical data and their primary goal is to use data from the past to forecast future values (Levine, et al., 2010). In order to achieve defined goal, it is decided to apply one of numerous methods of analyzing variations of time series. In this group of methods, there are those which approach the analysis of time series in terms of time, and those that approach it from frequency domain. In studying economic phenomena, apart from additive and combined methods, multiplicative model is commonly used; it is based on the key assumption that the ratio of factors that affect individual components and components themselves is relative. It is known that empirical data of the observed phenomenon vary around the trend line, and that the mentioned variations are caused by influences of various, factors that are not systematized. Regular variations around the trend are of seasonal and cyclical nature, while all others are considered irregular or random variations.

**Figure 1. Multiplicative model of time series**



*Source: (Groebner, Shannon, Fry and Smith, 2001)*

When trend or any other variations are known, it is easy to find out the amount of influence of certain factors on the original data values. According to Stojković (2005) if we know the trend, we can find out the influence of seasonal, cyclical and irregular variations. By analyzing the phenomenon that is repeated over a longer period of time, we can come to the conclusion that it is in constant development, manifested by increase or decrease, and that in the mentioned development it shows characteristic variations that are repeated over time. If we want to determine which factors influence the variations of the analyzed phenomenon, it is necessary to research the widest range of time periods, in our case years, in order to infer whether the variations are the result of seasonal, cyclical and residual swings of time series, or whether we have expressed secular tendency of the given phenomenon, i.e. its trend.

## **Developmental tendency of a phenomenon – trend**

In examining the developmental tendency of data variation of the observed phenomenon during a longer period of time, it is started by assuming that there are factors that constantly function in a certain direction, as well as those that temporarily divert the flow of the phenomenon from the mentioned direction, upwards or downwards. A trend is a general, long-term movement upwards or downwards in time series (Levine, et al., 2010). In this research, the trend is depicted as a straight or curvy line of variations of the phenomenon in a longer period of time, which represents the average movement of FDI inflows in some Balkan countries in the period between 1992 and 2011. Before determining the appropriate trend line for the mentioned time series and deriving the trend equation, its significance must be tested and therefore checked whether this phenomenon actually exerts a long term developmental tendency or the observed trend is only accidental. The testing of trend significance is conducted by defining the null and alternative hypothesis as follows:

***H<sub>0</sub>:** Variations of FDI inflows in Bulgaria, Croatia, Romania and Serbia between 1992 and 2011 are accidental and the developmental tendency of the phenomenon is not expressed.*

***H<sub>1</sub>:** Variations of FDI inflows in Bulgaria, Croatia, Romania and Serbia between 1992 and 2011 are not accidental but statistically important, so the developmental tendency of the phenomenon, i.e. trend is expressed.*

By setting the upper and lower limit of the interval in which can be found the actual number of absolute differences calculated among the original data in the observed time series, it is determined with 95% probability that null hypothesis is rejected and alternative hypothesis is accepted, so the time series regarding FDI inflows in analyzed countries between 1992 and 2011 shows a developmental tendency, i.e. trend. The variations in the observed time series are statistically significant, and the process of determining the theoretical type of trend function can be commence. For this purpose, the Method of Standard Error has applied and by calculating the values of standard errors for several types of trend functions, comparing them to each other and noting the smallest value, it is determined that linear trend fits the original data of the observed time series.

## **V. APPLYING THE STATISTICAL METHOD OF LINEAR TREND**

### **The linear trend equation of FDI inflows in some Balkan countries between 1992 and 2011**

Since the theoretical linear function in the form of  $\hat{Y}_i = a_0 + b_0 x_i, i = 1, 2, \dots, n$ , fits the original data of the observed time series, a linear trend has been determined and the observed time series exhibited a tendency almost straight in its motion. In further research the Method of Least Squares is used and it is determined the equation of the linear trend. As a starting point the middle of the initial year, i.e. June 30<sup>th</sup>, 1992 is chosen, and one year was set as the basic time unit (x unit), while the value unit of the feature was set to 10<sup>6</sup> US \$ (y unit).

Therefore, the equation of linear trend of FDI inflows in some Balkan countries between 1992 and 2011 is the following:

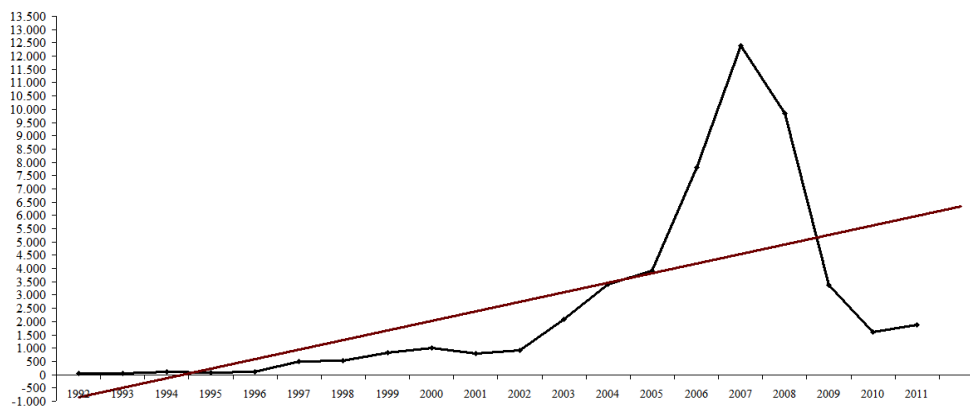
$$\text{Bulgaria: } \hat{Y}_i = -1810,7214 + 359,4759x_i, i = 1, 2, 3, \dots, 20$$

$$\text{Croatia: } \hat{Y}_i = -137,5143 + 183,3489x_i, i = 1, 2, 3, \dots, 20$$

$$\text{Romania: } \hat{Y}_i = -2679,45 + 450,921x_i, i = 1, 2, 3, \dots, 20$$

$$\text{Serbia: } \hat{Y}_i = -502,7857 + 184,0195x_i, i = 1, 2, 3, \dots, 20$$

**Figure 2. Linear trend line of FDI inflows in Bulgaria since 1992 by 2011 with one year forward and one backward**

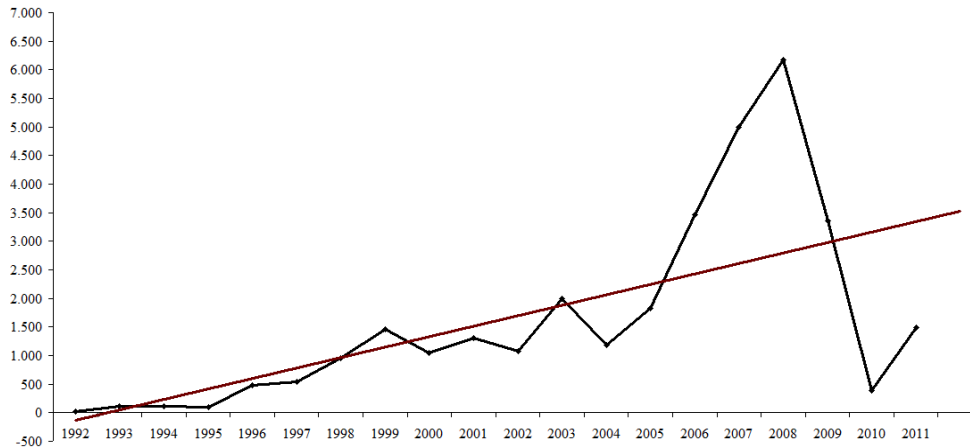


*Graphic. Linear trend of FDI inflows in Bulgaria (millions US\$)*

The theoretical value of the trend at the starting point is -1810,7214 in Bulgaria, -137,5143 in Croatia, -2679,45 in Romania and -502,7857 in Serbia and shows the point at which the trend line intersects the ordinate axis Y in the rectangular coordinate system. Presented data also show the theoretical expected value of FDI inflows in analyzed countries on the date of June 30<sup>th</sup>, 1992. The calculated value of the second parameter of the linear trend equation tells that, during each observed year, the value of FDI inflows have increased by an average of  $359,4759 \cdot 10^6$  US\$

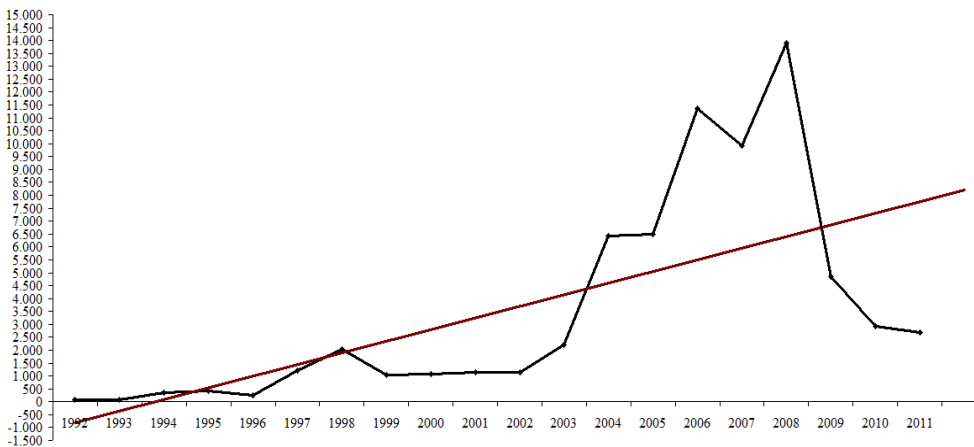
in Bulgaria,  $183,3489 \cdot 10^6$  US\$ in Croatia,  $450,921 \cdot 10^6$  US\$ in Romania and  $184,0195 \cdot 10^6$  US\$ in Serbia, so therefore the trend line is growing in each country.

**Figure 3. Linear trend line of FDI inflows in Croatia since 1992 by 2011 with one year forward and one backward**



*Graphic. Linear trend of FDI inflows in Croatia (millions US\$)*

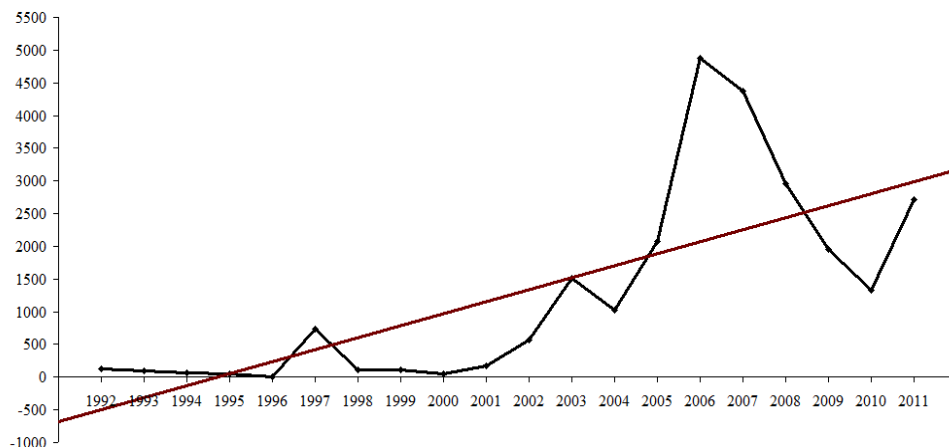
**Figure 4. Linear trend line of FDI inflows in Romania since 1992 by 2011 with one year forward and one backward**



*Graphic. Linear trend of FDI inflows in Romania (millions US\$)*



**Figure 5. Linear trend line of FDI inflows in Serbia since 1992 by 2011 with one year forward and one backward**



*Graphic. Linear trend of FDI inflows in Serbia (millions US\$)*

The trend line on the given graphic displays shows the average movement of input values of FDI in analyzed countries in the observed period of time, so the direction and degree of variation of original data around the trend line can be noticed. The maximum deviation was recorded in 2008 in Croatia and Romania, 2007 in Bulgaria and 2006 in Serbia and it is a reflection of a larger number of completed direct investments in the mentioned years. It is evident that significant FDI inflows in this region have been recorded after 2002, when some Balkan countries began an intensive destruction of political, economic and legal barriers for the entry of foreign investors and they also grabbed new investments in order to not go back into the era of economic recession.

### **Representativeness of linear trend and extrapolation of FDI inflows value in some Balkan countries in 2012**

The statistical researches often contain a question whether the selected function best represents the trend in time series, i.e. is the most appropriate trend truly chosen. According to Stojković (2001) the degree of representativeness of the trend is measured by standard deviation, which is also known as standard error of linear trend and is marked with  $S_{\hat{y}}$ . The standard error is calculated as follows

$$S_{\hat{y}} = \sqrt{\frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{n - k}}$$

and best shows how much, in average, the values of original data of the observed time series deviate from the trend line, and it is at the same

time expressed in same measurement units as the observed phenomenon. Calculated values of this parameter are as follows:

$$\text{Bulgaria: } s_{\hat{y}} = 3028,0965 \cdot 10^6 \text{ US\$}$$

$$\text{Croatia: } s_{\hat{y}} = 1317,2315 \cdot 10^6 \text{ US\$}$$

$$\text{Romania: } s_{\hat{y}} = 3744,2643 \cdot 10^6 \text{ US\$}$$

$$\text{Serbia: } s_{\hat{y}} = 1045,4428 \cdot 10^6 \text{ US\$}$$

It is concluded that the average algebraic deviation of values of FDI inflows in the observed time period is  $3028,0965 \cdot 10^6$  US\$ from the trend line in Bulgaria,  $1317,2315 \cdot 10^6$  US\$ in Croatia,  $3744,2643 \cdot 10^6$  US\$ in Romania and  $1045,4428 \cdot 10^6$  US\$ in Serbia.

By monitoring the value variations of the observed phenomenon during a sufficiently long period of time, it was possible to notice the character of its behaviour and, by using linear trend method, to forecast the future direction of its movement. The forecast is done by monitoring changes that occur over time and their projection in the future (Levine, et al., 2010). Main goal of this paper is to perform the forecast of linear trend values beyond the known values of the original data on FDI inflows in analyzed Balkan countries and thus calculate the theoretical value of the trend for the year following the last analyzed year in the time series. Projections will refer to the year 2012 because the official data on input and output flows of FDI published by UNCTAD in the World Investment Report 2012 end with the year 2011. The official data for 2012 will be announced in mid 2013 along with the publishing of the following report of this organization.

Based on previously identified linear trend equations, the following extrapolated values are get:

$$\text{Bulgaria: } \hat{y}_{2012} = 5378,7974 \cdot 10^6 \text{ US\$}$$

$$\text{Croatia: } \hat{y}_{2012} = 3529,4632 \cdot 10^6 \text{ US\$}$$

$$\text{Romania: } \hat{y}_{2012} = 6338,9710 \cdot 10^6 \text{ US\$}$$

$$\text{Serbia: } \hat{y}_{2012} = 3177,6053 \cdot 10^6 \text{ US\$}$$

It is concluded that in 2012 the value of FDI inflows that can be expected is in the amount of  $5378,7974 \cdot 10^6$  US\$ in Bulgaria,  $3529,4632 \cdot 10^6$  US\$ in Croatia,  $6338,9710 \cdot 10^6$  US\$ in Romania and  $3177,6053 \cdot 10^6$  US\$ in Serbia, provided that the observed phenomenon behaves according to linear trend in that year as well.

It can not be claimed with absolute certainty that this exact value will be accomplished, but it would be very useful to define the confidence interval in which the mentioned value could be found in 2012. Based on the calculated value of standard error of the linear trend ( $S_{\hat{y}}$ ) for the extrapolated value of the trend ( $\hat{y}_{2012}$ ) and probability  $(1-\alpha)$  the confidence interval can be calculated as follows  $\hat{y}_i - t_{(\alpha,r)} \cdot S_{\hat{y}} \leq \hat{Y}_i \leq \hat{y}_i + t_{(\alpha,r)} \cdot S_{\hat{y}}, i = 1, 2, \dots, n$ .

In the analyzed countries values of this interval are as follows:

$$\text{Bulgaria: } -983,2334 \leq \hat{Y}_i \leq 11740,8281$$

$$\text{Croatia: } 761,9597 \leq \hat{Y}_i \leq 6296,9666$$

$$\text{Romania: } -1527,7282 \leq \hat{Y}_i \leq 14205,6704$$

$$\text{Serbia: } 981,13 \leq \hat{Y}_i \leq 5374,0805$$

The value of  $t_{(\alpha,r)}$  has been taken from the statistical table of Student's t-distribution for risk of error  $\alpha$  ( $\alpha=0,05$ ) and the number of degrees of freedom  $r$  ( $r = n - 2$ ).

With a confidence level of 95%, we can expect that in 2012, the value of FDI inflows will not be greater than  $11740,8281 \cdot 10^6$  US\$ in Bulgaria,  $6296,9666 \cdot 10^6$  US\$ in Croatia,  $14205,6704 \cdot 10^6$  US\$ in Romania and also not greater than  $5374,0805 \cdot 10^6$  US\$ in Serbia, unless the analyzed phenomenon still exhibits an approximate straight-line trend in its future movement.

## VI. CONCLUSION

As a result of the increasing tendency towards a global economy and severities of economic and financial crisis pressures by many countries, attracting FDI, has been viewed as an important tool of developing and transition economic growth. FDI inflows rose from 19 percent in 2000 to 52 percent in 2010 and half the top 20 FDI recipients in 2010 were developing or transition economies (World Bank Group, 2011).

It should be noted that one possible way of accelerating the process of European Union integrations is by increased FDI inflows at a national level, especially true in the Balkan countries. The study the determinants of FDI from Western countries, mainly in the European Union, to Central and Eastern Europe has received considerable research attention in the last decade. Bevan and Estrin (2004) by

analyzing data on FDI flows from 18 market economies to 11 transition economies from 1994 to 2000, have identified unit labor costs, gravity factors, market size, and proximity as the most important determinants also indicating that announcements about European Union Accession proposals have a direct impact on FDI increase for the future member countries.

The results show that defined null hypothesis is rejected and alternative hypothesis is accepted with 95% probability, which means that variations of FDI inflows in Bulgaria, Croatia, Romania and Serbia between 1992 and 2011 are not accidental but statistically important, so developmental tendency of the phenomenon, i.e. trend is expressed. Considering the nature of original data of analyzed time series a linear trend has been determined and it was concluded that observed time series exhibited a tendency almost straight in its motion. The calculated value of the second parameter of the linear trend equation tells us that, during each observed year, the value of FDI inflows have increased by an average of  $359,4759 \cdot 10^6$  US\$ in Bulgaria,  $183,3489 \cdot 10^6$  US\$ in Croatia,  $450,921 \cdot 10^6$  US\$ in Romania and  $184,0195 \cdot 10^6$  US\$ in Serbia, so therefore the trend line is growing in each country. It is concluded that the average algebraic deviation of values of FDI inflows in the observed time period is  $3028,0965 \cdot 10^6$  US\$ from the trend line in Bulgaria,  $1317,2315 \cdot 10^6$  US\$ in Croatia,  $3744,2643 \cdot 10^6$  US\$ in Romania and  $1045,4428 \cdot 10^6$  US\$ in Serbia.

In 2012 the values of FDI inflows that can be expected are  $5378,7974 \cdot 10^6$  US\$ in Bulgaria,  $3529,4632 \cdot 10^6$  US\$ in Croatia,  $6338,9710 \cdot 10^6$  US\$ in Romania and  $3177,6053 \cdot 10^6$  US\$ in Serbia, provided that the observed phenomenon behaves according to linear trend in that year as well. With a confidence level of 95%, it is calculated that in 2012, the value of FDI inflows will not be greater than  $11740,8281 \cdot 10^6$  US\$ in Bulgaria,  $6296,9666 \cdot 10^6$  US\$ in Croatia,  $14205,6704 \cdot 10^6$  US\$ in Romania and also not greater than  $5374,0805 \cdot 10^6$  US\$ in Serbia, unless the analyzed phenomenon still exhibits an approximate straight-line trend in its future movement.

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**PART II.**

**MACROECONOMIC FRAMEWORK  
FOR STRUCTURAL ADJUSTMENT  
AND ISSUES OF LIBERALIZATION OR  
INTERVENTION**

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# A MONETARY ANALYSIS OF THE LIQUIDITY TRAP

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João Braz PINTO<sup>1</sup>  
João Sousa ANDRADE<sup>2</sup>

## *Abstract*

*Keynes has emphasized a particular situation in which the liquidity preference becomes absolute. In this situation the monetary policy will be ineffective: the near zero nominal rate of interest does not allow for negative values of the real rate of interest. This situation is called: liquidity trap (LT). Although this situation was popularized in the IS-LM Hicks-Hansen scheme it received its name by Robertson. This situation was also considered as the Keynesian case compared with the classical case. Krugman in 1998 has recovered the name to apply it to the Japanese situation of the 1990's. The "lowflation" situation in the USA and Europe has brought again the LT to the forefront. The quantitative easing monetary policy was followed in Japan and is now applied in the USA as a solution to overcome the LT. The LT has been erroneously considered as a problem of money supply inefficiency and at the same time denied as a "banking problem" in the words of Krugman. We propose to consider the present situation as a "banking problem" that does not allow the monetary base to be transformed in the money supply. In order to prove our thesis we study the behavior of the money multiplier and the income velocity of money before the beginning of the current crisis and during the crisis and by forecasting and stimulating models we compare the normal situation of monetary policy efficiency with the situation of LT monetary policy inefficiency.*

**Keywords:** *Liquidity Trap, Money Supply, Monetary Base Multiplier, ARIMA, VAR and VECM models.*

**JEL:** E12, E3, E4, E51 and E6

But do not be reluctant to soil your hands, as you call it. I think it is most important. The specialist in the manufacture of models will not be successful unless he is constantly correcting his judgment by intimate and messy acquaintance with the facts to which his model has to be applied." (Keynes, 1973)<sup>3</sup>, p.300.

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<sup>3</sup> Letter to Roy Harrod 10<sup>th</sup> July 1938.

## A KEYNESIAN DEFINITION OF LIQUIDITY TRAP

(Keynes, 1936) have suggested the expression of absolute liquidity-preference (p.191) to the situation we know now as Liquidity Preference (LP). (Tobin, 1947) used “Keynesian impasse” (p.128) to express the same situation. We owe the expression LT to (Robertson, 1940) p.34 and 36. (Hicks, 1937), p.56 knew the expression that was subsequently popularized by (Hansen, 1953), see (Sutch, 2009). Robertson proposed the expression to illustrate the consequences of a money demand negatively sloped on the saving-investment process, (Boianovsky, 2003). The standard Hicks-Modigliani-Hansen unemployment equilibrium model, (Patinkin, 1974), became the source for the LP explanation based on the assumption of Keynesian interest rate regressive expectations. The situation of a LT explained in terms of term structure of interest rates proposed by Keynes, and retained by Hicks, was replaced by the explanation where the floor of long run interest rate doesn’t depend on uncertainty, (Kaldor, 1939) and (Robinson, 1951).

The LT was the basis of the role attributed to fiscal policy by macroeconomic textbooks of the 60’s identifying a “Keynesian case”, (Franco, 1944), p.56<sup>4</sup>, where “nobody will be willing to hold nonphysical assets except in the form of money”, p.53. And as a consequence “(a)ny increase in the supply of money to hold now fails to affect the rate of interest”, p.55. The General Theory was conceived as “the Economics of Depression”, (Hicks, 1937), p.155.

The refusal of LT came from (Patinkin, 1974) that proposes against the conventional IS-LM model for the explanation of sustainable less than full-employment an explanation based on the General Theory “generated by the fact that the rate of interest falls *too slowly* in relation to the marginal efficiency of capital” (italics in the original, p.9). The refusal comes also from (Brunner and Meltzer, 1968) well known representatives of the monetarist thinking. They considerer what they call different types of LP: “Traps have been said to affect interest rates, the bank’s demand for excess reserves, the public’s supply of loans or commercial banks, and the public’s demand for money” (p.2). They correctly reallocate the discussion in terms of transmission mechanisms of monetary policy and they deny that monetary policy is ineffective and so they deny also the

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4 The complete phrase is “This situation that plays such an important role in Keynes’s *General Theory* will be referred to as the “keynesian case”. The BORDO, M. & SCHWARTZ, A. 2003. IS-LM and Monetarism. *NBER W. P.*, 9713. observation that FRANCO, M. 1944. Liquidity Preference and the Theory of Interest and Money. *Econometrica*, 12, 45-88. viewed Keynes “absolute liquidity preference as a curiosity and not the true hallmark of the Keynesian model” (p.221) doesn’t expresses Modigliani thinking.

existence of the different kind of traps (p.28). The authors write that “some form of a trap had existed” (p.1) and they cite the famous p. 207 of (Keynes, 1936) as a reference for its existence, but Keynes say “I know of no example of it hitherto”, just the opposite.

There were both theoretical and empirical critics of this hypothesis. (Haberler, 1937) and (Pigou, 1943) argued that deflation that characterized the LT hypothesis leads to an increase in real income of the agents (a shift to the right of the IS curve) which would be sufficient to initiate the economic recovery. This hypothesis was referred to as “Pigou effect”. Monetarists like (Friedman, 1956) and (Brunner and Meltzer, 1968) argued that the demand for liquidity would never become absolute and therefore monetary policy remains effective if unconventional policies, that Friedman called “money gift”, were adopted. Those policies consisted in establishing a high target for the rate of monetary base growth or diversifying open market securities purchases focusing on longer-term maturities.

From an empirical and theoretical point of view Jean Fourastié’ *trente glorieuses*, the growing inflation of the 60’s with the eclipse of the Phillips Curve, and the rational expectations revolution of the 70’s led to forget not only the schematic presentation of the LT but also most part of Keynesian ideas about over savings and deficient aggregate demand. We have “thrown out the baby with the bath water” until the seminal article of (Krugman, 1998).

## **CURRENT DEFINITIONS OF LT**

In terms of IS-LM model the phenomenon of LT is interpreted as a situation of perfect substitutability of money and bonds at a (near-)zero short-term nominal interest rate and so this irreducible interest floor becomes a binding constraint making impotent traditional procedures of monetary policy (Krugman, 1998), (Buiter and Panigirtzoglou, 1999), (Benhabib et al., 2002), (Auerbach and Obstfeld, 2004), (Hanes, 2006), (Svensson, 2006), (Eggertsson, 2008), (Sutch, 2009), (Rhodes, 2011)(2). The reputation for maintaining a stable reduced inflation rate is also important to push interest rates to near zero values (Sumner, 2002).

(Buiter and Panigirtzoglou, 1999) call the LT “an inefficient equilibrium” and (Blinder, 2000) comparing with zero gravity or near absolute zero temperature writes that “it may indeed be a new world” and (Pollin, 2012) insists in the particular situation of high unemployment, high inequality, collapse of household wealth and fiscal austerity policies accompanying the LT. This is not far from what (Franco, 1944) defines as the “Keynesian case” (P.56) or (Hicks, 1937) the “Economics of Depression” (p.155) when the LM curve is horizontal.

The majority of the LT interpretations are addressed in terms of money demand behavior. The problem of money supply is rarely taken into consideration and when it occurs it is exclusively confined to the monetary base behavior<sup>5</sup>. So monetary policy is ineffective due to the behavior of money demand. Some authors look at the monetary base but do not go further, e.g., (Brunner and Meltzer, 1968) gives another interpretation for monetary policy ineffectiveness, “the banks desired to hold excess reserves and were unwilling to lend” (p.12) but he dismisses that explanation in the absence of evidence supporting it as well as (Sumner, 2002). A similar interpretation is given also by (Svensson, 1999) and (Svensson, 2003) claiming that the increase in the monetary base beyond the satiation point is without effects on nominal and real prices and quantities. (Krugman, 1998) recognizes the impossibility of increasing “monetary aggregates” although MB increment still, he is categorical pointing out that the essential problem does not lie in the banking sector (p.140) since its solution is the creation of inflation expectations. But he does not explain how those expectations can be effective in the absence of money supply growth. (Pollin, 2012) shows that at least for the current crisis there is no satiation level for the MB in the USA and so the problem is on the transformation of MB on money supply. And without an increase in the money supply we cannot expect the reduction in longer interest rates that will affect consumption and investment, (Svensson, 2003).

For (Eggertsson and Woodford, 2003) in a LT situation the demand for money is less than the money supply but this is a misinterpretation of the money supply circuit. (Rhodes, 2011) prefers the expression “liquidity sump” where individuals want to convert income flows in excess of basic income into money (liquid assets). If this is the actual situation then the money supply will be growing in a LT and this does not happen.

### **WHAT ARE THE CONSEQUENCES OF THE USUAL DEFINITION?**

In LT monetary policy is ineffective to achieve full-employment or to reverse the downward slide in prices (Benhabib et al., 2002)<sup>6</sup>. (Auerbach and Obstfeld, 2004), (Eggertsson, 2005), (Eggertsson, 2008) support the idea that even in a LT large-

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5 In SVENSSON, L. 2003. Escaping from a Liquidity Trap and Deflation: The Foolproof Way and Others. *Journal of Economic Perspectives*, 17, 145-166. the confusion between the effect of the monetary base and on the money supply is notorious, see p.147. KRUGMAN, P. 1998. It's Baaack: Japan's Slump and the Return of the Liquidity Trap. *Brookings Papers on Economic Activity*, 2, 137-205. says explicitly that "base and bonds are viewed by the private sector as perfect substitutes" (p.141). This may be true for banks but not for the "private sector".

6 We have no pretension of being exhaustive.

scale open market operations are a powerful instrument for fiscal policy<sup>7</sup>. The IS-LM model with the independence of the two curves was not an appropriate framework for that proposal. Nevertheless the door was open for the fiscal channel at the end of the most cited passage of Keynes (p.207) "Moreover, if such a situation were to arise, it would mean that the public authority itself could borrow through the banking system on an unlimited scale ...".

## LT EPISODES

The seminal paper of (Krugman, 1998) is responsible for the recent interest on LT episodes. the Econlit records 36 articles until 1997 and 162 since 1999 until June 2014. About the case of Japan in the 90's and after other authors than Krugman we have (Auerbach and Obstfeld, 2004), (Shirakawa, 2002), (Bernanke, 2000) (Eggertsson and Woodford, 2003) (Svensson, 2006). In the early' 1930s in the USA (1933) (Hanes, 2006) and (Eggertsson, 2008) are good references.

The Fisherian explanation (Fisher, 1933) of debt deflation for the Great Depression was also advanced to explain Japan' 1990 (Koo, 2009) and (Eggertsson and Krugman, 2012) and is also common LT explanation (Svensson, 2003). We considerer that this explanation leads to understand why the dynamics of deficient or stagnant global demand and money supply is perpetuated in a vicious cycle.

We considerer that we have now different episodes of massive creation of high power money by central banks. Theses experiences are known by "quantitative easing" and they were applied first in the early 2000s in Japan and then after the beginning of the current crisis (2007) in the United States, United Kingdom, Japan, and the Euro Area, (Fawley and Neely, 2013).

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7 BERNANKE, B. 2000. Japanese Monetary Policy: A Case of Self-Induced Paralysis? In: POSEN, A. S. & MIKITANI, R. (eds.) *Japan's Financial Crisis and Its Parallels to U.S. Experience*. Washington, D.C.: Institute for International Economics. ORPHANIDES, A. & WIELAND, V. 2000. Efficient Monetary Policy Design near Price Stability. *Journal of the Japanese and International Economies*, 14, 327-65. and POLLIN, R. 2012. The Great U.S: Liquidity Trap of 2009-11: Are We Stuck Pushing on Strings? *Policy Economic Research Institute, University of Massachusetts, W.P.*, 284. proposed solutions to change the rigidity of high values of longer rates of interest in a LT.

## HOW TO GET OUT OF THE VICIOUS CIRCLE OF LT

(Buiter and Panigirtzoglou, 1999) considerer that the question about LT is not how to eliminate it but how to avoid it<sup>8</sup>. But this not means that we should eliminate it when we are in that situation. In a LT situation the anemic aggregate demand is negatively influenced by household deleveraging and must be compensated or reversed by unconstrained agents (Mian and Sufi, 2010), (Guerrieri and Lorenzoni, 2011), (Hall, 2011), (Eggertsson and Krugman, 2012) and (Korinek and Simsek, 2013).

The traditional Keynesian policy proposal to eliminate the LT was based on the displacement to the right of the IS curve by means of fiscal stimulus policy. This was the position justifying the 'american fiscalism' position. The idea of fiscal stimulus continues but nowadays mostly by way of increasing future prices and so changing the intertemporal budget constraint of governments (Benhabib et al., 2002), (Eggertsson, 2008). Another kind of policy is to increase the money supply choosing a money growth targeting that will be responsible for inflation growth and so will change the intertemporal budget constraint of private agents as well as government (Krugman, 1998) and (Benhabib et al., 2002). These proposals are usually based on the assumption of the government as the spender of last resort. In this case this monetary strategy is the other face of the fiscal policy and in the limit "it is government debt that determines the price level" (Eggertsson, 2003) (p.5). (Burgert and Schmidt, 2013) shows that efficiency of this policy depends on the government debt level. The more radical proposition comes from (Cochrane, 2013) where the fiscal stimulus should be regarded as "totally useless (...) government spending"<sup>9</sup> (p.10) or in the words of (Krugman, 1998), government must "commit to being irresponsible".

The effects of increasing in government spending corresponds to one of the particularities of the LT: what in normal times will reduce the natural level of output will in a LT increase equilibrium employment (Eggertsson, 2008) and so government spending becomes self-financing, tax revenues increases enough to pay for higher spending (Erceg and Lindé, 2014).

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8 "Targeting a higher rate of inflation after you are caught in the trap would be like pushing toothpaste back into the tube" (p17).

9 Some suggestive examples "hiring people to dig ditches and fill them up or construct defenses against imaginary alien invasions, to use two classic examples. It also can represent destruction of capital or technological regress — throwing away ATM machines to employ bank tellers, idling bulldozers to employ people with shovels, or even spoons, breaking glass or welcoming hurricanes, to use classic examples."

Let us see now the money supply side of the LT. We considerer that we have two problems in terms of money supply. The first problem is the velocity of money decrease. The second one results from the fact that the increase in money supply in our credit money economy is that money is created as a result of banking anticipated solvable credit demand. The first problem is very similar to the situation of over-saving considered by Keynes and has lead this author to cite Silvio Gesell in the GT. (Gesell, 1916) proposed a tax on currency, “one-thousandth of its face value weekly, or about 5% annually” (p.123) to increase the velocity of money in order to stabilize the general level of prices. The increase in velocity of money will attenuate the decrease in aggregate demand in a LT situation (Buiter and Panigirtzoglou, 1999). The second one is reflected on the very reduced value of the money multiplier and could be solved by “an excess reserve tax” (Edlin and Jaffee, 2009) and (Pollin, 2012) or the imposition of a maximum reserve level (Dasgupta, 2009)<sup>10</sup>.

The demand policies will be ineffective if individuals anticipate the return of the inflation values prevailing during the LT period (Krugman, 1998) and (Rhodes, 2011), or if they anticipate that monetary authorities will continue to choose the interest rate following a Taylor rule (Eggertsson and Woodford, 2003). Both situations are the denial of the idea that a Central Banks can create the amount of money they want<sup>11</sup>.

A third alternative to eliminate the LT consists in a sustainable reduction of long-term interest rates through the supply of reserves in exchange of foreign currency and long-term government bonds (Hanes, 2006). This effect my be achieved through loan-guarantee programs (especially) to smaller businesses (Pollin, 2012) that will reduce its risk premium. This proposition must be weighted with the moral-hazard problem as well as the inefficiency in the credit market that it will create. Following (Orphanides and Wieland, 2000) to reduce long term interest rates it is sufficient a commitment of central banks on very low short term interest rates. (Bernanke, 2002) proposed an operational procedure to guarantee high prices in unlimited quantity for future government bonds.

This alternative is denied by (Svensson, 2003) and (Svensson, 2006) that insists expectations of higher future price level are more effective. (Svensson, 2001), (Svensson, 2002) and (Svensson, 2006) proposed what he calls the “Follproof

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<sup>10</sup> An example of this kind of measure is represented by the ECB decision on 5th June 2014 to reduce its deposit facility interest rate from 0% to -0.10%.

<sup>11</sup> BERNANKE, B. 2000. Japanese Monetary Policy: A Case of Self-Induced Paralysis? In: POSEN, A. S. & MIKITANI, R. (eds.) *Japan's Financial Crisis and Its Parallels to U.S. Experience*. Washington, D.C.: Institute for International Economics. strangely has written that “(t)he monetary authorities can issue as much money as they like” (p.5).



Way” to eliminate the LT. This consists of a price-level increasing target path, currency depreciation with currency peg and a zero interest rate until positive results in price-level targets has been reached. But he regards the monetary base as a sufficient condition to change expectations of prices increase what is a wrong deduction during an LT episode.

## OUR THESIS

The current analysis of LT has some limitations that were already presented in its formulation in the IS-LM model. The IS-LM model had two black boxes (BB) in terms of monetary policy: (1) the oversimplification of the relations between the Central Bank (CB) and the banking system and (2) the neglect of the relations between banks and the non-banking sector (Dale and Haldane, 1993). The first BB leads to ignoring that the LM curve depends on the operational targeting of the CB (refinancing interest rate or monetary base), (Bofinger, 2001), p.85-90 and to assume that banks have a passive role in the transmission of monetary policy. In a LT situation the chain represented by the monetary base multiplier is broken. The second BB ignoring the banking credit demand ignore the creation of money, or as we say, the supply of money. The LM curve represents the equilibrium between demand and supply of money. Money demand is dependent on permanent<sup>12</sup> income and its value is always finite. The LM represented by a horizontal curve is nonsense. An LM curve horizontal will be possible with an infinite banking lending to the economy for an infinite value of the permanent income. The idea of a near zero velocity of money in a LT situation is incorrect.

We have now a considerable period of an *ex ante* strategy for monetary expansion (Fawley and Neely, 2013) and we focus on the quantitative easing in the U.S.A.. The concept of Quantitative Easing ( QE ) refers to a set of unconventional monetary policy measures related to changes in structure and/or balance sheet size of central banks and massive asset purchases by introducing high power money in huge amounts seeking to facilitate access to credit for non-financial agents. This concept arises in the literature as one of the most debated solutions to overcome the LT, and there are historically two registers, identical in shape but different in content, of the adoption of such policies: by the Bank of Japan after the Japan’s Lost Decade and by the FED during the period following the 2007 Financial Crisis.

The strategy adopted by the FED can be divided into two phases: the first, beginning in 2008, was marked by an *ad hoc* approach centered on the left side of the balance sheet (assets): purchase of longer maturities assets (Treasury notes and

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12 Current income or wealth. But for the main argument this is secondary.

Treasury bonds), regardless of the usual Treasury bills (maturity less than 1 year). The objective was to promote monetary expansion by reducing the liquidity premium.

The second phase is characterized by operations on liabilities: the U.S. Treasury resorted to loans beyond their needs depositing excess funds in their accounts with the Fed. The action therefore focused on the reduction of the risk premium, which reveals a paradigm shift in the FED action during the implementation of QE: at first the financial crisis was seen as a problem of illiquidity and in a second moment the FED adopted an approach to troubleshoot solvency of the financial sector and in this way the objective was to increase the supply of credit to the non-financial sector of the economy.

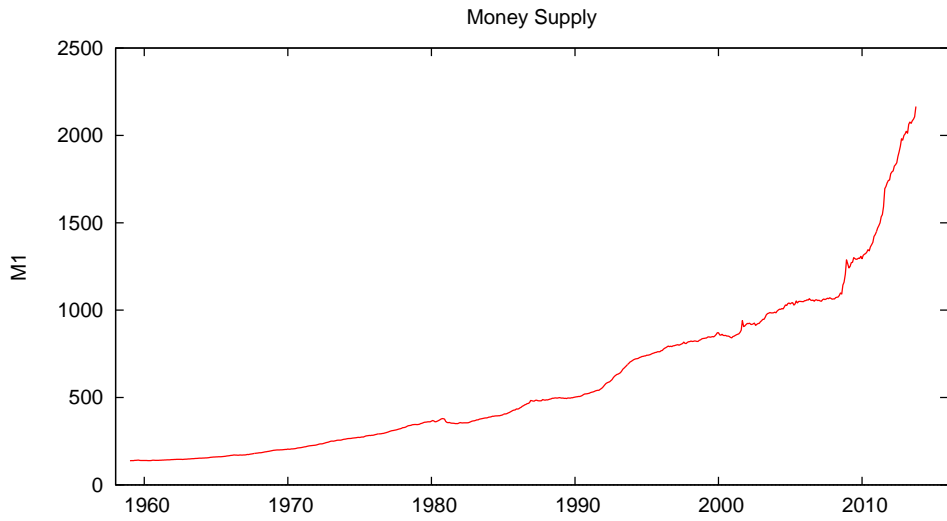
## **DATA**

The database is from FRED (Federal Reserve Bank of St. Louis) and contains monthly values between 1959:01 and 2013:10. The variables are: output (LYR), nominal interest rate (R), consumer price index (LP), monetary base (LMB), monetary aggregate M1, money velocity of circulation (Lv) and money multiplier (Lm). All variables except the nominal interest rate, are in logs. LYR refers to real GDP at 2009 prices in billions USD. This variable was converted from quarterly to monthly data using the package “tempdisagg” from R software, (Sax and Steiner, 2013). R is the Effective Federal Funds Rate, the actual values of the operational target of the FED monetary policy. LP is a measure of monthly prices of a set of goods and services purchased by consumers with 1982-84 as the base year. LMB refers to the adjusted monetary base of the Federal Reserve of St. Louis. LM1 is the narrow definition of money supply in the U.S. Lv measures the income velocity of money ( $=LYR+LP-LM1$ ), while Lm measures the money multiplier ( $=LM1-LMB$ ).

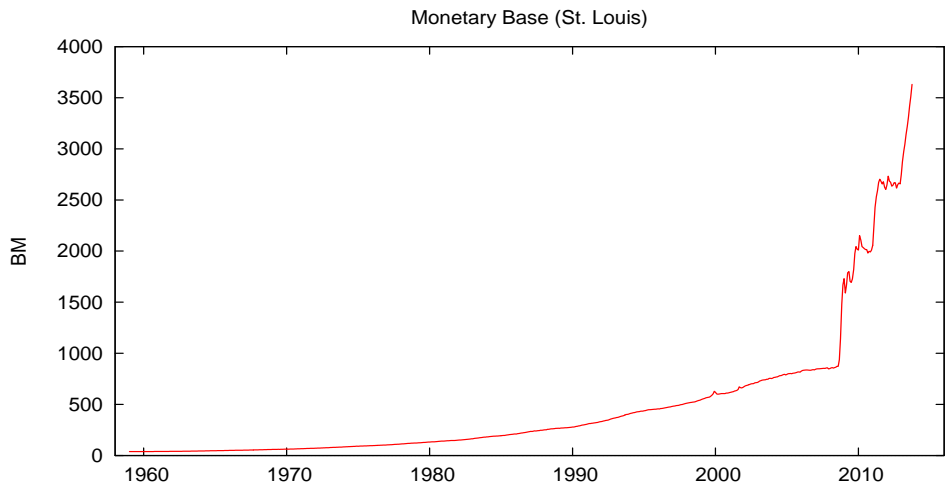
## **EMPIRICAL ESTIMATIONS**

When we see the evolution of money supply (M1) and monetary base (MB) in Figure 1 and 2 we perceive a huge increase in those values after 2008. But this increase hides a completely different picture in terms of the transmission mechanism of monetary policy. In Figure 3 we represent the relation between M1 and the MB and we see a rupture in the relationship after the values corresponding to the beginning of the financial crisis.

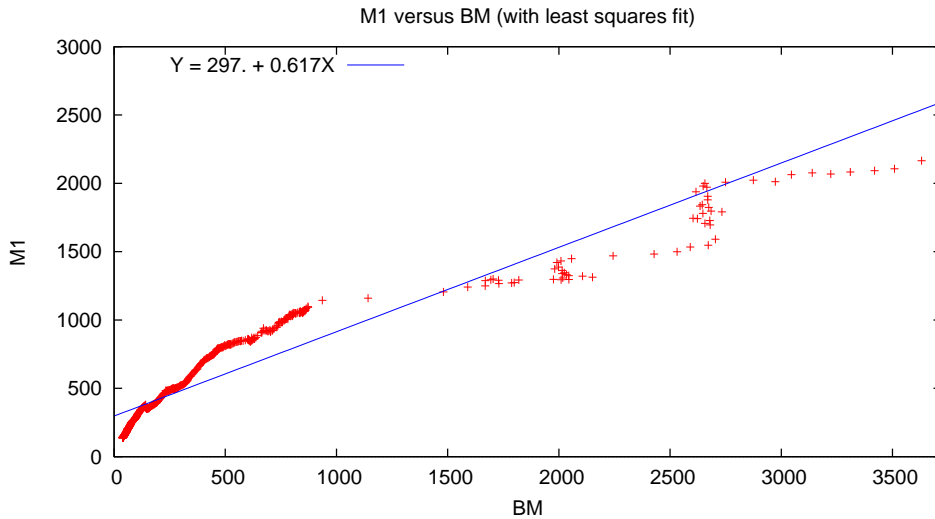
**Figure 1.**



**Figure 2.**



**Figure 3.**



The econometric part of this work is divided into two parts. In the first part (A) we study the evolution of the income velocity of money and the money multiplier. We compare the actual values during the financial crisis with forecasting values obtained until its beginning. With this analysis we focus on two characteristics of a LT situation: the decline of the money velocity which is usual recognized but exaggerated and the decline of the money multiplier almost always ignored.

In the second part (B), we present two reduced money supply models (a VAR and a VECM) in order to draw conclusions about the responses of the variables to shocks<sup>13</sup>. This will enable us to evaluate the impact of money supply policies (such as QE) on the U.S economy.

(A). In a LT the velocity of money will tend to minimum values corresponding to an increase in the amount of idle money. We divided the sample in two sub-periods (1959:01 – 2008:03 and 2008:04 – 2013:10) taking into account the temporal behavior of Lv. The following general ADL (augmented distributed lags) model was investigated:

$$Lv_t = c + a(L) \cdot Lv_{t-1} + b(L) \cdot R_t + \varepsilon_t \tag{1}$$

where  $a(L)$  and  $b(L)$  are lag polynomials with maximum order of 6. We choose our final model according to the likelihood ratio criterion. The model is on Table 1.

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<sup>13</sup> The shock value is equal to the standard deviation of the estimation for each variable.

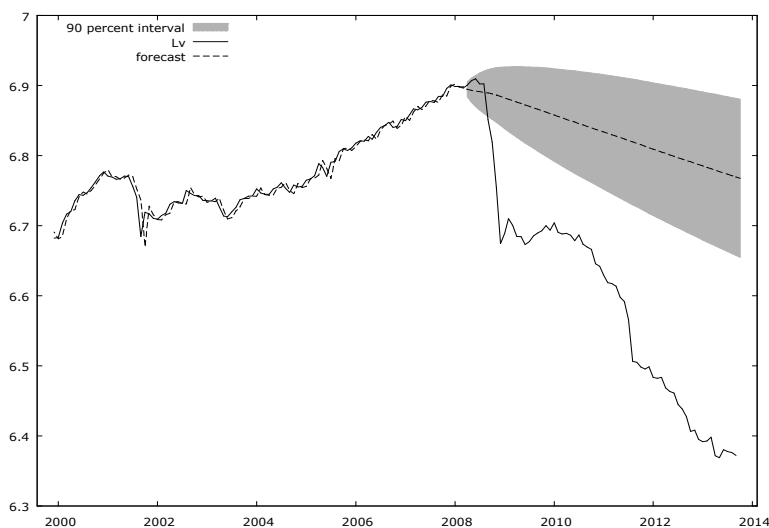
**Table 1. OLS, 1959:03-2008:03 (T = 589), for Lv  
HAC standard errors, bandwidth 6 (Bartlett kernel)**

	<i>Coeff.</i>		
Const	0.0053*	$R^2=0.999$	AR1: $F(1,584)=0.139$
R_1	0.0005***	$\sigma=0.006$	RESET: $F(2, 583) = 1.864$
Lv_1	1.2683***	$F(3,585)=1324137$	
Lv_2	-0.2693**		

*Notes: author's calculations. The last statistics in the second column is a LM test for the null of all coefficients beyond the constant. In the third column we have a ARI LM test and a RESET for the squared and third exponent.*

As we see for this model there is no problems of autocorrelation of the errors or misspecification. The coefficient of the interest rate is positive which was expected: the velocity of money increases with the rising cost of holding money. The forecast for the period of crisis, considering a confidence interval of 90%, is shown in Figure 4.

**Figure 4. Income velocity of money (M1)**



The velocity of money fell far beyond what was expected for the previous behavior, which can be interpreted as a situation of “excess money” because a substantial part of the money in circulation is inactive (the fall was 40% compared to the forecast value). This evolution is in accordance with our representation of a LT.

We consider that the normal transmission mechanism of monetary policy does not work. The banking sector does not transform “high power money” into money supply, money that circulates in the economy. This capacity of the banking sector can be measured by the money multiplier. The ADL model for Lm is the following:

$$Lm_t = c + a(L) \cdot Lm_{t-1} + b(L) \cdot R_t + c(L) \cdot LYR_t + d(L) \cdot LP_t + \varepsilon_t \quad (2)$$

where the terms  $a(L)$ ,  $b(L)$ ,  $c(L)$  and  $d(L)$  are lag polynomials. We continue to consider the period prior to 2008:08 and the period post 2008:09. We have selected our specification applying the likelihood ratio criterion. The Lm model excludes LYR and LP and keeps R with a polynomial lag of order 5 and the dependent variable has a polynomial lag order equal to 4. The estimated model is on Table 2.

**Table 2. OLS, 1959:06-2008:08 (T = 591), for Lm  
HAC standard errors, bandwidth 6 (Bartlett kernel)**

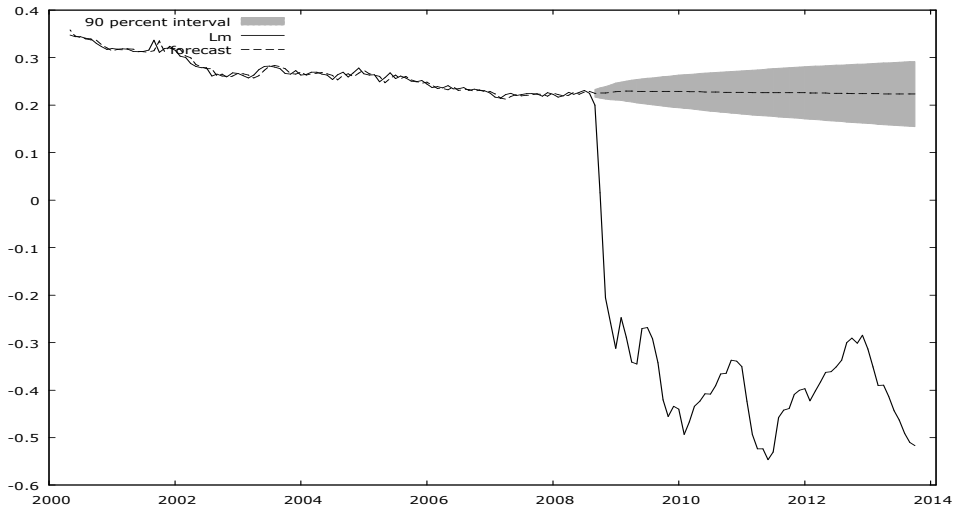
	<i>Coeff.</i>		
Const	-0.0004	R <sup>2</sup> =0.999	AR1: F(1,580)= 0.327
R_1	- 0.0015***	σ=0.005	RESET: F(2, 579) = 2.058
R_2	-0.0003	F(9,581)=497137	
R_3	0.0007		
R_4	-0.0004		
R_5	0.0011**		
Lm_1	0.945***		
Lm_2	0.0104		
Lm_3	0.1985***		
Lm_4	- 0.1543***		

*Notes: author's calculations. See notes on Table 1.*

The sum of the coefficients associated with lagged Lm is nearly equal to unit (1.001), for a standard deviation of 0.0005. Again, we have no problems of autocorrelation and misspecification. The dynamic forecast of the money multiplier for the crisis period, with the 90% confidence interval, are in Figure 4. The evolution of Lm reflects a relative stability of the money multiplier, as was supported by monetarist's authors. The least we can say about the evolution of their values during the crisis is that the fall was brutal (for instance in 2013:10 the

difference between the actual and the forecast value was 74%). In our opinion this is an essential characteristic of the LT.

**Figure 5. Money multiplier**



**(B).** In this subsection we suggest the analysis of LT from the point of view of money supply. We consider the following scenario: the Central Bank opt for a policy of money creation, increasing the monetary base, but banks, either due to rearrangement of its assets or by reducing their lending capabilities, do not increase the money supply. The monetary policy is in this situation ineffective. To verify this hypothesis we propose the study of a reduced model in which the interaction between monetary base and money supply (LMB and LM1)<sup>14</sup> variables will be studied. The model is applied to two sub-periods previously defined: 1959:01 to 2008:08 and 2008:09 to 2013:10. We propose to analyze the effectiveness / ineffectiveness of monetary policy with a VAR in a situation of LT through comparison of the results of the different shocks in the two periods.

The order of the VAR was chosen by the likelihood ratio test. For the first sub-period the number of lags selected was 7 and for the second period was 3. Since both variables are first order integrated we've also applied the Johansen cointegration test to see if we could have a long-run relationship between these two variables. The lags chosen for the test correspond those of the VAR model minus one and we never retained any cointegration vector. For both sub-periods the Cholesky decomposition was retained. With regard to the first sub-period no

<sup>14</sup>The variables were ranked in terms of proximity to the action of MA.

autocorrelation of order 1 problems were detected. Tables 3 and 4 below contain the values of the variance decomposition for LMB and LM1, respectively.

**Table 3. Variance decomposition for LMB (VAR – 1<sup>st</sup> sub-period)**

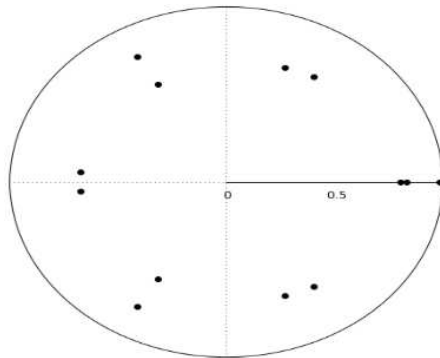
Period	Standard error	LMB	LM1
1	0.004	100.00	0.00
12	0.022	97.71	2.29
24	0.036	95.26	4.74
36	0.047	93.19	6.81

**Table 4. Variance decomposition for LM1 (VAR – 1<sup>st</sup> sub-period)**

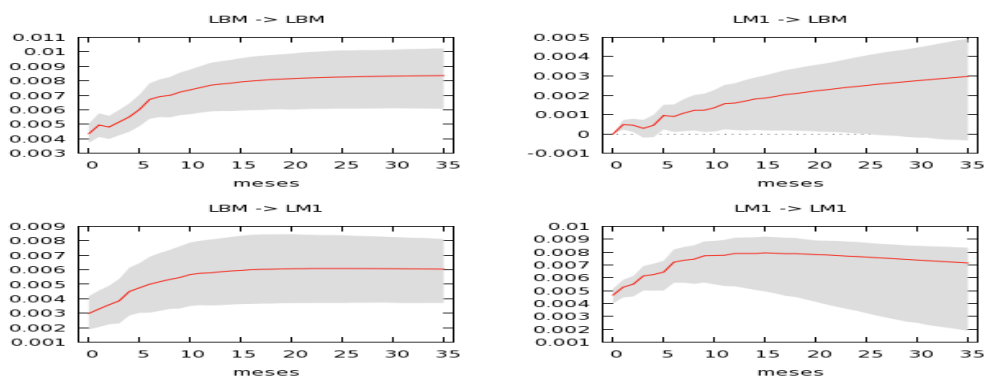
Period	Standard error	LMB	LM1
1	0.005	29.16	70.84
12	0.028	33.04	66.96
24	0.044	35.33	64.67
36	0.055	37.08	62.92

As can be seen LMB is mainly explained by itself (93%) while it explains 37% of the variance of LM1. This model is stable, as can be seen by the roots associated with the VAR which lie inside the unit circle (Figure 6).

**Figure 6. Inverse of the VAR roots on the unit circle (VAR - 1<sup>st</sup> sub-period)**





**Figure 7. Money Supply and Money Demand Shocks (VAR - 1<sup>st</sup> sub-period)**

We will identify a shock of LMB as a money supply shock and a shock of LM1 as a money demand shock (Figure 7.). A money supply shock causes, in the period up to the present crisis, an increase in the money supply that stabilizes after almost a year. A money demand shock has a much reduced effect on the monetary base and after 1 year is practically negligible. Thus, the role of monetary authorities through money supply policy is clear and corresponds to the expected theoretically. At the same time we see the characteristic of exogeneity of the monetary aggregate M1.

We present now the second sub-period VAR. We continue to have no problems of autocorrelation of order 1. The values of the decomposition of the variance of the two variables are in Tables 5 and 6. The roots associated with the VAR are in Figure 8 and the representation of the different shocks are in Figure 9.

**Table 3. Variance decomposition for LMB (VAR – 2<sup>nd</sup> sub-period)**

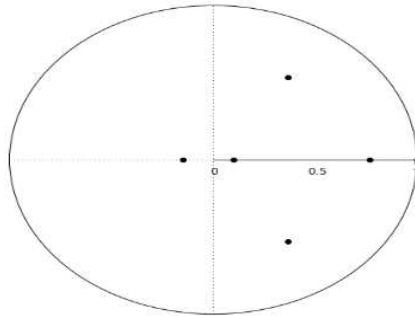
Period	Standard error	LMB	LM1
1	0.030	100.00	0.00
12	0.081	85.99	14.01
24	0.097	61.26	38.74
36	0.111	46.67	53.33

**Table 4. Variance decomposition for LM1 (VAR – 2<sup>nd</sup> subperiod)**

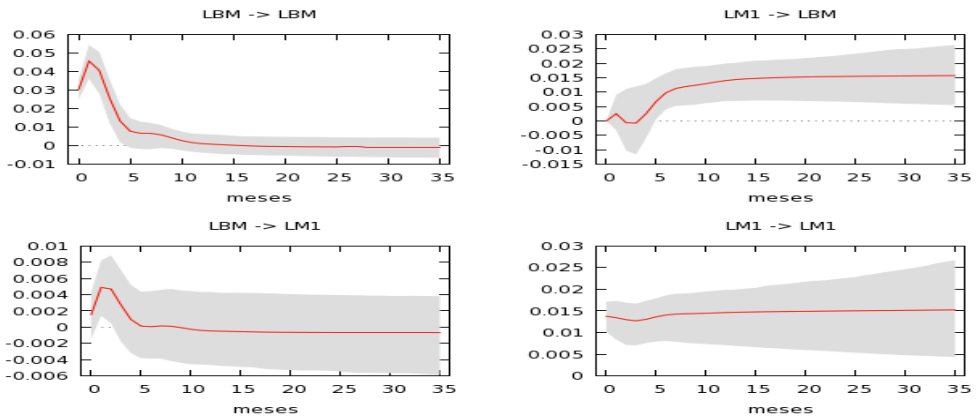
Period	Standard error	LMB	LM1
1	0.014	1.23	98.77
12	0.048	2.44	97.56
24	0.071	1.23	98.77
36	0.088	0.86	99.14

Now we find a strong participation of LM1 in the variance of LMB (53%) reflecting a strange effect in terms of monetary theory. Regarding the variance of LM1, LMB has virtually no explanatory role unlike what happened in the first sub-period and LM1 is explained practically by itself (99%). The model remains stable (Figure 8).

**Figure 8. Inverse of the VAR roots on the unit circle (VAR - 2<sup>nd</sup> sub-period)**



**Figure 9. Money Supply and Money Demand Shocks (VAR – 2<sup>nd</sup> sub-period)**



A shock of money supply quickly cancels its effects on LM1 and practically its effects can never be taken as non-zero. In turn, money demand shocks significantly and durably affect LMB. So contrary to what happened before the crisis, money supply shocks don't have a growth effect in money circulating in the economy. It can be concluded that for the period under review, monetary policy based on money supply shocks is ineffective in prevent the emergence of a situation of deflation.

The book of (Hoffman and Rasche, 1996) market a new route in monetary empirical research with cointegration (C-I) monetary modeling. We propose a model with the rate of interest, the monetary base and the income velocity of

money (R, LMB and Lv). These variables are I(1) by the usual ADF with the null the unit root and KPSS with the null the stationarity. We continue with the 2 sub-periods previously taken, 1959:1-2008:03 and after 2008:4. The optimal order of the VAR is 7 using the likelihood ratio test so we choose a C-I Johansen test of order 6. We see (Table 5) that we can not reject the existence of 1 vector for C-I.

**Table 5. Johansen Test: Lag order =6, 1959:07 – 2008:03, Unrestricted constant**

Rank	Trace test	Lmax test	Trace test (C)
0	55.28***	43.09***	55.28***
1	12.20	11.22	12.20
2	0.979	0.979	0.979

*Notes: the last column refers to the trace test corrected for sample size (df=566).*

The sign of the short-term adjustment coefficient ( $\alpha$ ) is negative and so the process is stationary. As we have done below we retain the Cholesky decomposition to obtain the variance decomposition and responses to shocks. For each of the VAR equations associated with the VECM we do not have problems of auto-correlation. In Tables 6, 7 and 8 we have the values of the decomposition of the variances and in Figure 10 we have the inverse of the VAR roots on the unit circle.

**Table 6. Variance decomposition for R (VECM - 1<sup>st</sup> sub-period)**

Period	Standard error	R	LMB	Lv
1	0.405	100.00	0.00	0.0000
12	1.601	88.74	2.26	9.0021
24	2.068	83.52	4.35	12.1286
36	2.319	81.63	5.23	13.1393

**Table 7. Variance decomposition for LMB (VECM – 1<sup>st</sup> sub-period)**

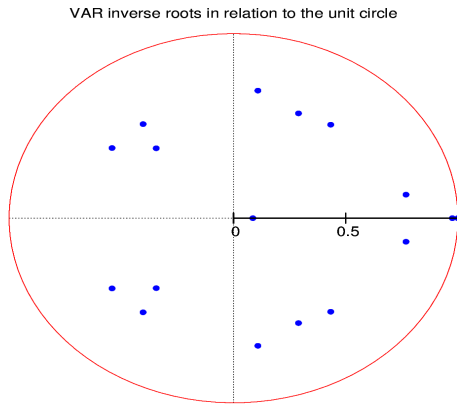
Period	Standard error	R	LMB	Lv
1	0.004	0.17	99.83	0.00
12	0.021	3.68	96.17	0.15
24	0.033	2.42	97.46	0.12
36	0.043	1.57	98.32	0.11

**Table 8. Variance decomposition for  $L_v$  (VECM – 1<sup>st</sup> sub-period)**

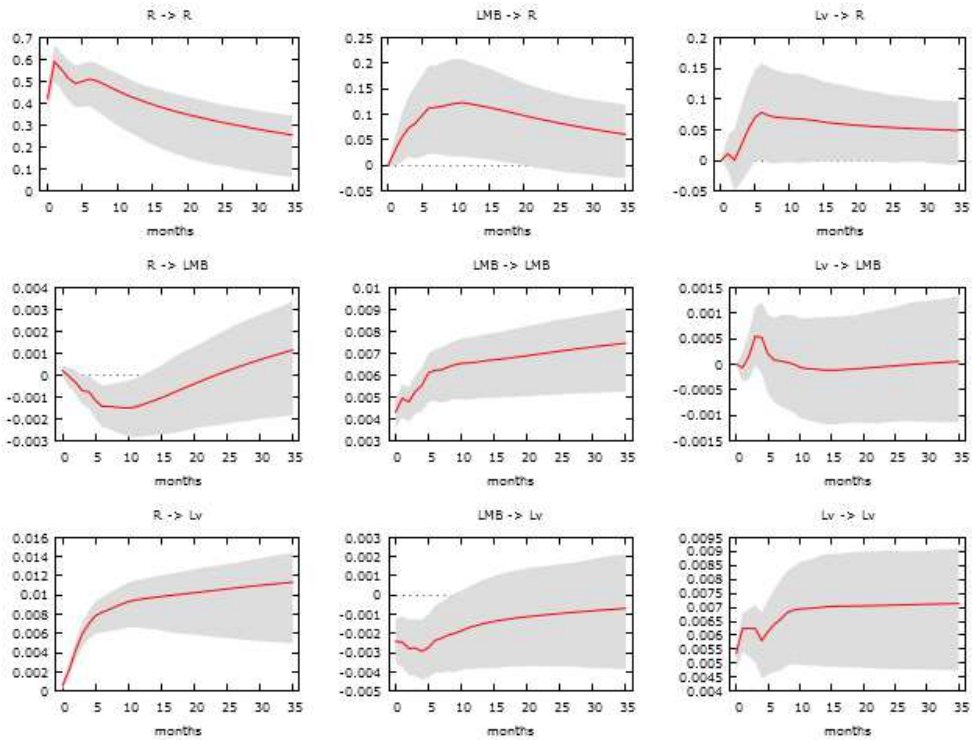
Period	Standard error	R	LMB	$L_v$
1	0.006	0.88	17.31	81.81
12	0.036	39.53	6.80	53.67
24	0.059	41.16	3.92	53.67
36	0.077	42.32	2.79	54.89

Both R and LBM are mostly explained by themselves while R has a share of 42% in explaining  $L_v$  which corroborates the importance of the interest rate in the transmission mechanism of monetary policy. It seems reasonable to continue to be a model with these variables.

**Figure 10. Inverse of the VAR roots on the unit circle (VECM – 1<sup>st</sup> sub-period)**



In Figure 11 we have the results from the different shocks.

**Figure 11. Money Supply and Money Demand Shocks (VECM – 1<sup>st</sup> subperiod)**

We identify a shock on R as a money supply “price shock”, a shock on the monetary base as a money supply “quantity shock” and a shock on the velocity of money as a money demand shock. The effects of a “price shock” on the velocity of money are positive and permanent. A “quantity shock” has positive and permanent effects on the monetary base. As for the effects on the velocity of money, a “quantity shock” reduces the velocity of money in the short-run and can’t be considered different from zero after 10 months (in terms of the expected value is always negative although this is reduced over time). In short money supply policies have clear effects on the interest rate, the monetary base and velocity of money, while money demand shocks only have a significant effect on the interest rate.

For the second sub-period, 2008:04 to 2013:10, the VAR model has order 6, suggested by the likelihood ratio, so we’ll use the Johansen test with 5 lags (Table 9). The value of “alpha”, the adjustment coefficient, is negative so that the process is stationary. This model presents problems of autocorrelation of order 1 in the first equation of the model.

**Table 9. Johansen Test: Lag order =5, 2008:04 – 2013:09, Unrestricted constant**

Rank	Trace test	Lmax test	Trace test (C)
0	33.25**	24.70**	33.25**
1	8.55	8.53	8.55
2	0.021	0.021	0.021

Notes: the last column refers to the trace test corrected for sample size ( $df=566$ ).

**Table 10. Variance decomposition for R (VECM – 2<sup>nd</sup> sub-period)**

Period	Standard error	R	LMB	Lv
1	0.113	100.00	0.0000	0.0000
12	0.386	40.53	58.1930	1.2785
24	0.524	30.93	66.6899	2.3785
36	0.633	27.30	69.8239	2.8777

**Table 11. Variance decomposition for LMB (VECM – 2<sup>nd</sup> sub-period)**

Period	Standard error	R	LMB	Lv
1	0.0343501	20.9383	79.0617	0.0000
12	0.259556	16.2417	83.0042	0.7541
24	0.387668	14.3206	84.9402	0.7393
36	0.482921	13.7409	85.5314	0.7277

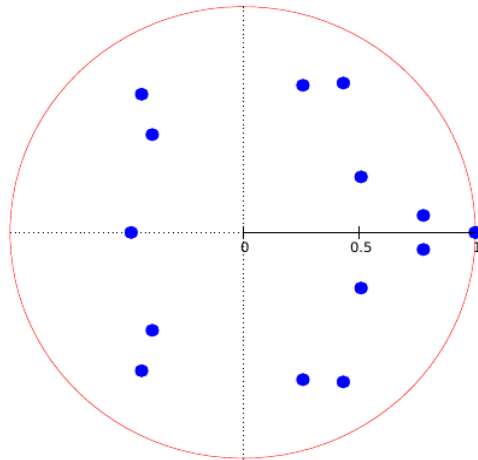
**Table 12. Variance decomposition for Lv (VECM – 2<sup>nd</sup> sub-period)**

Period	Standard error	R	LMB	Lv
1	0.0129823	12.0495	3.8009	84.1496
12	0.074697	2.1950	47.2433	50.5617
24	0.107678	1.1501	49.7129	49.1370
36	0.132694	0.8167	50.5285	48.6548

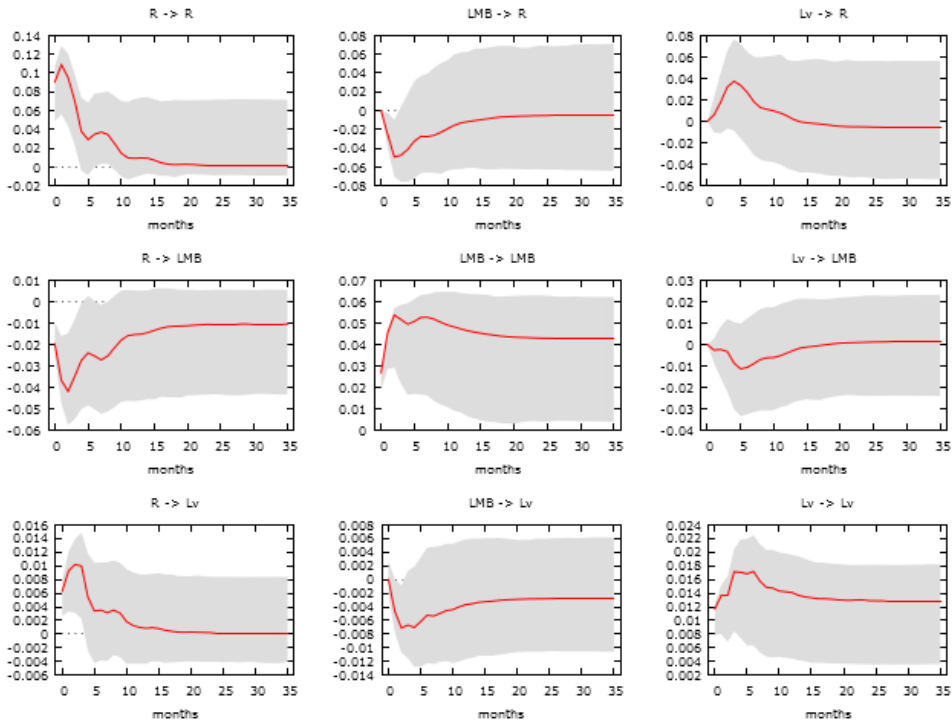
Tables 10, 11, and 12 contain the variance decomposition of the variables in the VECM. The fact that LMB and  $Lv$  have shares of 70% and 2.9%, respectively, in the explanation of  $R$  is easily understood due to the period under analysis: from one side, QE policy is a combination of both an increase in monetary base and a decrease in the interest rate and from the other, relatively lower velocity of money has a reduced impact on the evolution of interest rates. The money velocity has also a much reduced impact on the evolution of the monetary base (Table 11). The variance of this last variable is explained by the interest rate (14%) and by itself (85%). The variance of the velocity of money is explained in practically equal parts by itself and by the monetary base (Table 12). It is also important to highlight the fact that  $R$  lose explanatory power on  $Lv$  and this fact maybe an indicator of a possible ineffectiveness of the MP in the crisis period.

In Figure 12 we see that the model is stable: the associated roots are in the unit circle.

**Figure 12. Inverse of the VAR roots on the unit circle (VECM – 2<sup>nd</sup> sub-period)**



**Figure 13. Money Supply and Money Demand Shocks (Model B – 2<sup>nd</sup> sub-period)**



Applying the same designations as in the previous sub-period analysis it appears (Figure 13) that a “price shock” has a positive effect on Lv (though not different from zero after 4 months). A “quantity shock” has a negative effect on R during 3 months. A “quantity shock” has also a permanent and positive effect on the variable itself and a negative effect on Lv (though after about 2 months this effect is not different from zero). In short, in terms of monetary policy a “price shock” or a “quantity shock” are ineffective since they have no significant impact on LMB and Lv. Finally money demand shocks does not significantly affect R or LMB but they have a very high degree of inertia in itself.

Thus, as we have already confirmed with the VAR model, we can prove that monetary policy does not exert significant effects on non-banking economy in the second period analyzed, unlike what happened in the first. This second period is likely to be identified as a period of LT.



## CONCLUSION

With this paper we study the phenomenon of LT. We started with the definition of LT from the origins of the concept in the Keynesian literature to the more recent definitions. We also called attention for the consequences of the usual definition and some of the episodes. The understanding of the LT allows the monetary authorities to get out its vicious circle. Contrary to the common vision that bases the phenomenon on the demand for money we propose to see it as a demand for credit and a money supply ruptures.

To analyze our vision we look at the newly QE policy adopted by the FED and its effects on the U.S. economy. We have divided the period of study (1959:01 to 2013:10) in a “normal period” (1959:01 to 2008:03) and a “crisis period” (2008:04 to 2013:12). This last period is identified as having the characteristics of a LT episode. We demonstrate that the decrease of the income velocity of money is important but far it is from the zero value predicted by the traditional and current definition. The most important element of a LT is not the evolution of the income velocity of money but the evolution of the money multiplier. As a consequence we propose a VA model to analyze the evolution of the monetary base and the money supply. For the first period we prove the exogeneity of the money supply and the null effect of the demand for money over the monetary base. In the second period a shock on the money supply quickly cancels its effects on M1 and money demand shocks affects permanently the monetary base. The relevant conclusion with this model is the ineffectiveness of money supply shocks in the current situation since 2008:04 to the present.

We have also studied a monetary equilibrium model with short and long term relations between the interest rate (Federal Funds Rate), the monetary base and the income velocity of money. These variables are cointegrated of order 1 and so we use a VECM model to simulate shocks in the two selected sub-periods. During the normal period the effects of a monetary “price shock” is positive and permanent on the income velocity of money and a “quantitative shock” has permanent effects on the monetary base. Resuming our results money supply policies have clear effects on the interest rate, the monetary base and the income velocity of money and money demand shocks have only significant effects on the interest rate. The same type of model for the period after 2008:4 has very different results. A monetary policy “price shock” or a “quantity shock” are ineffective since they have no significant impact on the monetary base and in the income velocity of money. The money demand shocks does not significantly affect the interest rate or the monetary base. Instead they have a high level of inertia in itself.

The interpretation we propose for LT puts the central problem in the banking sector. In a simple way: banks can but don't create money because there are no acceptable level of risk in the demand for bank credit. The creation of inflation expectations in order to create incentives for banking borrowing must be compatible with targets for money supply and these will be realistic if banks lend money, the preference to the private sector of the economy. Almost everywhere the government as a spender of last resort is limited by high levels of indebtedness.

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# CONVERGENCE TO THE MEAN. WHAT DOES QUANTILE REGRESSION SAY?

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## **Abstract**

*Galton Fallacy compels us to look at economic relationships beyond conditional mean. This research revisits growth convergence equations based on the neoclassical model by investigating the causal effects of the initial level of output on its growth rate across different quantiles ( $Q$  convergence) using quantile regression techniques (Koenker (2005)). It is the econometric approach that fits better in this framework and Canay (2011)'s methodology is applied to control for the presence of fixed effects associated with panel data. The main results reveal  $Q$  unconditional convergence for the upper quantiles of the growth rate's conditional density function. Controlling for other covariates leads to a smoother decreasing pattern of the coefficient on the initial level of the output. This pattern implies that countries in the upper quantiles of the conditional density function of the growth rate of output per capita are converging faster to their own steady states.*

**Keywords:**  $Q$  convergence, Beta convergence, sigma convergence, quantile regression, fixed effects

**JEL Classification:** C31, C33, O47.

## **1. INTRODUCTION**

The main motivation of any research in economic growth is related to the explanation of living standards' differences across countries or regions. Why does the danish citizen has an income per capita twenty one times higher than the cameroonian one? Does it make sense to state that this differential will vanish in the future? Economic theory suggests two mechanisms through which convergence can occur: the neoclassical growth model of exogenous growth (Solow (1956)) and

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the technological diffusion models (e.g. Barro and Sala-i-Martin (1997)). Despite the fact that there seems to exist a robust negative relationship between the growth rate and the initial level of output (Sala-i-Martin (1997); Doppelhofer *et al.* (2004)), there are still some characteristics impossible to derive concerning the specific dynamics of output per capita, such as the number of steady states or the specific evolution of the whole sectional distribution of output per capita.

This paper aims to assess whether the negative relationship between the growth rate of output per capita and its initial level occurs throughout the whole conditional density function, and not only around its mean. For example, if there is a re-ranking inside country groups but not between these groups, the lower quantiles of the conditional density function will not be converging to the same equilibrium as the upper ones. Galton Fallacy (Galton (1886); Friedman (1992)), which applied to the economic growth context states that beta convergence is compatible with an increasing dispersion of output per capita, shows that looking solely at the conditional mean gives insufficient information about the growth process (Quah (1993b)), because what happens to the average individual (in the average time, if the data structure is longitudinal) may be different from what happens to the individuals in the tails.

There is a close interaction between our main objective discussed above and the econometric methodology we apply. The approach that fits better is quantile regression (Koenker e Bassett (1978); Koenker e Hallock (2001); Koenker (2005)), which seeks to estimate the marginal effects throughout the conditional density's quantiles. We apply this methodology to the estimation of growth equations, therefore allowing us to analyse: a) whether the conditional convergence applies to the whole distribution and not just the mean; b) variations in the speed of convergence, namely whether the "iron law" (Barro (2012)) is true for all the quantiles; c) differences in the marginal effects of other covariates. Therefore, quantile regression is a robust methodology which has the potential to improve the knowledge about output per capita dynamics.

The remaining of this paper is organised as follows: in section 2, the convergence concepts that are most important for this study are presented, followed by a theoretical and empirical review of literature. Afterwards, in section 3, a brief descriptive statistic analysis is undertaken and the econometric methodology is presented. In the next section, 4, the results are presented and analysed and a brief theoretical exercise is undertaken in order to clarify the relationship between Q convergence and sigma convergence; in the last section, 5, we conclude.

## 2. LITERATURE REVIEW

### 2.1 Convergence: theoretical background

In economic growth, the analysis focuses on the determinants of long term evolution of output per capita. The assumption that the dynamics of this variable is imposed by the restrictions of the macroeconomic supply enables the production function to be the foundation of the majority of the investigation in this area. The brief theoretical presentation will be mainly based on Solow (1956), which considers an aggregate production function with three neoclassical assumptions. The assumption of constant returns to scale makes it possible to write the production function in its intensive form. That is, to establish a univocal relationship between output ( $Y$ ) and the physical capital stock ( $K$ ), both measured in efficiency units of labour. The additional assumptions are: closed economy so that savings equals investment; households have a marginal and average propensity to save that is constant and equal to  $s$ ; physical capital depreciates at a constant rate  $\delta$ ; productivity and population grow at constant exogenous rate,  $g^3$  and  $n$ , respectively. Therefore, the growth rate of capital in efficient units of labour has the following expression<sup>4</sup>.

Under the assumption of diminishing returns of the inputs, this derivative is negative because the numerator is the symmetric of the marginal productivity of labour. Thus, the growth rate of  $k$  is a decreasing function of its level, since the additional units of capital lead to a less than proportional increase in output; as a constant share of output is invested, there will be a penalisation in the next period's growth rate of capital.

Using the extension of the neoclassical model made by Mankiw *et al.* (1992), which include human capital as an input in a Cobb-Douglas aggregate production function, logarithmising and deriving its intensive form in order to time and taking into account accumulation equations of physical and human capital, it is possible to

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<sup>3</sup> The *labour-augmenting* technical progress is exogenous, usually named as “*mana from heaven*”

<sup>4</sup>  $\frac{\partial x}{\partial t} = \dot{x}$  and  $\hat{x} \equiv \frac{\dot{x}}{x}$  with  $x = x(t)$ .



derive an equation for the growth rate of  $y$ . With a log-linearisation around the steady state,  $y^*$ , becomes<sup>5</sup>:

$$\frac{\dot{y}}{y} = -\lambda(\ln y - \ln y^*), \quad \lambda = (1 - \alpha - \phi)(n + \delta + g) \quad (1)$$

Equation 1 indicates that the growth rate of output depends linearly on the relative distance to the steady state.  $\lambda$  is the negative variation of the growth rate due to a 1% decrease in the relative distance to the equilibrium situation and that is why it is called the speed of convergence. This equation is also the theoretical support for the idea that the poorer countries grow faster than the richer ones. This is what is called beta convergence. It can be unconditional (or absolute) when this negative relationship between the growth rate and initial level of output per capita verifies without controlling for additional variables. However, as [equation:neo] makes explicit, it does not seem realistic to expect absolute convergence if the countries with an initially higher output per capita, for example, invest more in human or physical capital (in another words, if they have a higher  $y^*$ ). Conditional beta convergence accounts for this possibility, corresponding to the existence of the aforementioned negative relationship when structural parameters are controlled for. Finally, using Castellacci (2011)'s taxonomy, it can be established that there is unconditional Q convergence if quantile  $\tau$  shows a negative relationship between growth and the initial level; similarly to beta convergence, conditinal Q convergence corresponds to a negative sign of the relationship, addind the fact that steady state differences across countries are controlled for. In fact, the objective of this research is precisely related to enquiry the existence of Q convergence.

## 2.2 Beta convergence: empirical results

Solving the first order differential equation 1 implies the estimation of an empirical model given by<sup>6,7</sup>:

$$\Delta \ln y_{it} = \rho \ln y_{it-1} + X'_{it} \beta + Z'_{it} \gamma + \mu_i + \nu_t + \varepsilon_{it} \quad (2)$$

Where  $X$  is a tetra dimensional vector that includes the determinants of the steady state according to Mankiw *et al.* (1992): a constant, the logarithm of the investment

<sup>5</sup>  $\alpha$  and  $\phi$  are the elasticities of output with respect to physical and human capital, respectively.

<sup>6</sup> The equation is presented for a panel data structure because cross-section and time series are particular cases, implying the disappearance of the temporal or individual subscript, respectively.

<sup>7</sup> It is relevant to emphasize that equation 2 is a dynamic panel.

rates in physical and human capital; the logarithm of the effective depreciation rate. The addition of the variables that are included in  $\mathbf{Z}$  is associated with an *ad hoc* procedure, which is sometimes called as Barro regressions (Barro (1991)). Theoretically, adding  $\mathbf{Z}$  may be justified by the fact of being proxies of  $A(0)$ , the initial level of the total factor productivity. In fact, this variable “reflects not just technology but resource endowments, climate, institutions and so on” (Mankiw *et al.* (1992)). Therefore, the vector  $\mathbf{Z}$  will include a wide array of dimensions: political, social, institutional, ethnic, financial... Finally,  $\mu_i$  corresponds to an individual effect;  $v_t$  is a time-specific shock;  $\varepsilon_{it}$  is the panel idiosyncratic error term.

Taking into account the purpose of this research, it is relevant to carry out a systematisation of the main econometrical methodologies and results related to the estimation of these type of equations. The reference for this exposition is the “iron law” of convergence (Barro (2012)), which corresponds to an annual speed of convergence of 2%, derived from the Mankiw *et al.* (1992) model. On one hand, convergence studies that consider regions within a country point to the existence of unconditional beta convergence according to the this rate (Sala-i-Martin (1995); Barro and Sala-i-Martin [2004, chap. 11]<sup>8</sup>). This is substantiated by the fact that the individuals are subject to the same institutional and political framework. As a result, the differences in steady states should be minimal. Examples of samples considered are the states of the USA, Japan’s prefectures and other regions inside a country, like Canada or Australia<sup>9</sup>.

On the other hand, when the individuals are countries, usually there is no evidence of unconditional beta convergence for these heterogeneous groups, and even in more homogeneous groups the unconditional convergence found occurs at relatively low rates. One of the pioneer empirical studies is Baumol (1986), which concludes that there is convergence in labour productivity for a sample of 16 developed countries over the period. However, DeLong (1988) claims that the results suffer from a sample selection problem. In a recent study, Rodrik (2011) shows that there is convergence in labour productivity of the manufacturing sector in a sample composed of a wide and heterogeneous group of nations. A seminal paper is Mankiw *et al.* (1992) which, using ordinary least squares (OLS), found a speed of convergence around 2%, except for the OCDE subsample. Nevertheless, Canarella and Pollard (2003), considering a more recent period for this subsample, arrive at results that support the “iron law”.

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<sup>8</sup> This chapter is an update of Barro and Sala-i-Martin (1992).

<sup>9</sup> A summary of these results is reported in De La Fuente (2000).

The first panel approaches deal with individually idiosyncratic (country specific) effects by applying the Chamberlain (1983) estimator (Knight *et al.* (1993); Loayza (1994)). Besides, Islam (1995) also employs the fixed effects estimator. These three articles arrive at a speed of convergence around 5%, which favours a narrow definition of capital or open economy's models in the neoclassical context. However, there are econometric problems with the two panel methodologies described. Firstly, as the Chamberlain's estimator assume that the fixed effects and lagged dependent variable are function of the other independent variables, its validity relies on the assumption of strict exogeneity, which in this context is very questionable. Secondly, it is well known that the fixed effects estimator tends to underestimate the coefficient on the lagged dependent variable (Nickell (1981)<sup>10</sup>). Barro (2012) refers to this problem as the Hurwicz bias, due to the work of Hurwicz (1956). These problems are presented in Caselli *et al.* (1996), which solves the aforementioned problems by applying the GMM estimator proposed by Arellano and Bond (1991) to the estimation of a dynamic panel. The results show an even higher speed of convergence of roughly 10%.

However, when the dependent variable is persistent and the temporal dimension of the panel is relatively small, the instruments may be weak, as the first difference is weakly correlated with the level. Therefore, it is advisable to add some orthogonality restrictions related to the equation in first differences, using lagged levels as instruments (Arellano and Bover (1995); Blundell and Bond (1998)). Using this methodology, Bond *et al.* (2001) find a speed of convergence of 2%. Besides the fact that the econometric approach that seems the most robust favours the "iron law", Barro (2012) employs a slightly different approach to support the "legendary" value. In this article, the argumentation supporting the 2% value is precisely related to the expected bias from two different econometric techniques. The first one consists in applying OLS to a growth equation, controlling for a representative group of steady state proxies. Therefore, the expected underestimation of the speed of convergence due to omitted variable bias is reduced. The second is related to the fixed effects estimator when the temporal dimension of the panel is large, because the Hurwicz bias has a small magnitude. The dataset used for this purpose starts in the 19th century. Hence, as the first and second methods reveal respectively a 1.7% and 2.4% value for the convergent rate, the populational parameter will be in this interval<sup>11</sup>. Finally, Barro and Sala-i-Martin [2004, chap. 12] get to similar results.

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<sup>10</sup>The fixed effects estimator applies OLS to the transformed equation (ignoring the time effect):  $\ln y_{it} - \ln \bar{y}_i = (\mathbf{1} + \rho)(\ln y_{it-1} - \ln \bar{y}_i) + (X'_{it} - \bar{X}'_i)\beta + Z'_{it}\gamma + (\varepsilon_{it} - \bar{\varepsilon}_i)$ , where  $\bar{\varepsilon}_i = \frac{1}{n} \sum_{t=1}^T \varepsilon_{it}$ . It can be shown that  $\text{Cov}[(\ln y_{it-1} - \ln \bar{y}_i), (\varepsilon_{it} - \bar{\varepsilon}_i)] \neq 0$ .

<sup>11</sup>Bond *et al.* (2001) also show that the Arellano and Bond (1991) estimator lies outside this interval.

### 3. CONVERGENCE EMPIRICS: DATA AND METHODOLOGY

#### 3.1 Dataset and descriptive analysis

The majority of the data comes from the version 8.0 of the Penn World Tables (PWT) (Feenstra *et al.* (2013)). This version introduces measures of the relative prices of exports and imports, which allows to compute Gross Domestic Product (GDP) according to the supply (*rgdpo*) and demand (*rgdpe*) optics. Taking into account the theoretical basis, we use the supply variable, as it is a better proxy for the production function. Moreover, PWT 8.0 adds a proxy for physical capital that in conjunction with an index for human capital enables the computation of a total factor productivity index. Finally, as this version includes all international comparisons programs, there can be substantial differences between the GDP growth rate implied and the one derived from national accounts (*rgdpna*). Therefore, Feenstra *et al.* (2013) suggest using the national data in when working with growth rates.

If in the next section the purpose is to analyse the effects of the covariates on the quantiles of the conditional density function, in this one the goal is to analyse the same characteristics for the unconditional density function of GDP per capita. This characterisation will be done in three dimensions: firstly, a non parametric estimation of the density function; secondly, the materialisation of the shape by computing means, standard deviations, quantiles and normality tests; thirdly, a approach that allows the analysis of intradistributional dynamics, consisting in the construction of transition matrixes.

The final sample includes 99 countries. PWT 8.0 makes available data for 167 countries, but we exclude some nations because of three reasons: data missing after 1970; a population below one million during the majority of the time horizon; an oil rent above 20% of GDP<sup>12</sup>. The last two reasons endeavour to rule out countries whose forces driving the allocation of resources in the economy are different from the ones implicit in the theoretical background.

In order to have the distribution of a long term component of the logarithm of output per capita, ten-year averages were taken as a simple way to expurgate cyclical components (for the years 1971-80, 1981-90, 1991-00 and 2001-10)<sup>13</sup>. This is especially relevant when the world business cycle is not synchronised,

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<sup>12</sup> This variable was downloaded from the World Bank dataset. The choice of the 20% threshold was based on the reasonability of the value.

<sup>13</sup> For convenience of designation, one of the dates in the middle of the decade will refer to the period: 1976, 1986, 1996 and 2006.

which would lead to distortions in the shape of long term GDP per capita's distribution. The variable was not divided by a "reference value" in order to compute a other one without a "natural" positive trend<sup>14</sup> because this way sigma convergence can be directly assessed, as well as the average growth rate of GDP per capita.

The visualisation of the evolution of the estimated density graphics (Figure 4) reveals that in the 70's there are almost three peaks. However, as we move further ahead in time, the first peak shows a dillution with the consolitation of the one associated with higher incomes. Therefore, the general picture clearly reveals that there is a trend for the probabilistic mass not to be concentrated in a convex interval.

As can be concluded by the constant proximity between the mean and the median (Table 1), the ratio between the third centered sample moment and the cubed standard error confirms that there is not a significant skeweness. In terms of kurtosis, the sectional density function of per capita GDP tends to be platikurtic. These two statistics are the basis to construct the Jarque-Bera normality test. Taking into account that the values are not too far away from the ones of a Gaussian distribution, this test indicates the non rejection of the null hypothesis. Nonetheless, changing the approach to a test that compares the empirical distribution function with the corresponding theoretical Gaussian (Anderson-Darling), confirms the first impression that comes from the analysis of Figure [figure:densw], that is, the hypothesis that it follows a normal law is clearly rejected. This aspect reveals that the sectional density deviates from the Gaussian one not in terms of skewness and kurtosis, but instead in the bimodal shape.

Moreover, the standard error of the logarithm of output per capita increased throughout the period of the analysis (Table 1), which shows that there was not sigma convergence<sup>15</sup>. The mean of the sectional distribution had a modest evolution, showing a slight acceleration over the last decade, changing from 1% to 2%. Nonetheless, as this is a growth rate for a ten-years period, some countries must have experienced anemic or even negative growth. Indeed, this feature is confirmed by noting that the first decile is almost constant during the whole period. Besides, until the fourth decile there is a trend for the quantiles to remain static.

The general picture given by the transition matrixes<sup>16</sup> (Tables 2, 3 e 4) reveals a relatively low intradistributional mobility, as it can be seen by the diagonal

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<sup>14</sup> As an example, Quah (1997) divides by the average global GDP, whereas Jones (1997) puts in the denominator the GDP per capita of the United States.

<sup>15</sup> The standard deviations are corrected.

<sup>16</sup> See Appendix 1 for the methodology of computation of these matrixes.

elements, whose value is always larger than any other element of the same row. Beyond that, it can also be concluded that the countries belonging to the tails have a higher persistence in their relative position. At first sight, this deduction may seem tautologic, as a country on the extremes of the distribution have its possible moves truncated, because if it is on the first (last) decile, and has grown below (above) the average, it will necessarily remain on that quantile, but if we take into account the results of Quah (1997), this evidence is supportive of the idea that the extremes show higher persistence. The Spearman test (Table 5), which analyses the statistical significance of ranking correlation, clearly rejects the null hypothesis of independence in relative positions. In other words, the persistence of the rankings is very high, with a test statistic very close to one, which demonstrates that the intradistributional mobility is low. If these results are taken at the same time as the fact that the initial quantiles remained static, it can be concluded that there is a group of poor countries not (unconditionally) converging. The following section will confirm this idea.

Up until now, all the statistical descriptive approaches undertaken aimed to describe and analyse the distribution of the levels of the logarithm of output per capita. In order to conclude this descriptive analysis, it is relevant to have a general picture of the growth rates. To achieve this goal, the time period was divided into two subperiods of equal length. For each one, the average growth rate was computed and plotted in a scatter plot, whose X and Y labels are the first and second subperiods growth rates, respectively. The points are not consistently close to the bisection of odd quadrants, which reveals the inexistence of persistence in the growth rates (Figure 5). There is a concentration of values in the first quadrant, above the bisection. As the members of this group are mostly developed countries, this reveals a growth slowdown in the second subperiod. Some countries to highlight are the very well performing Asian Tigers and, at the other extreme, some nations with negative rates in both periods, which belong mostly to Africa.

### **3.2 Galton Fallacy and Quantile Regression**

Despite the consistent empirical results on conditional beta convergence, some important criticisms have been raised to the classical approach to real convergence (Sala-i-Martin (1995)). Firstly, a negative and statistically significant relationship between the growth rate of output and its initial level does not necessarily imply that there is a unique steady state. This objection is reported in Durlauf and Quah (1998) or Durlauf (2003), based on the Azariadis and Drazen (1990) model, in which the production function contains thresholds effects. For example, if there are two steady states, and the richer (poorer) countries are above (below) then equilibrium situation, in the convergence dynamics the richer (poorer) nations will grow slower (faster) than the average and an OLS regression will find a negative

and (possibly) statistically significant coefficient on initial output. This situation demonstrates that interpreting beta convergence as an empirical support for the neoclassical growth model might be misleading, as what occurs in the population might in fact correspond to club convergence. Durlauf and Johnson (1995) address this issue by using a regression tree approach, a method which deals with coefficients heterogeneity. They conclude that there is statistical evidence supporting the fact that country subgroups have different parameters, with the low-income countries revealing a high convergence rate whereas there is no convergence among the richer ones.

On the other hand, beta convergence analyses the intradistributional dynamics of output per capita and does not tackle the issue of the evolution of the sectional density function of this variable, which is demonstrated by the relationship between beta and sigma convergence<sup>17</sup>. In fact, even if there is a negative impact of the initial level of output on its growth rate, there can be an increasing dispersion of output per capita over time. Although beta convergence constitutes a “force” for the approximation of living standards, its variance is also influenced by random shocks. One example is a situation where the poorer countries grow faster than the richer ones in such a magnitude that the former leapfrog the latter and the absolute value of the differential between the groups increases. This is the so called Galton Fallacy, whose name is due to the fact that Galton (1886) discovered that the sons of taller (smaller) than the average parents tend to be shorter (taller) than them and, simultaneously, that the dispersion of heights did not decrease across generations<sup>18</sup>. The intuitive explanation given above shows that the two empirical facts are not contradictory<sup>19</sup>.

Finally, the results presented so far are the result of applying conditional mean approaches, that infer the behaviour of the average individual, ignoring the marginal effects on the other parts of the conditional density function<sup>20</sup>. Quantile

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<sup>17</sup> Taking into account that beta convergence is a necessary but not sufficient condition to the reduction of the dispersion of output per capita (Barro and Sala-i-Martin (1992)), the concept of sigma convergence aims to address directly this aspect and corresponds to a decrease over time of the standard deviation of the logarithm output per capita.

<sup>18</sup> An alternative to expose this aspect is presented in Quah (1993a): supposing that the cross-sectional distribution of output per capita is invariant, it is showed that a beta convergence regression will necessarily find a negative coefficient. Durlauf and Quah (1998) present a similar argumentation.

<sup>19</sup> Another criticism associated with the skepticism about the “iron law” can be found in Quah (1995). The author calls it a “magic value”, showing that one can not exclude the hypothesis that it is just not centric estimative, due to a small sample bias.

<sup>20</sup> Quah (1997) reinforces and confirms this evidence. Quah (1993b) proposes solving this issue by estimating a (time-constant) transition matrix, which reports the probabilities of a country to stay in its income interval or move to another. The main result is associated with

regression tackles this question, whose function to minimise to obtain the estimated regression for the conditional quantile  $\xi_\tau$  of  $y_{it}$  corresponds to the following formula:

$$\hat{\beta}(\tau) = \underset{\beta}{\operatorname{argmin}} \sum_{i=1}^n \sum_{t=1}^T \rho_\tau(y_{it} - \xi(x_{it}, \beta)) \quad (3)$$

Where  $\rho_\tau(\cdot)$  is the "check function"<sup>21</sup>. Proposed by Koenker and Basset (1978), this methodology seeks to estimate the evolution of the quantile  $\tau$  of the density function of the dependent variable  $y$ , conditional on the values of  $x$ <sup>22</sup>.

When the error term fullfills all the classical linear model assumptions, there is a "stability" of the conditional density function and consequently quantile regression will be redundant, because the only parameter different from the conditional mean will be the intercept<sup>23</sup>. On the other hand, if the variance of the error term is a function of the covariates, that is, if there is heteroskedasticity, the marginal effects on the mean will differ from the ones on the quantiles. However, this is just a particular case, as there can be changes in the skewness or any other not conventional shift of the probabilistic mass.

The computation of the estimates across the quantiles allows us to trace the evolution of the conditional density function resulting from changes in the covariates. The interpretation of the estimated coefficients, *mutatis mutandis*, is similar to the one for the conditional mean<sup>24</sup>. Thus, this methodology can identify the existence of differences in the marginal effects depending on the quantile and is therefore a method to address the problem of coefficients heterogeneity. Besides, as it is the result of a weighted sum of the absolute value of the residuals, it is robust to outliers. Finally, this methodology will also be more efficient than OLS if the iid error term assumption is violated, for example, when the error term's distribution is heavy tailed.

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the trend for poor countries to remain poor and the rich to remain rich; on the other hand, the medium-income nations have a high probability to move. Consequently, there would be a trend for the bimodal distribution of output per capita to become more pronounced.

<sup>21</sup>  $\rho_\tau(u) = u(\tau - I(u < 0))$ .

<sup>22</sup>  $Q_y(\tau | x) = \inf\{y: F(y | x) \geq \tau\}$ , where

$F(y | x) = P(Y \leq y | X = x) = \int_{-\infty}^y f(t | x) dt$ .

<sup>23</sup> Koenker [2005, chap. 2] calls location-shift to this model, in contrast with the location-scale, where the marginal effects differ across the quantiles, as a result of a linear heteroskedasticity pattern.

<sup>24</sup> See Koenker e Hallock (2001) for empirical applications of quatile regression, as well as the interpretation of the coefficients.



The main results concerning the application of quantile regression to the economic growth context tend to be relatively consistent (e. g. Mello and Novo (2002); Mello and Perrelli (2003); Canarella and Pollard (2004)). In the framework of the neoclassical growth model, there is a trend for the countries in the upper quantiles to show a faster speed of convergence, irrespective of the additional covariates<sup>25</sup>. When no other variables are controlled for, the pattern described continues to exist, although the initial quantiles do not converge. Within the convergence taxonomy presented above, the literature results point out for the existence of Q conditional convergence for all quantiles and the absence of absolute Q convergence for the first quantiles. Barreto and Hughes (2004) apply an approach similar to Levine and Renelt (1992) in the quantile regression framework. Although in the extreme quantiles there are some models in which there is not a statistically significant relationship between growth of output and its initial level, if a less strict definition is considered, it can be concluded that there is robust conditional Q convergence for all quantiles<sup>26</sup>. Crespo-Cuaresma (2011) join quantile regression and the bayesian approach in a study applied to the regions of the European Union, concluding that the posterior probability of the inclusion of the initial level of output per capita is one. Nonetheless, these results are fragile in the sense that they remain statistically significant only if fixed effects are not controlled for.

A panel dataset allows for an increase in the number of observations and to control for fixed effects. Owing to the fact that the mathematical expectation is a linear operator, the usual econometric methodologies aiming at eliminating the individual-idiosyncratic effects (either by taking the differential with the time mean for each individual or first differences) cannot be used in quantile regression, since quantiles are not linear operators. Koenker (2004) constitutes the pioneer research in this area, proposing an estimator that assumes a constant effect of the individual characteristics across the quantiles. This assumption is especially important when the panel has a relatively large number of individuals (and a small time dimension). Moreover, as there might be problems in letting the fixed effects float freely,

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<sup>25</sup> Despite the fact that the dependent variable is the average growth rate of GDP per capita, this interpretation can be done because the majority of the studies uses a cross-section dataset. When the estimation is based on a panel dataset, the transposition needs to be more careful. On the other hand, even in some situations the interpretation from the country perspective may be incorrect, because what is inferred is the evolution of the quantile, which does not imply that the country will remain in that quantile. As an example, if one concludes that a quantile will remain static to changes in the independent variables, that does not mean that the country belonging to that quantile will remain in that relative position (Buchinsky (1998)). Nevertheless, the conclusion that there is persistence in the rankings of the countries enables us to do this interpretation.

<sup>26</sup> Other examples of quantile regression applied to economic growth are Osborne (2006), Saçildi (2009) and Ram (2008).

Koenker (2004) also proposes a penalisation term, that is, a “force” for a shrinkage in the fixed effects.

A computationally simpler alternative is related to the following deduction: if the fixed effects do not vary with the quantile, then the conditional mean estimator is equal to the quantile regression one. Therefore, the fixed effects can be estimated by a conditional mean approach and then apply a pooled quantile regression to the regression with the dependent variable expurgated from the estimated fixed effect. This approach was proposed by Canay (2011) and will be the one applied in this research, as well as pooled quantile regression, which simply ignores the fixed effects.

The research economic growth studies using quantile regression in a panel framework are scarce. Osborne (2006) and Foster (2004) are two examples. These articles do not focus on the convergence coefficient, neither control for fixed effects. Finally, a study that applies the Canay (2011)’s estimator to a 14-EU members sample is Andrade *et al.* (2011), with results similar to the aforementioned pattern, although the differences with the conditional mean seem to be not significant.

### 3.3 Empirical model

The econometric equation to be estimated is a hybrid between the one that comes from the theoretical development of the Augmented Slow model and the Barro growth regressions:

$$\frac{\Delta \ln y_{it}}{T} = \beta_0 + \beta_1 \ln y_{it-1} + \beta_2 \ln sk_{it} + \beta_3 \ln g_{it} + \beta_4 \ln sh2_{it} + \beta'_{[5-p]} Z_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

Where the dependent variable consists in the T-year average growth rate of output per capita; the four independent variables discriminated are three steady state determinants, following directly from the Augmented neoclassical model: the logarithm of the T-year average of the gross physical capital share on GDP (*lsk*) and gross enrollment rate in secondary school (*lsh2*), as well as the logarithm of the sum of the T-average of population growth rate and depreciation of physical capital (*lng*). The fourth variable and the most relevant for this study is the logarithm of initial output per capita, whose coefficient is the approximate value of the speed of convergence<sup>27</sup>. The variables included in vector *Z* will be

<sup>27</sup>As the equation to be estimated is the discrete-time version of the continuous-time theoretical one whose the speed of convergence concept comes from, the implied convergence rate is roughly equal to the coefficient on the initial output. A more rigorous

representative of the most important dimensions that prove to statistically influence growth. The benchmark studies for this choice are Barro and Sala-i-Martin [2004, chap. 12] and Barro (2012)<sup>28</sup>.

The data structure is panel and the T chosen was 5. There is not a theoretical prediction for the optimum value of T (Durlauf *et al.* (2004)). This choice is based on the references used, resulting from the trade-off between the expurgation of the cyclical component and the time dimension of the panel. To sum up, as the temporal horizon is 1970-2010, the panel structure consists of 8 time observations for each of the 99 countries<sup>29</sup>. Finally, since controlling for time-specific effects could lead to a excessive loss of degrees of freedom, it seems imperative to control for the possible effects of the recent crisis. Thus, a dummy variable for the last period was added. In this way, quantile regression can even distinguish a potential differential of the crisis impact on the countries situated in the conditional density function.

## 4. RESULTS

### 4.1 Unconditional convergence

The first equation to be estimated refers to Q unconditional convergence, that is, consists in a regression of the average growth rate of output per capita on its initial level. The same equation was estimated controlling for fixed effects, employing Canay (2011)'s estimator<sup>30</sup>. One of the most relevant tests to be carried out is a test of the equality of the coefficients for the several quantiles. Thus, one can statistically infer whether quantile regression is redundant when compared to conditional mean approaches. Figure [figure:qu] contains the evolution of the estimated coefficient across the quantiles (black line), with the respective 5% confidence interval (shaded grey area), contrasted with the conditional mean estimates (red line) and its confidence interval (red dashed lines).

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interpretation would lead us to derive  $\hat{\lambda} = -\frac{(\ln(1 - \hat{\beta}_1 T))}{T}$  and estimate its standard error

through the delta method.

<sup>28</sup> See Annex 1 for a description of the variables.

<sup>29</sup> See Annex 2 for the list of countries.

<sup>30</sup> See Appendix 2 for the standard error computation methodology.

**Figure 1. Coefficient on the initial output, Q unconditional convergence, with and without controlling for fixed effects.**

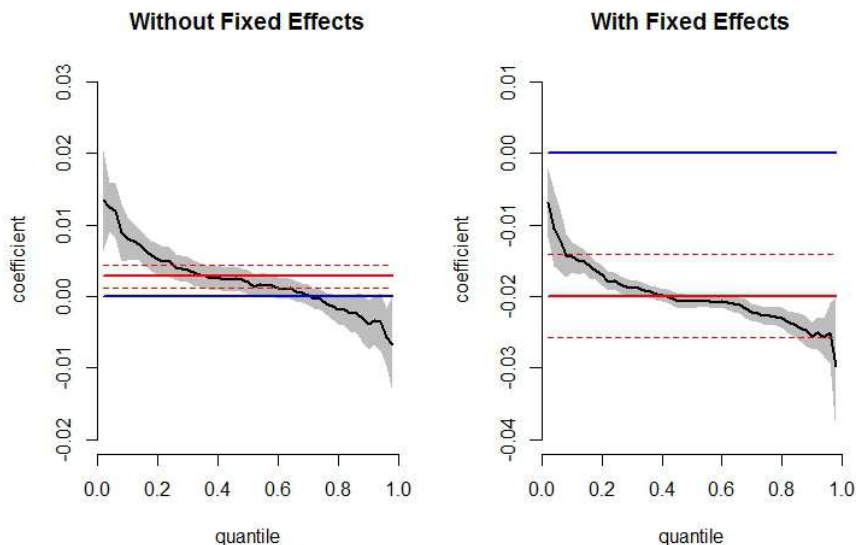


Table 6 presents the values of the coefficients on initial output, with and without controlling for fixed effects. First, the general pattern found on the literature is confirmed: as we move across the quantiles, the initial output coefficient decreases (Figure 1). The results for the conditional mean point to the absence of unconditional beta convergence. The same qualitative result occurs for the quantiles below the median, with the last ones showing a negative relationship, but only at the 10% significance level. Therefore, unconditional Q convergence applies to the upper quantiles, albeit occurring at a low speed.

The consideration of fixed effects shows a very different picture ((Figure 1). If we assume that changes in a country's steady state over time are not big, controlling for individual-specific effects in a way of expurgating steady state differentials and, consequently, the estimated coefficient will already be close to the populational value, even without adding other covariates. This aspect is supported by the rejection of the null hypothesis of jointly insignificant individual effects (Table 7) In fact, the results for the conditional mean point to a speed of convergence close to the iron law (Table 6). On the other hand, this convergence to the mean corresponds to an approximation to the steady state that is faster in the upper tail of the conditional density function.

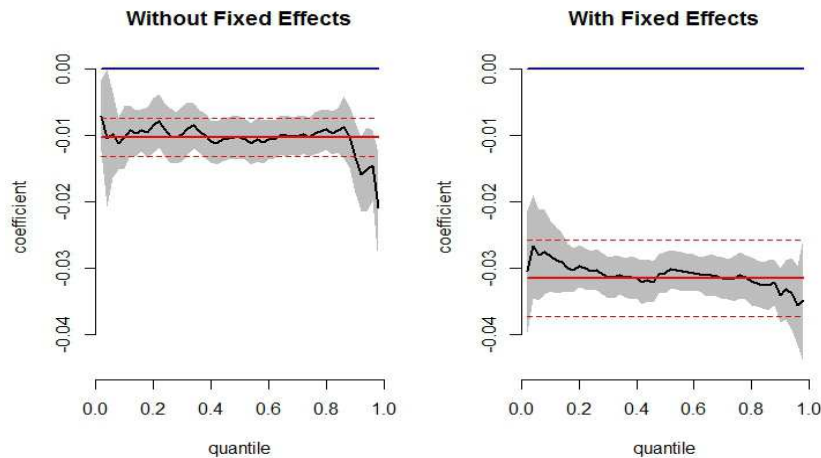
## 4.2 CONDITIONAL CONVERGENCE

In order to get to a parsimonious equation, all variables that are representative of steady state determinants were initially included but were discarded if their coefficients were not statistically significant. However, some variables were kept in the equation even if this happened due to its theoretical relevance or to the interesting pattern across quantiles.

The results for the estimation of the pooled quantile regression (Figure 6) show what was expected when compared to the one that did not include steady state proxies: there is a drop in the convergence coefficient to a value around 1% (Table 8; Figure 2). Moreover, the decreasing pattern found for Q unconditional convergence is much less pronounced, which is supported by the fact that the null of coefficients equality is not rejected.

However, it is more correct to analyse the results that control for fixed effects, as they are jointly statistically significant (Table 7). Similarly to what happened without taking into account the individual-idiosyncratic effects, the decreasing pattern becomes smoother (Figure 2), in such a way that not only the equality of the slope of the initial output is not rejected, but also none of the other coefficients is significantly different across the benchmark quantiles (Table 9).

**Figure 2. Coefficient on the initial output, Q conditional convergence, with and without controlling for fixed effects.**



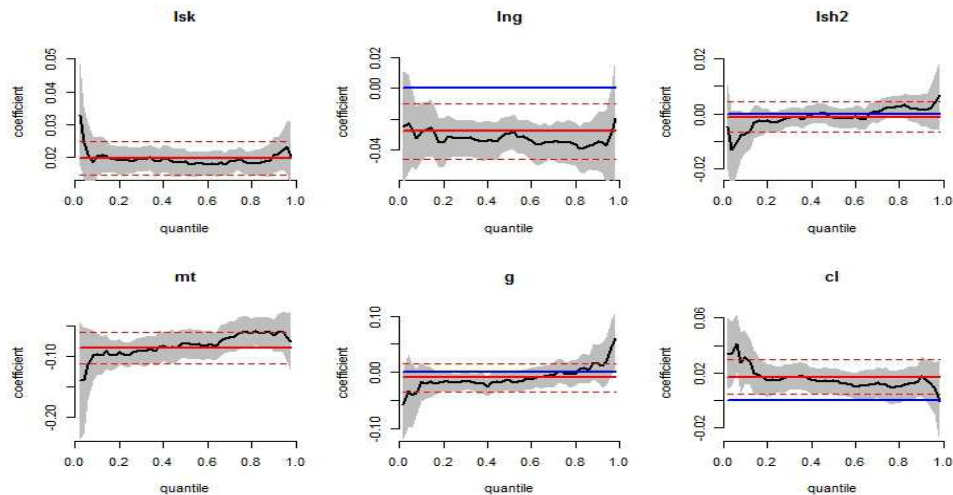
Nevertheless, the decreasing pattern continues to exist, therefore showing that the countries on the upper quantiles of the conditional density function are converging faster to their respective steady states. There is conditional Q convergence for all

quantiles and the implied speed of convergence is around 3% (Table 9). Curiously (or not), the iron law is the middle point between the approaches with and without controlling for fixed effects.

Although this study focuses on the coefficient of the initial output per capita, it is relevant to analyse the results for the remaining covariates (Tables 8 and 9; Figures 3 and 6). The investment rate in physical capital (*Isk*) has a positive impact on economic growth and is one of the variables whose marginal effect on the dependent variable is more stable across quantiles. The logarithm of the effective depreciation also presents a coefficient with the expected signal and showing statistical significance. Conversely, the other steady state proxy that follows directly from the Augmented Solow model, the logarithm of the gross enrollment rate in secondary school, (*Ish2*)<sup>31</sup> is not statistically significant. On the contrary, the mortality rate (*mt*) has a negative and statistically significant coefficient, with a slightly increasing trend as we move across the quantiles (from left to right). Thus, the negative impact of mortality on growth is more detrimental in the lower quantiles.

One variable that shows an interesting result is the ratio of public consumption to GDP (*g*), which has a negative impact on the lower quantiles and a positive on the upper ones.

**Figure 3. Estimated coefficients for the remaining covariates in the Q conditional convergence model, controlling for fixed effects.**



<sup>31</sup> The same for primary school shows similar results.

In this framework, the economic interpretation can be based on the two opposite effects that public expenses have on economic growth, either by promoting a better allocation of resources by overcoming market failures or by a negative effect deriving from the taxes necessary to finance the fiscal budget. Therefore, we can conclude that as we move upwards in the conditional density function, the positive effect becomes larger whereas the negative one shrinks<sup>32</sup>.

Other variable that reveals a “charm of variety” pattern is the proxy for the institutional and political system. The civil liberties index (*cl*) was the variable included<sup>33</sup>, which is a variable constructed by a score given to the citizens’ freedom to invest or organise. Whilst the conditional mean coefficient is positive and marginally significant, the influence of this variable on growth is stronger at the lower quantiles. In a certain way, these results can be interpreted in the framework of the possible non-linearities between democracy and growth (Barro (2012)): if the observations associated with the left tail show an institutional and political system underdeveloped, an increment in this index will have a higher potential to boost investment in assets intrinsically more productive, thereby promoting growth<sup>34</sup>.

Finally, Annex 1 presents a list of other variables that were tested, but that revealed not to be statistically significant in any quantile. In this group, we have the dummy for the last subperiod. Hence, we failed to prove that the financial crisis has led to a decrease in long-term growth. Nevertheless, this aspect may be due to the fact that the sample’s time span finishes in 2010 and consequently the few observations post-crisis may lead to the lack of significance of the dummy that captures it.

### 4.3 And what about Galton?

As aforementioned, none of the variables in Q conditional convergence regressions that control for fixed effects reveal marginal effects statistically different between each other among the benchmark quantiles. Nonetheless, the failure to reject the null hypothesis may be due to the fact that this methodology estimates a constant for each country, leading to a great loss in the degrees of freedom and associated

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<sup>32</sup>It is important to note that this is just an empirical interpretation, as there is not any theoretical prediction in this context.

<sup>33</sup> The other two variables for the same dimension (*pr* and *pol2*) show a similar pattern, albeit slightly less pronounced.

<sup>34</sup> It is interesting to reflect on the different ways to address non-linearities: quadratic specifications and interaction terms comprise marginal effects that depend on the level of the underlying independent variable or another one, respectively; on the other hand, quantile regression enquires a marginal effect that varies according to the location of the dependent variable in the conditional density function.

increase in the variance of the estimator. Moreover, the results of the test will also depend on the quantiles chosen and in the level of desaggregation of the test, that is, if it is undertaken for all quantiles or two by two. Additionally, the fact that Q unconditional convergence occurs at statistically different speeds, as well as the persistence of the decreasing pattern for conditional Q convergence and the similar results in the majority of the consulted investigation reveal that it is important to look with further detail for the relationship between beta sigma and Q convergence.

Is the discover of conditional Q convergence for all quantiles inconsistent with Galton Fallacy? Is the non existence of sigma convergence compatible with Q convergence? Intuitively, if the countries associated with the upper quantiles have an higher steady state, then the increasing dispersion of product per capita may be coherent with different convergence rates. Thus, the stretch of the right tail will cause the aforementioned decreasing pattern and the increase in the variance.

In order to better understand this relationship, it is relevant to carry out a theoretical exercise analogous to the one used to explain that beta convergence is a necessary but not sufficient condition for sigma convergence. To achieve this goal, assume an equation where the dependent variable is the level (and no the first difference) of the logarithm of product per capita. The existence of a differential in the speed of convergence can be materialised in an heteroskedasticity pattern:

$$y_{it} = \alpha + \beta y_{it-1} + h(y_{it-1})\varepsilon_{it} \quad (5)$$

As the unconditional variance of  $y$  in the period  $t$  is equal to the expectation of the conditional variance plus the variance of the conditional expectation (Greene (2012)), comes:

$$Var(y_t) = E[Var(y_t | y_{t-1})] + Var[E(y_t | y_{t-1})] = E[h(y_{t-1})^2]\sigma_\varepsilon^2 + \beta^2\sigma_{t-1}^2 \quad (6)$$

A brief note for the fact that the usual analysis is a particular case, with  $h(y_{t-1}) = 1$ . In order go further and take some additional conclusions, a linear heteroskedasticity pattern is assumed,  $h(y_{t-1}) = \delta + \gamma y_{t-1}$ , implying:

$$\sigma_t^2 = \beta^2\sigma_{t-1}^2 + \sigma_\varepsilon^2[\delta + \gamma E(y_{t-1})]^2 + \gamma^2\sigma_\varepsilon^2\sigma_{t-1}^2 \quad (7)$$

Therefore, heteroskedasticity leads to two alterations in the unconditional variance formula: firstly, the average level of the lagged GDP per capita will influence the "equilibrium value" of the error variance; secondly, an interaction term between the two variances appears. Hence, it can be concluded that Q convergence is consistent with the non existence of sigma convergence. Moreover, the signal of  $\gamma$



only influences the first aspect and if it is positive, then a time-increasing mean of the independent variable will cause an higher dispersion of the random shocks. Assuming that the cross-section sample is sufficiently large so that its mean is close to the populational value (Barro e Sala-i-Martin (1992)), then the increase in the unconditional mean confirms, in this context, the non existence of sigma convergence.

It is relevant to emphasise that the assumption of a linear heteroskedasticity pattern, as well as the materialisation of the differential in marginal effects in a conditional variance that depends on the covariates are just a possible explanation adopted to shed light on the relationship between the convergence concepts.

## 5. CONCLUSION

This study's main contributions are related to the estimation of growth regressions using the version 8.0 of PWT and applying quantile regression in a panel dataset, which allows to control for fixed effects. After a theoretical and empirical review of the literature, growth regressions have been estimated by pooled quantile regression and Canay's (2011) methodology. The results show that there is unconditional Q convergence for the upper quantiles of the output growth rate conditional distribution, although it occurs at a low speed. Moreover, the coefficient on the initial output seems to show a decreasing pattern, that is, the upper quantiles are converging faster to the respective steady states. Nonetheless, this pattern becomes smoother when we control for steady state proxies. Finally, there is conditional Q convergence for all quantiles and the iron law of convergence is the medium value between the two econometric approaches applied. Also, the descriptive statistic analysis shows some interesting conclusions. The cross sectional density function of output per capita is bimodal, with a consolidation over time of the peak associated with higher incomes. Moreover, the lower quantiles have remained static over the period under analysis. Taking into account the very high ranking persistence shown by the transition matrixes and the Spearman test, there is a group of poor countries that are not (unconditionally) converging. This is confirmed by the fact that there is not unconditional Q convergence for the lower quantiles. Finally, the last theoretical exercise has shown that Q convergence is consistent with the non existence of sigma convergence.

Since the 18th century that the "battle" between ordinary least squares and least absolute deviations exist. Relevant criticisms have been pointed out to the latter until the present (Koenker[2005, chap.1]). Moreover, Koenker (2005), quoting Galton (1886) refers the ability of the quantile regression to look at a "charm of variety" that conditional mean approaches do not tackle. Quantile regression not

only can provide additional information of the causal relationships beyond the conditional mean, but is also relevant to use this information as a way to propose policy measures aiming at improving more effectively the living standards.

## APPENDIX

The methodology employed for the construction of the transition matrixes was based on the relationship between quantiles and rankings. Let  $\{y_{it}\}_{i=1}^n$  be a vector with the  $n$  cross-sectional observations for the period  $t$  and  $\zeta = \{\tau_0, \tau_1, \dots, \tau_p, \tau_{p+1}\}$  of quantiles where there will be the “partitioning”, with  $\tau_0 = 0$  and  $\tau_{p+1} = 1$ . Hence, the  $p - dimensional$  transition matrix  $t$  will have as a generic element:

$$\{t_{kj}\} = \sum_{k=1}^{p+1} \sum_{j=1}^{p+1} \sum_{i=1}^n I\left(\tau_{k-1} < \frac{r_{it}-1}{n} \leq \tau_k \wedge \tau_{j-1} < \frac{r_{it}}{n} \leq \tau_j\right) \quad (8)$$

Where  $r_{it}$  is the ranking of  $y_{it}$  ( $r_{it} = \sum_{i=1, i \neq t}^n I(y_{it} < y_{it}) + \frac{1}{2} I(y_{it} = y_{it})$ ). In order to put the elements in percentage, each one was divided by the sum of the elements of each row:

$$\{t_{kj}^*\} = \frac{\{t_{kj}\}}{\sum_{i=1}^{p+1} \{t_{ij}\}} \quad (9)$$

The computation of the approach that controls for fixed effect was based in the script for the **R** software made available by the author (Canay (2011)) in his personal website. Canay (2011) proposes two alternatives to estimate the variance-covariance (VCV) matrix: one is based on the asymptotic VCV and the other consists in the bootstrap. The approach followed was the latter, as it is easier to compute the VCV matrix for coefficients of different quantiles.

Having the several bootstrap estimates, the matrix VCV can be computed:

$$\hat{\Sigma} = \frac{1}{R} \sum_{i=1}^R (\beta_i^* - \bar{\beta}^*)(\beta_i^* - \bar{\beta}^*)' = \beta^* M^0 \beta^{*'} \quad (10)$$

Where  $R$  is the number of replications,  $\beta_i^* = [\beta_i^*(\tau_1)' \beta_i^*(\tau_2)' \dots \beta_i^*(\tau_p)']'$  and  $M^0$  is a simetric matrix that creates deviations between the element and the mean of the column. The choice of  $R$  was an *ad hoc* procediture, being 1000 for the tables presented and 200 for the graphics, due to the computational time required. The standard-errors presented are the square root of the diagonal elements of the VCV matrix and the confidence intervals presented are based on the assumption of

asymptotic normality of the estimator. Once we have the VCV matrix for the several quantiles, it is possible to implement the Wald test (Koenker e Basset (1982a, 1982b); Koenker [2005, cap. 3]; Greene (2012)) for the equality of coefficients across the quantiles. In order to test the null hypothesis  $H_0: C\beta = r$ , the test statistic is:

$$(C\hat{\beta} - r)'[C\hat{\Sigma}C']^{-1}(C\hat{\beta} - r) \stackrel{d}{\approx} \chi_q^2 \quad (11)$$

Where  $q$  is the rank of  $C$ . The estimations without controlling for fixed effects use the package presented in Koenker (2012a, 2012b). The standard-errors are estimated by the design matrix bootstrap, as it proves to be the best performing way (Buchinsky (1998)) and to be in consonance with the procedures that control for fixed effects.

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## Annexes

## Annex 1 - Variables, definition and source.

Notation	Description	Source
$\Delta \ln y$	Average growth rate of output per capita (GDP measured by the national accounts ( <i>rgdpna</i> ))	PWT 8.0
<i>lyi</i>	Logarithm of the output per capita in the initial period ( <i>rgdpo</i> )	PWT 8.0
<i>lsk</i>	Logarithm of the ratio of gross capital formation to GDP	PWT 8.0
<i>lng</i>	Logarithm of the sum between the population growth rate and 0.05 (benchmark value for the sum between the depreciation rate and technical progress)	PWT 8.0
<i>lsh1; lsh2</i>	Logarithm of the gross enrollment rates in primary and secondary school, respectively	World Bank and CANA
<i>mt</i>	Mortality rate, measured as the reciprocal of the life expectancy at birth	World Bank
<i>infe</i>	Average inflation, based on the price index for GDP (demand approach, <i>rgdpc</i> )	World Bank
<i>open</i>	Degree of openness, measured as the ratio between exports plus imports to GDP	PWT 8.0
<i>tt</i>	Average growth rate of the real exchange rate, measured as the ratio between the price level of imports and exports	PWT 8.0
<i>g</i>	Ratio of public consumption to GDP	PWT 8.0
<i>cl</i>	Civil liberties index	Freedom House
<i>pr</i>	Political rights index	Freedom House
<i>pol2</i>	Intensity of democracy index	Polity 4
<i>dum10</i>	Binary variable which equals 1 if the quinquennium is 2006-2010, and 0 otherwise	

Notes: The data the enrollment rates was occasionally imputed for some African countries by linear interpolation.

## Annex 2 - Countries in the sample.

Countries				
Albania	Colombia	Indonesia	Morocco	South Africa
Argentina	Congo, Dem. Rep.	Ireland	Mozambique	Spain
Australia	Costa Rica	Israel	Namibia	Sri Lanka
Austria	Cote d'Ivoire	Italy	Nepal	Sudan
Bangladesh	Denmark	Jamaica	Netherlands	Sweden
Belgium	Dominican Republic	Japan	New Zealand	Switzerland
Benin	Egypt	Jordan	Niger	Taiwan
Bolivia	El Salvador	Kenya	Norway	Tanzania
Botswana	Ethiopia	Korea, Republic of	Pakistan	Thailand
Brazil	Finland	Laos	Panama	Togo
Bulgaria	France	Lebanon	Paraguay	Tunisia
Burkina Faso	Gambia, The	Lesotho	Peru	Turkey
Burundi	Germany	Madagascar	Philippines	Uganda
Cambodia	Ghana	Malawi	Poland	United Kingdom
Cameroon	Greece	Malaysia	Portugal	United States
Canada	Guatemala	Mali	Romania	Uruguay
Central African Republic	Guinea	Mauritania	Rwanda	Vietnam
Chad	Honduras	Mauritius	Senegal	Zambia
Chile	Hungary	Mexico	Sierra Leone	Zimbabwe
China	India	Mongolia	Singapore	

## Annex 3 - Tables and Figures

Table 1: Descriptive statistics for the ten-year averages of the logarithm of output per capita.

Date	Mean	SD	Decile									Skew.	Kurt.	J-B	A-D
			1	2	3	4	5	6	7	8	9				
1976	8.07	1.13	6.71	7.00	7.23	7.62	7.92	8.35	8.67	9.35	9.76	0.22	-1.11	5.32%	0.14%
1986	8.18	1.20	6.61	6.96	7.35	7.70	8.17	8.54	8.80	9.47	9.90	0.12	-1.15	5.89%	0.25%
1996	8.32	1.33	6.57	7.00	7.34	7.93	8.20	8.79	9.15	9.94	10.13	-0.02	-1.17	6.04%	0.19%
2006	8.48	1.41	6.67	7.13	7.46	8.04	8.37	8.99	9.30	10.14	10.39	-0.05	-1.12	7.24%	0.15%

Notes: SD: Standard deviation; Skew.: Skewness; Kurt.: Kurtosis; J-B: Jarque Bera Test; A-D: Anderson Darling Test.

Table 2: Transition matrix for the output per capita, 1976-1986

		Decil em 1986									
		1	2	3	4	5	6	7	8	9	10
Decil em 1976	1	67%	22%	11%	0%	0%	0%	0%	0%	0%	0%
	2	30%	50%	10%	10%	0%	0%	0%	0%	0%	0%
	3	0%	20%	60%	20%	0%	0%	0%	0%	0%	0%
	4	0%	10%	20%	40%	30%	0%	0%	0%	0%	0%
	5	0%	0%	0%	30%	60%	10%	0%	0%	0%	0%
	6	0%	0%	0%	0%	10%	60%	20%	10%	0%	0%
	7	0%	0%	0%	0%	0%	30%	50%	20%	0%	0%
	8	0%	0%	0%	0%	0%	0%	30%	60%	10%	0%
	9	0%	0%	0%	0%	0%	0%	0%	10%	80%	10%
	10	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%

Notes: Methodology presented in Appendix 1. Calculations based on the variable *rgdpo* (PWT 8.0).

Table 3: Transition matrix for the output per capita, 1986-1996

		Decil em 1996									
		1	2	3	4	5	6	7	8	9	10
Decil em 1986	1	67%	33%	0%	0%	0%	0%	0%	0%	0%	0%
	2	30%	40%	20%	10%	0%	0%	0%	0%	0%	0%
	3	0%	20%	80%	0%	0%	0%	0%	0%	0%	0%
	4	0%	10%	0%	70%	20%	0%	0%	0%	0%	0%
	5	0%	0%	0%	20%	40%	30%	10%	0%	0%	0%
	6	0%	0%	0%	0%	40%	50%	10%	0%	0%	0%
	7	0%	0%	0%	0%	0%	20%	70%	10%	0%	0%
	8	0%	0%	0%	0%	0%	0%	10%	90%	0%	0%
	9	0%	0%	0%	0%	0%	0%	0%	0%	70%	30%
	10	0%	0%	0%	0%	0%	0%	0%	0%	30%	70%

Notes: Methodology presented in Appendix 1. Calculations based on the variable *rgdpo* (PWT 8.0).

Table 4: Transition matrix for the output per capita, 1996-2006

		Decil em 2006									
		1	2	3	4	5	6	7	8	9	10
Decil em 1996	1	89%	11%	0%	0%	0%	0%	0%	0%	0%	0%
	2	10%	50%	40%	0%	0%	0%	0%	0%	0%	0%
	3	0%	20%	40%	40%	0%	0%	0%	0%	0%	0%
	4	0%	20%	20%	50%	10%	0%	0%	0%	0%	0%
	5	0%	0%	0%	0%	60%	30%	10%	0%	0%	0%
	6	0%	0%	0%	10%	30%	50%	10%	0%	0%	0%
	7	0%	0%	0%	0%	0%	20%	60%	20%	0%	0%
	8	0%	0%	0%	0%	0%	0%	20%	60%	20%	0%
	9	0%	0%	0%	0%	0%	0%	0%	20%	60%	20%
	10	0%	0%	0%	0%	0%	0%	0%	0%	20%	80%

Notes: Methodology presented in Appendix 1. Calculations based on the variable *rgdpo* (PWT 8.0).



TABLE 6: RESULTS OF THE SPECTRUM TEST.

Transition	76-86	86-96	96-06	76-06
$\rho$	0.98	0.98	0.98	0.91
p-value	0.000***	0.000***	0.000***	0.000***

Notes: \*\*\* Significance at 1% level; \*\* significance at 5% level; \* significance at 10% level.

Table 6: Q unconditional convergence regressions. Results for the coefficient on the initial level of the logarithm of output per capita

	OLS	Quantile					Slopes Equality Test
		$\tau = 10\%$	$\tau = 25\%$	$\tau = 50\%$	$\tau = 75\%$	$\tau = 90\%$	
Postel Quantile	0.0038***	0.0092***	0.0047***	0.0020**	0.0006	-0.0017*	8.479
Regression	(0.0008)	(0.0011)	(0.0009)	(0.0009)	(0.0008)	(0.0022)	(0.000)***
Fixed Effects	-0.0189***	-0.0142***	-0.0180***	-0.0202***	-0.0228***	-0.0255***	39.654
Quantile Regression	(0.0029)	(0.0011)	(0.0006)	(0.0004)	(0.0006)	(0.0011)	(0.000)***

Notes: Standard errors between parentheses. For the equality of slopes test, the first line is the statistic and the p-value is in brackets. For the definition of the variables, see Annex 1.

\*\*\* Significance at 1% level; \*\* significance at 5% level; \* significance at 10% level.

Table 7: Tests statistics and p-values for the statistical significance of the fixed effects.

	Unconditional Conc.	Conditional Conc.
Test Statistic	3.84	3.73
p-value	0.000***	0.000***

Notes: \*\*\* Significance at 1% level; \*\* significance at 5% level; \* significance at 10% level.

quantile regression.

	OLS	Quantile					Slopes
		$\tau = 10\%$	$\tau = 25\%$	$\tau = 50\%$	$\tau = 75\%$	$\tau = 90\%$	Equality Test
<i>const</i>	-0.2065*** (0.0374)	0.3434*** (0.1028)	-0.1938*** (0.0685)	-0.2024*** (0.0491)	0.1314*** (0.0473)	-0.0848 (0.0674)	
<i>lyi</i>	-0.0103*** (0.0015)	-0.0103*** (0.0027)	-0.0096*** (0.0026)	-0.0103*** (0.0018)	-0.0112*** (0.0017)	-0.0133*** (0.0034)	0.3981 0.81016
<i>lsk</i>	0.0133*** (0.0019)	0.0134*** (0.0048)	0.0117*** (0.0028)	0.0102*** (0.003)	0.0141*** (0.003)	0.0183*** (0.0037)	2.0647 0.08276
<i>lng</i>	-0.0067 (0.0064)	-0.0071 (0.0129)	-0.0104 (0.0098)	-0.0087 (0.0069)	-0.0143 (0.0087)	0.0047 (0.0115)	1.5740 0.17835
<i>lsh2</i>	4e-04 (0.002)	-0.0063 (0.0054)	0.0032 (0.0034)	0.0019 (0.0024)	0.0032 (0.0026)	0.0065 (0.0045)	2.3870 0.04895
<i>mt</i>	-0.0755*** (0.0097)	-0.1052*** (0.0304)	-0.062*** (0.017)	-0.0713*** (0.0128)	-0.0575*** (0.0134)	-0.0626*** (0.0171)	1.0942 0.14840
<i>g</i>	0.0067 (0.0088)	0.032 (0.0225)	-0.0111 (0.0164)	-0.0066 (0.0137)	0.0109 (0.0184)	0.0513** (0.0227)	3.2695 0.01099
<i>cl</i>	6e-04 (0.0051)	0.0321*** (0.0097)	0.0097 (0.0096)	6e-04 (0.0056)	-0.0134** (0.0065)	-0.0192** (0.0093)	7.1753 9.408e-06

Notes: Standard errors between parentheses. For the equality of slopes test, the first line is the statistic and the p value is in brackets. For the definition of the variables, see Annex 1.

\*\*\* Significance at 1% level; \*\* significance at 5% level; \* significance at 10% level.

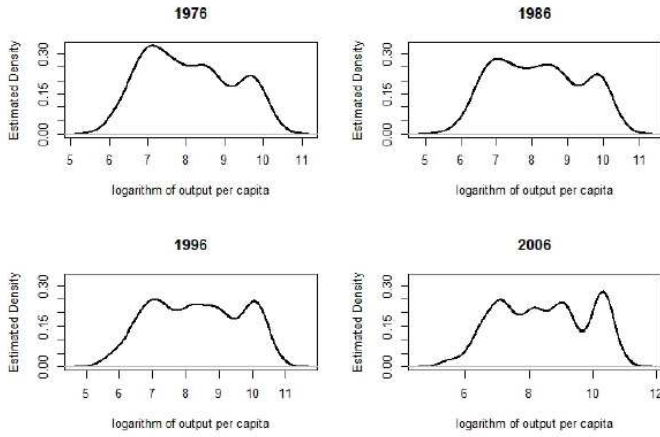
Table 9: Q conditional convergence regressions, estimated by Canay (2011)'s methodology.

	OLS	Quantile					Slopes
		$\tau = 10\%$	$\tau = 25\%$	$\tau = 50\%$	$\tau = 75\%$	$\tau = 90\%$	Equality Test
<i>lyi</i>	0.0315*** (0.0029)	-0.0282*** (0.0029)	-0.0303*** (0.0015)	-0.0307*** (0.0016)	-0.0311*** (0.0017)	-0.0341*** (0.002)	3.7921*** (0.4349)
<i>lsk</i>	0.0197*** (0.0026)	0.0203*** (0.0033)	0.0189*** (0.002)	0.0186*** (0.0022)	0.0193*** (0.002)	0.0207*** (0.0027)	0.7223 (0.9485)
<i>lng</i>	-0.0279*** (0.0092)	-0.0281*** (0.0087)	-0.0326*** (0.0069)	-0.029*** (0.0058)	-0.0344*** (0.0068)	-0.0342*** (0.0097)	1.3901 (0.8459)
<i>lsh2</i>	-0.0012 (0.0028)	-0.0073* (0.0039)	-0.0031 (0.0019)	-0.0012 (0.0019)	0.0022 (0.002)	0.0013 (0.0028)	6.0179*** (0.1978)
<i>mt</i>	-0.0858*** (0.0133)	-0.0968*** (0.0188)	-0.0971*** (0.0115)	-0.0793*** (0.0128)	-0.0593*** (0.0128)	-0.0657*** (0.0137)	6.6359*** (0.1564)
<i>g</i>	-0.0099 (0.0132)	-0.0172 (0.0171)	-0.0185** (0.0089)	-0.0154 (0.0096)	-0.0013 (0.0108)	0.0149 (0.0169)	3.3828*** (0.4959)
<i>cl</i>	0.0171*** (0.0065)	0.0316*** (0.0099)	0.0141*** (0.0052)	0.0143*** (0.0048)	0.0100* (0.0058)	0.0178*** (0.0068)	5.9001*** (0.2067)

Notes: Standard errors between parentheses. For the equality of slopes test, the first line is the statistic and the p value is in brackets. For the definition of the variables, see Annex 1.

\*\*\* Significance at 1% level; \*\* significance at 5% level; \* significance at 10% level.

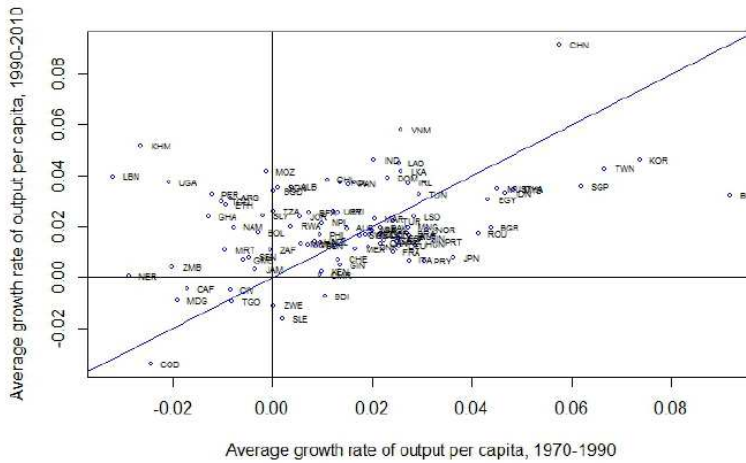
Figure 4: Estimated density functions for the 10-year average of the logarithm of output per capita.



Source: Authors' calculations based on the variable *rgdpo* (PWT 8.0).

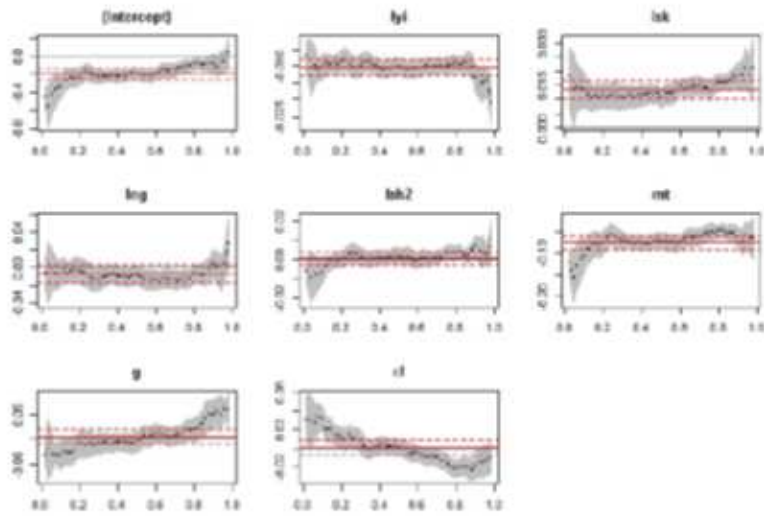
Notes: Gaussian kernel and Sheater-Jones bandwidth.

Figure 5: Scatter plot for the 20-year average growth rate of output per capita



Source: Authors' calculations based on the variable *rgdpma* (PWT 8.0).

Figure 6: Pooled quantile regression coefficients for the Q conditional convergence equation



Sources: R output.

Notes: See appendix for the description of the variables.

# **NONTARIFF BARRIERS: IMPACT OF SPS AND TBT MEASURES ON AGRICULTURAL EXPORTS FROM DEVELOPING COUNTRIES**

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**Natasha DANILOSKA<sup>1</sup>**

## ***Abstract***

*One of the most prominent manifestations of globalization is the liberalization and expansion of international trade, including the foodstuff exchange. After the conclusion of the Uruguay Round and creation of the World Trade Organization in 1995, international trade with food and agricultural products left with remarkable reduction of tariffs and quantitative restrictions. As a result, over the past 15 years, world agricultural trade has grown almost twice as fast as production. While some developing countries have performed well in world markets, many have struggled to become fully integrated in the international trading system. Namely, it is argued that the gains from trade liberalization are offset by increasing food standards, mainly imposed by developed countries. Such measures are regulated by two agreements annexed to the general trade accords: the Sanitary and Phytosanitary (SPS) Agreement and the amended Technical Barriers to Trade (TBT) Agreement. Focused on the export of agricultural and food products, this paper provides an overview of the SPS and TBT agreements and addresses the issue on whether or not the trading environment has been favourable to developing countries. The paper examines the impact of the WTO's SPS and TBT Agreement on the extent to which their measures impede exports from developing countries. It identifies the problems that limit the participation of developing countries in the SPS and TBT Agreement and their concerns about the way in which it currently operates. The objective of the paper is to generate solution-oriented analyses and to identify possible policy responses.*

**Key words:** *international trade, agricultural, food, nontariff barriers, developing countries*

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## INTRODUCTION

After the conclusion of the Uruguay Round in 1994 and creation of the World Trade Organization in 1995, international trade with food and agricultural products left with remarkable reduction of tariffs and quantitative restrictions. A key factor in this has been the liberalization of trade in agricultural and food products through the General Agreement on Tariffs and Trade (GATT), and in particular the Sanitary and Phytosanitary (SPS) Agreement and the Technical Barriers to Trade (TBT) Agreement, that were annexed to the general trade agreement. As a consequence to this, over the past 50 years considerable progress was made in lowering barriers to trade, such as tariffs and quantitative restrictions. This has benefited developing country export performance. Participation in international trade is generally recognized to favor economic growth, and due to the link with the rural economy, this is especially valid for agricultural export. However, it is argued that the gains from trade liberalization are offset by increasing food standards that are mainly imposed by high-income countries which have dominate position in the world's food trading system. This point of view reflects wider recognition that technical measures can act, either explicitly or implicitly, as a barrier to trade in a similar manner to tariffs and quantitative restrictions (Henson, 2009). Namely, since the „traditional” restrictions on trade in agricultural and food products were liberalized, attention has been focused on technical measures such as food safety regulations, labeling requirements, and quality and compositional standards. These standards are argued to act as new nontariff barriers to developing countries export. Moreover, others argue that high standards concentrate the benefits of trade with processing and retailing companies and large farms, thereby casting doubt on the development impact of increased agricultural exports from developing countries (Cipollina, Salvatici, 2010). As a consequence, standards would lead to an unequal distribution of the gains from trade and result in the marginalization of poorer farmers and small agri-food businesses.

Recent analysis by the FAO shows that food availability in developing countries will need to increase almost 60% by 2030 and to double by 2050, equivalent to a 42% and 70% growth in global food production, respectively (OECD-FAO, 2004). Accordingly, international trade will likely have to grow significantly in order to distribute the additional production to the places where the demand is increasing. This situation without any dough creates a need for establishment of a multilateral framework of rules and disciplines that will ensure efficient trade with food and agricultural products, equity and fair access to markets and thus stress even more the role of the SPS and TBT Agreements.

The paper is composed of two sections following this introduction. First section is dedicated to definition of nontariff barriers in international trade and within this

context, to analysis of the main principles of SPS and TBT Agreements. It identifies the dual effect that food safety and agricultural health standards can have on the performance of developing countries with respect to agricultural and food products exports.

The second section is about the impact of SPS and TBT Agreement on developing countries export. Its main idea is to identify some issues that limit the participation of developing countries in the SPS and TBT Agreement and their concerns about the way in which it currently operates. It concludes with drawing some possible policy responses that will enhance effectiveness of the agreements and will foster fair trading environment for developing countries.

Paper methodology is largely based on the classical methods of desk-based research of the available literature and data.

## **1. DEFINITIONS OF A NONTARIFF BARRIER AND PRINCIPLES OF SPS AND TBT**

Given the heterogeneous nature of nontariff barriers, different authors have proposed various definitions. Main conceptual differences in the attempts to define nontariff barrier arose from the need to make distinction between those regulations designed to protect national agro-food sectors and those designed to protect consumers. However, one of the widest definitions of nontariff barrier is: „Any governmental device or practice other than a tariff which directly impedes the entry of imports into a country and which discriminates against imports, but does not apply with equal force on domestic production or distribution” (Hillman, 2007). Other authors (Thornsby, Roberts, DeRemer and Orden, 1999) have upgraded this definition with standards of identity, measure, and quality, SPS measures, and TBT measures. Also, in order to identify differences in food safety and quality standards among counties that could act as a nontariff barrier, various authors have made various classifications, such as by policy instrument, by scope of the barrier, by regulatory goal, by legal discipline, by type of market restriction, by product category, and by geographical region (Roberts, 1998). Other authors suggest using cost-benefit criteria to decide whether the regulation will affect trade, and this would be classified as a nontariff barrier. According to yet another approach, regulatory measure should be compared to the measure that would have been implemented if it had been designed for domestic purposes only (Maskus, Wilson, Otsuki, 2001).

This variety in definitions, as well as in conceptual approaches, clearly demonstrates that distinguishing a nontariff barrier from a legitimate regulation for

protecting consumers is not an easy task. In this sense, it is crucial to understand that term „barrier” should not be applied to measures that are result of consistent political approach and whose principal objective is to correct market inefficiencies, even when they may have an incidental or temporal effect of restricting trade. In this sense, regarding international trade with food and agricultural product, it is crucial to understand the nature and main principles of existing regulation.

Namely, before establishment of the WTO in 1995, existing multilateral trade agreements were unable to control neither the use and impact of standards and technical measures on trade, nor the numerous trade related international disputes. After a long and difficult process of negotiations, the WTO has provided a basic mechanism that can ensure transparency in implementation of the technical regulations and/or standards in the context of international trade with agricultural and food products. With coming into force of the SPS and TBT Agreements, WTO has established rules by which Member states can apply standards and technical measures in a manner that is not discriminative and is less trade-distortive. Both Agreements cover the full range of standards relevant to human, animal and plant health and wellbeing, as well as to labeling, consumer protection, biotechnology, food irradiation and the production of „organic” food. The core acquisition of this mechanism is that in case of promulgation of product standards and/or technical regulations that are not internationally accepted, Member states are required to notify these measures before their implementation under SPS and TBT Agreements.

Being that main objectives of SPS Agreement are to protect and improve human and animal health and phitosanitary situation, and to protect Member countries from discrimination due to different sanitary and phitosanitary standards, the Agreement enables Member states to undertake appropriate measures for protection of human, animal and plant live and health, as long as they can be scientifically justified and proved not to be trade-distortive. In same time, Member states are requested to recognize that measures proposed by other countries, even when different, can provide equivalent level of protection. Principle elements of SPS Agreement, can be summarized as follow (GATT, 1994):

**Basic rights and obligations:** Members have the right to apply sanitary and phytosanitary measures based on scientific principles and clear scientific evidence and they must not be applied in a manner which would constitute a disguised restriction on international trade.<sup>2</sup>

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<sup>2</sup> Except as provided for in paragraph 7 of Article 5. of SPS Agreement.



**Harmonization:** In order to ensure as wide a base as possible, sanitary or phytosanitary measures should be based on international standards, guidelines or recommendations, where they exist. For greater success of the harmonization process, Member countries are invited to participate in the work of international standard-setting bodies concerned with food safety issues, as well as animal and plant health issues (Codex Alimentarius Commission, International Office of Epizootics, and International Plant Protection Convention).

**Equivalence:** In bilateral trading relations, when control mechanisms differ, countries must accept each other's sanitary and phytosanitary measures. The importing country, upon request, has rights to inspect, test and/or run all needed analysis to importing products, which in practice, to a certain extent limits the right of equal treatment.

**Assessment of risk and determination of appropriate level of sanitary and phytosanitary protection:** When introducing control mechanism more stringent than international standards, Member countries must apply appropriate risk assessment and provide scientific evidence to justify the need to protect human, animal and plant life and health. In order to avoid unjustifiable distinctions in the level of protection and avoid trade distortions, a consistency in the application of SPS measures is required.

**Adaptation to regional conditions, including pest or disease-free areas and areas of low pest or disease prevalence:** In trading relations, this means that SPS risks not necessarily correspond to national boundaries and there might be areas that have lower risk than others, determined by factors such as geography or ecosystems.

**Transparency:** Member countries are required to notify the SPS Secretariat and ensure prompt publication of all intended sanitary and phytosanitary measures and changes, as well as of the risk assessment methods. Being that main idea is to enable interested exporters to become acquainted and adapt their products and methods of production to the requirements, a reasonable interval between the publication of the SPS measures and their enforcement is given (45-60 days before putting the regulation into force), except in urgent cases.

**Technical assistance:** Member countries agree to give special assistance (technical and financial support) to developing countries in order to secure adjustment and achievement of appropriate level of sanitary or phytosanitary protection in their export markets.

**Special and differential treatment:** In order to maintain opportunities for export, developing countries are given special and differential treatment (phased introduction of new sanitary or phytosanitary measures and longer time frames to comply with the SPS requirements).

**Consultation and dispute settlement:** There are detailed and structured procedures for the settlement of trade disputes and in a same time, an SPS Committee meets three times per year and provides a forum through which issues related to SPS measures applied by WTO Member states can be raised and discussed.

The **Technical Barriers to Trade (TBT) Agreement** covers all products, including industrial and agricultural, and practically guarantees that regulations, standards, testing and certification procedures do not create unnecessary obstacles in international trade. Regarding agricultural products, TBT Agreement includes the product characteristics, their related processes and production methods, nutritional content, labeling and other aspects not covered by the SPS Agreement. According to TBT Agreement, Member states shall ensure that their central government standardizing bodies accept and comply with the Code of Good Practice for the Preparation, Adoption and Application of Standards. Thus, unlike the SPS Agreement, TBT Agreement sets out a code of good practice for both governments and non-governmental or industry bodies to prepare, adopt and apply voluntary standards, without an explicit goal of harmonization, meaning it makes a clear distinction between mandatory technical regulations and standards that are voluntary.

It is noticeable that SPS Agreement applies only to measures covering food safety, human, animal and plant health. All technical measures outside this area come within the coverage of the TBT Agreement. The SPS and TBT Agreements are thus complementary, mutually reinforcing and both involve a mix of protection and protectionist objectives which is very complex to disentangle.

Even if according to the principles listed above developing countries are entitled to have special and differential treatment as well as technical assistance, yet the increasingly complex food safety requirements, represents a threat to exporters and de-facto acts as a barrier to new participants in international trade. Since the technical regulations and standards are becoming more and more rigorous and stringent, their compliance surpasses the limited technical capacities of both public and private entities in the agro-food sectors of many developing countries. Namely, if determinate to participate in international food trade, developing countries have to closely monitor dynamic changes and promptly formulate appropriate plans for compliance, but also they need to employ necessary financial, technical and human

resources to implement and operate the required capacities. Furthermore, developing countries must be aware of the fact that achieving compliance with standards and technical regulations in international trade, are not sufficient „per se”. More often, it is necessary to demonstrate that compliance has been achieved (so called „assured compliance”<sup>3</sup>) and that its implementation is sustainable. In this sense, increasingly stringent quality standards can create a bias in favour of countries with a highly developed infrastructure and larger suppliers with greater resources.

The most unique principle of the SPS Agreement is the use of science as criteria for creating and justifying undertaken measures. Having on mind organic character of the food and agricultural products, scientific prove is to be obtained with research methodologies of natural science, but the decision to be taken is of economic nature. Namely, natural sciences have an advantage over social sciences in that they can study the isolated effects of one variable at a time, by holding everything else constant in a controlled laboratory environment. In contrast, economic research is based upon analyzing historical data, often of doubtful quality, in order to try to isolate the effects of individual variables in a constantly evolving dynamic system. In this manner, along with scientific (laboratory) prove, also income level, tastes, and historic occurrence of incidents will normally affect regulatory decisions. Thus, relevant scientific evidence may not always be sufficient to carry an appropriate risk assessment, nevertheless the risk and consequences of the hazard may be serious. In this sense, it is to be expected to be suspicious that certain SPS measures can be implemented as disguised protectionism.

A crucial conclusion resulting from our discussion so far is that, differently from traditional trade barriers, technical regulations and standards include at the same time elements of genuine protection and elements of disguised protectionism that are strictly interconnected and very difficult to disentangle. The problem is that regulations to ensure health and safety of food can have both a „protective” impact and also a „protectionist” one.

## **2. IMPACT OF SPS AND TBT AGREEMENT ON DEVELOPING COUNTRIES EXPORT**

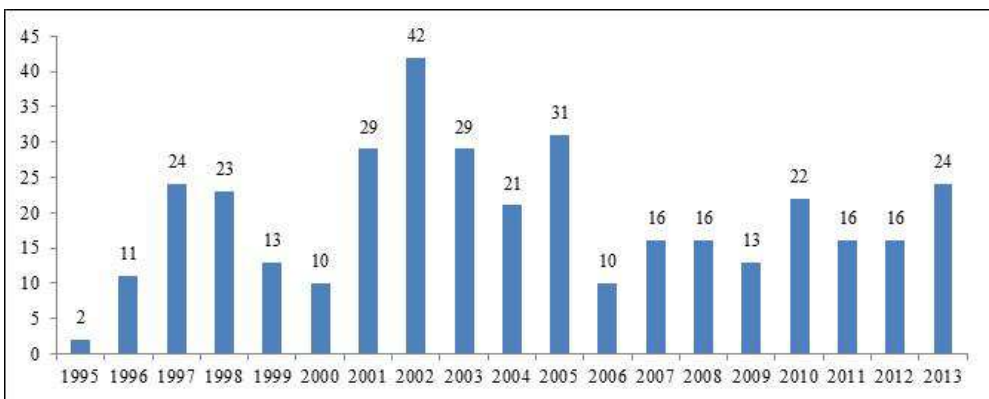
No doubt that the SPS and TBT Agreements introduced measures with transparent mechanism for their implementation, set-up clear dispute settlement procedures and indeed provided a solid base for international harmonization of national food

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<sup>3</sup>Measures instituted by a government agency to ensure that the provisions of its regulations are being met.

safety and food quality measures and regulations. It is also true that all along, particular situations and problems of developing countries and their needs for technical and financial assistance have been taken into consideration. However, in the same time, food safety and food quality standards have been significantly strengthened and increased, which has become a source of great concern among many developing countries. From their point of view, SPS and TBT measures and regulations are perceived as a barrier to the continued success of their exports, especially regarding the export of high-value agro-food products. In reality, many developing countries are still lacking technical, administrative and scientific capacities needed for compliance with emerging requirements, or they fear that standards can be applied in a discriminatory or protectionist manner (Lacovone, 2003). In fact, standards and regulations in general, and especially sanitary and phytosanitary measures, involve a mix of protection and protectionist objectives which is very complex to disentangle (Roberts, 2001). Thus, from developing countries prospective, SPS and TBT Agreement are hindering, rather than encouraging their access to export markets for some agro-food products and in practice, they are perceived as equivalent to a tariff barriers. Although the evidence for this perception are mostly of empirical nature and based on case studies, it is clear that in the context of international trade, food safety and agricultural health standards can significantly affect the performance of developing countries with respect to agricultural and food product exports and represents both administrative and financial burden. Indeed, Graph 1 shows that despite all efforts, there are many trade issues in international trade with food and agricultural products. Altogether, 368 specific trade concerns were raised in the 19 years between 1995 and the end of 2013. Graph 1 shows the number of new concerns raised each year; 24 new concerns were raised in 2013.

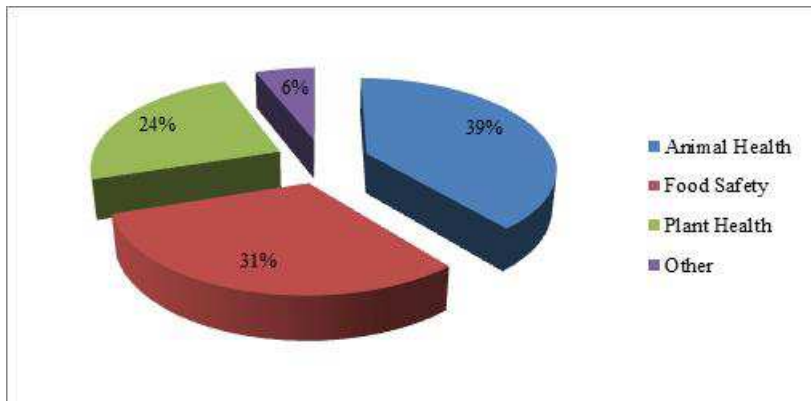
**Graph 1. Number of New Issues Raised in WTO in the period 1995-2013**



Source: *WTO-Committee on Sanitary and Phytosanitary Measures, document G/SPS/GEN/204/Rev.14*

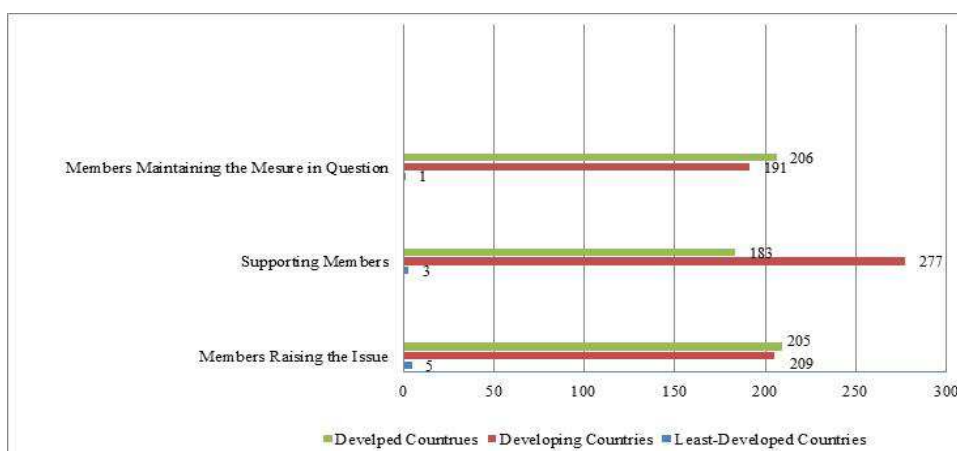
Graph 2. categorizes the trade concerns raised over the 19 years into food safety, animal or plant health issues. Overall, 31% of trade concerns relate to food safety concerns, 24% relate to plant health, and 6% concern other issues such as certification requirements, control or inspection procedures. 39% of concerns raised relate to animal health and zoonoses.

**Graph 2. Trade Concerns by Subject in the period 1995-2013**



Source: WTO-Committee on Sanitary and Phytosanitary Measures, document G/SPS/GEN/204/Rev.14

Major impacts upon international trade with agro-food products are result to the absence of consensus about the importance of individual measures, followed by absence of reliable studies of their secondary effects (Henson and Blandon, 2009). Within the WTO, the debate over implementation of individual measures is continuous quite live. Developing countries are participating actively under this agenda item in the SPS Committee meetings. Graph 3, indicates that over the 19 years, developing country Members have raised 205 trade concerns (on many occasions more than one Member has raised, supported or maintained an issue) compared to 219 raised by developed country Members and five raised by least-developed country Members. A developing country Member has supported another Member raising an issue in 277 cases, compared to 183 for developed country Members and three for least-developed country Members. In 206 cases, the measure at issue was maintained by a developed country Member, and in 191 cases it was maintained by a developing country Member. One trade concern regarding measures maintained by a least-developed country Member has been raised.

**Graph 3. Participation by WTO Members in the period 1995-2013**

Source: *WTO-Committee on Sanitary and Phytosanitary Measures, document G/SPS/GEN/204/Rev.14*

Most commonly used instruments that cause impact of food quality and safety standards on agro-food export from developing countries are full or partial import bans and request for certain technical specifications (for example product and process standards). Although SPS Agreement calls for technical and financial help to developing countries, as food safety and agricultural health standards proliferate, capacity requirements are increasing over time, so provided external assistance is insufficient to meet remaining and new, even more stringent requirements (Rios, 1999). Furthermore, having on mind the overall level of economic development, provided technical assistance often is insufficient to resolve the fundamental, current problems present in developing countries (Greenhalgh, 2004). Namely, new food safety standards in developed countries are defining the expectations of consumers and many developing countries simply don't have necessary legal and industry structures, or available technical, scientific, administrative and financial resources to comply with emerging requirements. Together with the level of tolerance which is usually quite lower in developed countries, this reinforces the doubt for discrimination against imports in the application of food safety and agricultural health controls and raise the question if suppliers from developing countries must comply with higher requirements than those from developed countries.

The length of time allowed between the notification and implementation of SPS requirements and the level of technical assistance provided by developed countries are also considered to be problems. This suggests that the concerns of developing countries about the operation of the SPS Agreement are closely related to the

actions of developed countries in setting and managing SPS measures (Henson and Loader, 2000).

Finally, it has to be noted that achievement and sustained implementation of food standardization is a long and costly process. The compliance cost with SPS-related obligations on some developing countries can require a lion share of total governmental development budgets.

### 3. CONCLUSIONS

Whether regulated or not with multilateral trade agreements, food quality and safety standards and regulations are affecting trade patterns and have significant impact on exporters ability to enter new international markets. Many developing countries face various problems associated with meeting SPS/TBT compliance. This not only applies to their agro-food sector but also to a number of other export sectors.

According to latest WTO-FAO predictions, developing countries will provide the main source of growth for world agricultural production, consumption and trade. From this perspective, greater understanding of the impact of SPS/TBT requirements on developing countries is of immanent importance. Thus, addressing problems they face, and support their efforts to change institutional structures relating to SPS and TBT standard setting, are a definite need.

In order to overcome difficulties, both on international and national level, concrete actions need to be taken to further promote the participation of developing countries in international agro-food exchange. Those actions should include:

- Raise the level of awareness in developing countries on the role and impact of SPS and TBT measures/regulations on international trade. This will change the perspective from „standards as a barriers” to „standards as a catalyst” and contribute to modernization of agro-food export from developing countries.
- Prolong the period for compliance for developing countries. Longer period will enable developing countries to atcheve new standards and manage the needed costs of compliance
- Expand harmonization of SPS requirements and develop international food safety, animal and plant health standards for the largest number of food and agricultural products traded in world markets. This will facilitate international trade and will minimize technical barriers.
- Inceze technical assistance. This will provide developing countries with the information, training and resources needed to comply with new standards and regulations.

- Enable developing countries to be more involved in standard setting so they can participate more fully in world trade. This will increase awareness of developed countries about ability of developing countries to comply with SPS/TBT measures and the impact they might have on their export performance.
- Provide legal assistance in dispute settlement over agricultural standards. This will help developing countries to overcome special difficulties and higher costs in demonstrating compliance with import regulations.

In much of the on-going debate about increased levels of food quality and safety standards through globalization, there is a growing concern on whether or not the benefits would be equally shared by all. Fair trade and access to markets are still the crucial unsolved issues. Regarding agro-food export sectors of developing countries, no doubt that improved transparency of SPS/TBT agreements; greater harmonisation of SPS/TBT standards; improved mechanisms for the provision of greater legal and technical assistance, including legal assistance to participate in dispute settlement; and longer periods in which to achieve compliance would certainly be more than welcome and beneficial.

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# THE PARTICIPATION OF PORTUGAL IN THE NEW POST-WAR WORLD ORDER: OPENNESS AND ECONOMIC DEVELOPMENT

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## *Abstract*

*In the period 1950-1973 the Portuguese economy showed a remarkable performance in a very favorable global macroeconomic environment. Among the main explanatory elements for this prosperity in the world was the creation in the post-war period of a new international order, with new agreements and institutions that favored international trade and monetary flows. This study seeks, in the first place, to analyze the role played by Portugal in the construction of this new order and explores whether such participation has coincided with an increasing degree of openness and further economic development of the country. It is possible to conclude that Portugal has taken an active role in the process of building the new world order, and that this has coincided with a progressive increase in the country's degree of openness. Secondly, the study aims to assess how the degree of openness of the Portuguese economy has related to the level of economic development of the country. It is possible to observe that Portugal's participation in the new post-war international order had a positive impact in spurring the country's economic development, in a period of great world prosperity.*

**Key Words:** *Economic development, 'Golden Age', new international order, Openness to the Outside.*

**JEL Classification:** C51, E62, H68, N14.

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## 1. INTRODUCTION

Between the end of the Second World War (1939-1945) and the beginning of the 1970s, the world economy experienced a truly remarkable macroeconomic performance, in a period known as the 'Golden Age' (1950-1973). In that same timeframe, the Portuguese economy managed to stand out positively, in a very favorable international economic environment, growing at a faster rate than the world economy itself (see Appendix).

Taking into account that one of the main explanations for the observed worldwide prosperity was the creation of the post-war new world order that favored international trade and monetary flows, this research seeks in the first place to analyze the role played by Portugal in the creation of this new order and to determine whether such participation coincided with a wider opening of Portugal's economy to the outside. Secondly, it aims to assess how the degree of openness of the Portuguese economy to the outside has been related to the level of economic development of the country in the period 1950-1973.

The work is structured in four sections. After the Introduction, in Section 2 we present the main events around the construction of the new order of the world economy and the Portuguese participation in that event. We proceed, in section 3, to evaluate the relationship between the degree of openness of the Portuguese economy to the outside, and the Portuguese economic development. Finally, Section 4 presents the main conclusions.

## 2. PORTUGAL AND THE NEW ORDER OF THE POST-WAR WORLD ECONOMY

Closely following Maddison (1995), one of the main elements for the great prosperity seen in the 'Golden Age', a period during which the Portuguese economy stood out very positively, is related to the fact that the economies of the Western world had created a new international order with strong and flexible institutions that were aimed at intensifying the co-operation between nations<sup>3</sup>. This is identified as a key factor that favored international flows, which caused a very positive impact on global economic growth.

It is in this context that new institutions and new agreements, such as Bretton Woods, introduced new rules for the functioning of the world economy.

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<sup>3</sup> Regarding to other elements see Maddison (1995).

The Bretton Woods Agreements arose from a Monetary and Financial Conference held in 1944 in New Hampshire in the United States of America. This gathering was attended by forty-four delegations from foreign countries, all of whom became signatories to the Agreements<sup>4</sup>. In themselves, the agreements not only established how the new international monetary system (facilitating commercial exchanges globally) would work, but also set up a system to support the economies that had been affected by the Second World War. Accordingly, in order to ensure proper functioning of the international monetary system, the International Monetary Fund (IMF) was created, formally<sup>5</sup> coming into existence in December 1945, with twenty-nine members, having started work on 1 March 1947.

Among the main functions of the IMF are: 1) The management of exchange rates in the context of an exchange rate band of  $\pm 1\%$ , except following a ‘fundamental disequilibrium’ in the balance of payments<sup>6</sup>, where currencies could float up to  $\pm 10\%$ ; and 2) to ensure funding to countries experiencing short-term difficulties in their balance of payments.

A system of fixed but adjustable exchange rates between currencies was assumed, in which the countries fixed the exchange rates of their currencies to the dollar, which, in turn, set the value of the dollar in gold, valued at \$35 per ounce of gold, and ensured full convertibility between the various currencies<sup>7</sup>. Unauthorized exchange changes by a member of the IMF, could make that member ineligible to use the resources of the Fund, and its persistence could even lead to a harsher punishment. Portugal did not initially participate in the Agreement<sup>8</sup>. That happened only on<sup>9</sup> March 1961, at a time when many European countries had restored full convertibility for their current account transactions<sup>10</sup>.

In turn, to support the reconstruction of countries affected by conflict worldwide and also to help the development of non-industrialized economies, the International

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<sup>4</sup> See Department of State United States of America (1948).

<sup>5</sup> See IMF (2012).

<sup>6</sup> The meaning of ‘fundamental disequilibrium’ has never been clearly defined, giving leeway to the IMF in the analysis of proposed changes in par values. See Duarte (2006).

<sup>7</sup> In other words, gold remained as the crucial standard of value, and the United States as the only country in the world to index its currency to gold.

<sup>8</sup> As pointed out by Nunes and Valério (2008), although Portugal did not immediately become a member of the IMF, eventually it behaved as if it had, in that it maintained a fixed exchange rate against the dollar, as well as the full convertibility of the ‘*escudo*’ for the purpose of the current account.

<sup>9</sup> See IMF (2013).

<sup>10</sup> See Bordo and Santos (1995).

Bank for Reconstruction and Development (IBRD)<sup>11</sup> was created, which began operations in 1946, later giving rise to World Bank<sup>12</sup>. Portugal became a member of the World Bank in March 1961.

Later, in 1947 it signed the General Agreement on Tariffs and Trade, known as GATT<sup>13</sup> which corresponded to part IV of the Havana Charter concerning trade policy, its main objective being the progressive liberalization of world trade<sup>14</sup>. This Agreement came into operation on 1 January 1948 with twenty-three contracting parties. The signatories of this Agreement committed themselves essentially to a set of articles that dealt with the extension of most favored nation treatment to other Nations (*General Most-Favored-Nation Treatment*), i.e., rejecting discrimination in terms of international trade and pledging to reduce tariffs. In short, the Agreement tried to promote greater openness of international trade and the abolition of protectionist practices that characterized the thirties. Portugal joined<sup>15</sup> the GATT only in 1962, having progressively reduced its tariffs<sup>16</sup> as agreed in the designated 'Kennedy Round'<sup>17</sup>, which took place between 1964 and 1967.

It should also be noted that in 1947, more precisely on 5 June, the Secretary of State George C. Marshall, made a famous speech advocating a programme of economic aid to Europe. This occurred because the humanitarian aid was mainly benefiting countries that were being consolidated as communist dictatorial regimes and because the reconstruction loans were insufficient<sup>18</sup>.

Marshall's speech became famous in that it gave rise to a precise economic aid plan that became known as the 'Marshall Plan'<sup>19</sup>, and officially as the European Reconstruction Plan (ERP) for a free Europe that was in need of economic support from the United States<sup>20</sup>. In total, between 1948 and 1951, thirteen billion dollars of economic aid was allocated to Europe through the two means of loans and

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<sup>11</sup>In practice the main aim of the IBRD was grant loans to these nations. See World Bank (2012).

<sup>12</sup> See World Bank (2013).

<sup>13</sup> See World Trade Organization (2012) [1986].

<sup>14</sup> See Parlamento Europeu (2000).

<sup>15</sup> See World Trade Organization (2012).

<sup>16</sup> See Cunha (1992).

<sup>17</sup> See World Trade Organization (2012) [1968].

<sup>18</sup> See Valério (2010).

<sup>19</sup> Countries such as Austria, Belgium, Denmark, France, Greece, Holland, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, United Kingdom, Federal Republic of Germany (FRG), Sweden, Switzerland, and Turkey resorted to this support.

<sup>20</sup> See Fontaine (1998).

grants. The responsibility for allocating the funds was placed with the Economic Co-operation Administration (ECA), established by the United States of America, and the Committee of European Economic Co-operation (CEEC), which was created to oversee sixteen countries, on 12 July 1947.

In the case of Portugal, the attitude towards the Marshall Plan changed profoundly in the space of just one year. It is, therefore, possible to identify at least three different phases: 1) an initial moment when after Marshall's speech, Portugal expressed its intention to actively collaborate in the reconstruction programme of Europe, and was subsequently invited by France and Britain to participate in the Paris conference in July 1947; 2) an intermediate point in the conference, in which Portugal did not provide the necessary means to correctly follow the work due to three facts: i) the existence of a possible objection related to the gold from Germany during the Second World War; ii) the fear that Portugal's limited amount of dollars could be used by other countries which might at some point need them; and iii) the fear that commercial and financial freedom could be constrained by foreign trade planning that would penalize Portugal. These three facts gave rise to a formal declaration on 22 September 1947, that it would not help America financially; and, finally, 3) a time when the Portuguese economy deteriorated prompting Portugal to request financial aid in<sup>21</sup> November 1948.

Some months after the famous speech by Marshall, specifically on 16 April 1948, the Organization for European Economic Co-operation (OEEC) emerged to replace the Committee of European Economic Co-operation (CEEC)<sup>22</sup>. The crucial principles of this organization related to the aims to<sup>23</sup>: 1) promote co-operation between Member States for the reconstruction of Europe; 2) develop intra-European trade by reducing tariffs and other trade barriers in order to expand trade; 3) study the feasibility of establishing a Customs Union or Free Trade Area; 4) study the multilateralism of a payment system; and 5) achieve conditions for better use of labor-force. Portugal was a founding member of the OEEC, and according to

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<sup>21</sup> Rollo (1994) lists four key factors that led to the deterioration of the economic and financial situation of Portugal: 1) an increase in imports after the restrictions of war and inflationary pressures; 2) a decrease in exports of products that were highly valued during the war (as is the case for example of tungsten); 3) an increase in imports of industrial equipment for the country's industrialization programme; and 4) an increase in imports of agricultural products due to the poor harvests of 1946 and 1947.

<sup>22</sup> The OEEC had the original members GFR (represented initially by the American, British, and French occupation zones), Austria, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, Luxembourg, Norway, Netherlands, Portugal, UK, Sweden, Switzerland, Turkey, and the then Free Territory of Trieste. Later, in 1958, Spain also joined.

<sup>23</sup> See OECD (2012a).

Bordo and Santos (1995), its participation in this institution, as in the EPU, was extremely important in that it allowed a progressive internationalization of the Portuguese economy, increasing both imports as exports. After the establishment of the OEEC, Britain leaned more towards creating a Free Trade Area. Already France, Germany, Italy, Belgium, Netherlands, and Luxembourg had sought to create a Customs Union.

In turn, on 4 April, the Organization of the North Atlantic Treaty (NATO) was signed in Washington<sup>24</sup>. The creation of this partnership has as its main purposes<sup>25</sup>, to: 1) dissuade soviet expansionism; 2) prohibit the revival of nationalistic militarism in Europe, through a strong American presence in Continental Europe, and 3) encourage European political integration<sup>26</sup>. Based on these principles, a military attack against one member would provoke a reaction from all members, but only if this attack occurred in Europe, North America, in the waters of the North Atlantic and in the Mediterranean to the north of the Tropic of Cancer. So there would be no reaction if the attack occurred in some of the colonial possessions of certain Member States. Portugal was also a founding member of NATO, the motivation being the threat of the Soviet Union to expand further into Europe<sup>27</sup>.

Some of the main advantages of Portugal's NATO membership were seen as<sup>28</sup>: 1) the integration of Portugal in the Western Atlantic system; 2) the creation of a partial alternative to the English Alliance; 3) a policy and strategic approach to the United States; 4) the acquisition of techniques and typical methods of post-industrialization; and 5) modernization of the national armed forces<sup>29</sup>.

By the early 1950s, specifically on 18 April 1951, due to disagreements within the OEEC related to trade policy, the Treaty establishing the European Coal and Steel

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<sup>24</sup> See NATO (2012) [1949].

<sup>25</sup> See NATO (2012).

<sup>26</sup> This alliance was initially set up by the United States, Belgium, Canada, Denmark, France, Great Britain, Iceland, Italy, Luxembourg, Norway, Netherlands, and Portugal, after having joined in 1952, Greece and Turkey, and in 1955, then the German Federal Republic (GFR). Also in 1955, the Soviet Union, Albania, Bulgaria, Czechoslovakia, Hungary, Poland, the German Democratic Republic, and Romania formed a military alliance known as the Warsaw Pact.

<sup>27</sup> See Teixeira (1993).

<sup>28</sup> See Telo (1999).

<sup>29</sup> Portugal managed to bring to meetings of the NATO the problem (conflict) of Guinea (where the war scenario was worst), trying to prove that the defeat of one of its members would weaken the entire organization, at a time when the Soviet threat remained. See Teixeira (1995).

Community (ECSC)<sup>30</sup> was signed, and considered as the first major initiative of European integration. The Treaty establishing the ECSC came into force on July 23, 1952, with a limited lifespan of 50 years. Its main objective was the introduction of free movement of coal and steel and free access to sources of production, as well to as contribute to economic growth, increased employment, and an improvement in living standards. Portugal, like Britain with which it had a special relationship, did not sign this Treaty.

Later, in March 1957, the Treaty of Rome was signed, establishing the European Economic Community (EEC)<sup>31</sup>, and this came into force<sup>32</sup> on 1 January, 1958. The Treaty establishing the EEC<sup>33</sup> required the creation of a common market that should be based on: 1) the free movement of persons, services, goods and capital, creating a unified economic space that would establish free competition between companies; 2) a customs union which eliminated customs duties in respect of the goods traded between Member States (creating a common external tariff for goods from third countries) and finally, 3) public policies, as for example, the Common Agricultural Policy, Common Trade Policy, and Transport Policy, and other policies that were created under the Treaty thereafter<sup>34</sup>. Thus, after the approval of the Treaty of Rome in January 1960, the Stockholm Convention established the European Free Trade Association (EFTA)<sup>35</sup>. This free trade area for industrial products, with some exceptions, was created by some of the members of the OEEC that had not joined the EEC, among them being Portugal, which followed Britain<sup>36</sup>. This association was not intended to function as a common market, but rather as a free trade zone for certain products<sup>37</sup>.

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<sup>30</sup> The ECSC was founded by the FRG, Belgium, France, Italy, Luxembourg, and the Netherlands. See União Europeia (2010a).

<sup>31</sup> And also the European Atomic Energy Community (Euratom)

<sup>32</sup> The OEEC also created in October 1957, an intergovernmental committee in order to try to delay ratification of the Treaty of Rome, proposing instead the alternative of a Free Trade Zone, but this proposal was not successful.

<sup>33</sup> The Treaty establishing the EEC was signed by Belgium, Netherlands, Luxembourg, West Germany, France, and Italy. See União Europeia (2010b).

<sup>34</sup> As a result of this policy the European Investment Bank (EIB) was created to facilitate the economic expansion of the Community and also the European Social Fund (ESF), in order to promote employment and increase the standard of living of citizens.

<sup>35</sup> See EFTA (2012).

<sup>36</sup> The founding members of EFTA were Austria, Denmark, Great Britain, Norway, Portugal, Sweden, and Switzerland.

<sup>37</sup> According to Macedo (1992), Portugal secured a tariff dismantling schedule very advantageous for its economy, since this was notably slower, while its exports to the EFTA countries increased after its entry.



In December 1960, Portugal signed the Convention of the Organization for Economic Co-operation and Development (OECD)<sup>38</sup>, which replaced the OEEC. Officially the OECD was established on 30 September, 1961, constituted not only by members of the OEEC, among which was Portugal, but also by Canada and the United States of America, and having as its main objectives, to: 1) achieve a high and sustainable economic growth and employment; 2) increase the standard of living in the United States; 3) maintain financial stability; 4) develop the world economy, help both member states and non-members to develop their economies; and 5) contribute to the expansion of world trade on a multi-lateral basis and without discrimination and with respect for the international obligations.

The period of the 1960s saw the consolidation of both the EEC and EFTA, and early in the next decade, Denmark, Ireland, and the UK joined the European Community, reducing the size of the EFTA to only six members: Austria, Norway, Portugal (which did not follow the UK), Sweden, Switzerland, and Iceland (which only joined in 1970)<sup>39</sup>.

Notwithstanding the fact that Portugal had not joined the EEC by that time, however, it can still be said that the Portuguese economy participated actively in the construction of the new international order that emerged after World War II, having been involved in various agreements and become a member of the new institutions<sup>40</sup>, during a period characterized by high economic growth. In this period the Portuguese exports and imports increased significantly. This growth in exports and imports resulted in a very significant opening of the Portuguese economy to the outside<sup>41</sup>. Indeed, in 1945, the year when World War II ended, the degree of openness was at around 10%, whereas in 1974, this value was greater than 20%, showing that in less than thirty years it had doubled. This may be seen in Figure 1.

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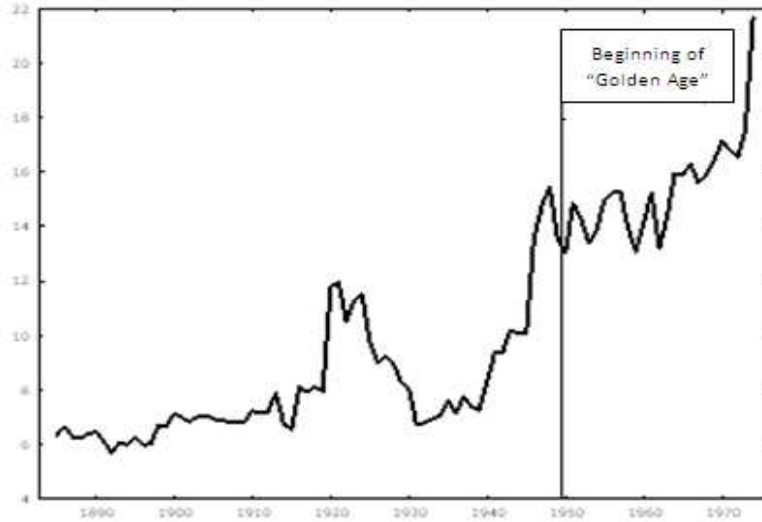
<sup>38</sup> See OECD (2012b).

<sup>39</sup> See União Europeia (2013).

<sup>40</sup> Later, in 1972, Portugal would also sign the Free Trade Agreement with the European Community. See, for example, Afonso and Aguiar (2008).

<sup>41</sup> The degree of openness of an economy, as a percentage of GDP is obtained by the following expression: Degree of openness =  $[(\text{exports} + \text{imports}) / 2] / \text{GDP} \times 100$ .

**Figure 1. Degree of Openness of the Portuguese Economy to the Outside, as a percentage of GDP, 1885-1974**



*Source: Authors' calculations based on Valério's (2008) data.*

So, the first conclusion we can draw is that the time when Portugal participated actively in the process of building the new post-war international order, was also the period when its economy grew and developed more as it underwent an intense internationalization process. However, having come to this realization, the question still remains as to how this greater opening of the Portuguese economy to the outside was related to the economic development of the country.

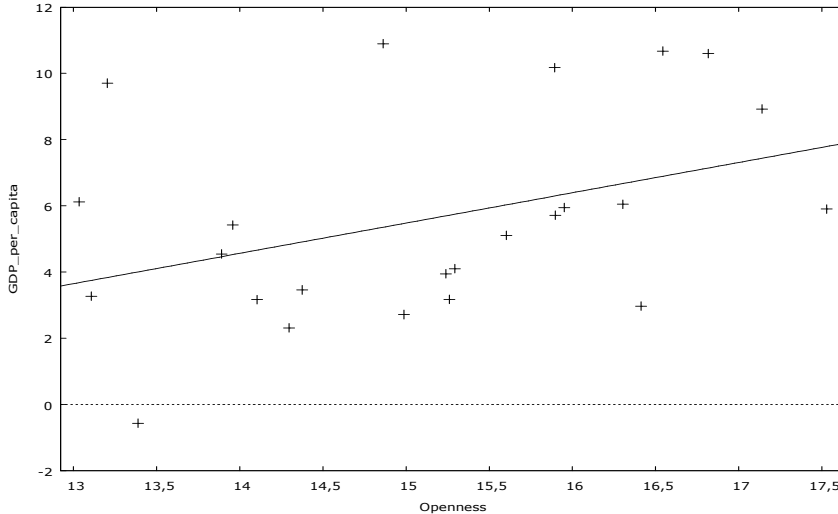
### **3. ECONOMIC DEVELOPMENT AND OPENING OF THE PORTUGUESE ECONOMY, 1950-1973**

The second objective of the research, i.e. to assess how the opening of the Portuguese economy to the outside during the Golden Age was related to Portugal's increased economic development, is met by considering the period 1950-1973, and the two variables of the degree of openness to GDP, and the growth rate of real GDP per capita (at 1914 prices).

Accordingly, we begin by constructing a scatter diagram in which those variables feature, and as is indicated in Figure 2, a positive linear relationship is seen between the degree of openness of the Portuguese economy to the outside as a

percentage of GDP, and growth rate of real Portuguese GDP per capita, although that relationship does not seem to have been very strong.

**Figure 2. Scatter Diagram for the Degree of Openness of the Portuguese Economy as a % of GDP and the Growth Rate of GDP per capita, 1950-1973**



Source: Authors' calculations based on Valério's (2008) data.

Subsequently, we calculated the correlation coefficient between these variables, to determine the strength of their relationship<sup>42</sup>. The value obtained was 0.39115018 as can be found in Table 1.

**Table 1: Correlation Coefficient between the Degree of Openness (% of GDP) and the Growth Rate of GDP per capita, 1950-1973**

	<b>Degree of openness to GDP</b>
	Correlation coefficient
<b>Growth rate of GDP per capita</b>	0.39115018

Source: Authors' calculations based on Valério's (2008) data and using Gretl (2010).

**Note:** The value of the correlation coefficient can take values between -1 and 1. If the value is 0 there is no correlation, 1 means a perfect positive correlation between variables, and -1 means a perfect negative correlation between the variables.

<sup>42</sup> The value of the correlation coefficient can take values between -1 and 1. If the value is 0 there is no correlation, 1 means a perfect positive correlation between variables, and -1 means a perfect negative correlation between the variables.

By analyzing the value of this correlation coefficient we can conclude that during the period in which Portugal grew and developed the greatest (1950-1973), the degree of openness of its economy was found to be positively related to the growth rate of real GDP per capita (1914), although this relationship cannot be considered strong (0.39 is a value that is relatively far from the unit), as is demonstrated in the scatter diagram.

But another question now occurs, which is whether a positive linear relationship between variables existed, as a result of the first variable impacting upon the second, and in order to answer that question, we estimated the following simple linear regression model<sup>43</sup>:

$$development_t = \beta_0 + \beta_1 Opening_t + u_t, \tag{1}$$

where the explanatory variable, ‘Opening’, represents the degree of openness of the Portuguese overseas savings as a percentage of GDP in the period 1950-1973, and the dependent variable, ‘Development’, corresponds to the growth rate of real GDP per capita, in the same period. For its part  $u_t$  is the error term representing all unknown factors that influence the behavior of the variable ‘Development’, being  $\beta_0$  and  $\beta_1$  the unknown parameters of the model (taking into account the value of the correlation coefficient already documented in Table 1, it is expected that  $\beta_1$  is positive).

For the estimation of the model (1) we used the method of Ordinary Least Squares (OLS). The results of this estimation are documented in Table 2.

**Table 2. Results obtained with the OLS Estimation Method**

Variable	Coefficient	Standard Error	t-Ratio	p-Value
Constant	-8.24289	6.96849	-1.183	0.2495
Opening	0.914867	0.458929	1.993	0.0588*
<b>Adjusted R-Square: 0.114498</b>				
<b>Durbin-Watson statistic: 1.844883</b>				
<b>LM test (p-value): 0.786</b>				

Source: Authors’ calculations based on Valério’s (2008) data and using Gretl (2010).

Note: “\*”, “\*\*” e “\*\*\*” represent the statistical significance of the regressor, respectively at 10%, 5% and 1%.

<sup>43</sup> See Gujarati and Porter (2003).

The results from the regression show that the explanatory variable 'Opening' is statistically significant at a level of 10%. They also reveal that each increase of one percentage point (pp) in the degree of openness of the Portuguese economy in the period 1950-1973, is associated with an increase of 0.91 percentage points in the growth rate of Portuguese GDP per capita in the same period.

This confirms the existence of a positive relationship between the degree of openness of the Portuguese economy and its level of economic development, measured by the growth rate of GDP per capita, during this particular timeframe 1950-1973. Consequently, we can infer that Portugal's participation in the new post-war international order had a positive impact in spurring the country's economic development in that same period.

#### **4. CONCLUSION**

From the late 1940s and the early 1970s, the world economy grew, on average, at the highest rates ever recorded, such that this particular time horizon became known as the Golden Age. During that same timeframe, the Portuguese economy also recorded its highest rates ever. Portugal even managed to stand out positively, in a very favorable international economic environment, growing at a faster rate than the world economy itself.

There are some explanations for the prosperity witnessed during the Golden Age, the main one being the creation of the post-war new world order that favored international flows (trade and monetary). In these circumstances, with this work, we sought in first place to understand the role played by the Portuguese economy in the creation of this new international order and evaluate the extent to which such participation coincided with a wider opening of Portugal's economy to the outside. Clearly, it has been possible to conclude that Portugal did adopt an active role in the process of building the new world order that emerged after World War II, having participated in various agreements and joined the new institutions, all of which coincided with a progressive and significant increase in Portugal's degree of openness within its economy.

In the second place, we sought to further assess the degree to which this greater openness of the Portuguese economy to the outside between 1950 and 1973, contributed towards the increased level of economic development in the country.

Based on an analysis of descriptive statistics and the estimation of a simple linear regression model by the OLS method, it was possible to confirm the existence of a positive relationship between the variables. Indeed, each increase of one percentage

point (pp) in the degree of openness of the Portuguese economy in the period 1950-1973, was found to be associated with an increase of 0.91 percentage points in the growth rate of Portuguese GDP per capita in the same period.

These results, therefore, provide evidence that the participation of Portugal in the new post-war international order resulted in prosperous developments within the Portuguese economy.

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## APPENDIX

**Annual Average Growth Rates of GDP and per capita GDP  
(Several Countries, 1820-1998)**

	GDP					GDP per capita				
	1820 -	1870 -	1913 -	1950 -	1973 -	1820 -	1870 -	1913 -	1950 -	1973 -
	1870	1913	1950	1973	1998	1870	1913	1950	1973	1998
Argentina	n.a	6.02	2.96	3.78	2.06	n.a	2.50	0.74	2.06	0.58
Belgium	2.25	2.01	1.03	4.08	2.08	1.44	1.05	0.70	3.55	1.89
Denmark	1.91	2.66	2.55	3.81	2.09	0.91	1.57	1.56	3.08	1.86
France	1.27	1.63	1.15	5.05	2.10	0.85	1.45	1.12	4.05	1.61
Germany	2.01	2.83	0.30	5.68	1.76	1.09	1.63	0.17	5.02	1.60
Italy	1.24	1.94	1.49	5.64	2.28	0.59	1.26	0.85	4.95	2.07
Japan	0.41	2.44	2.21	9.29	2.97	0.19	1.48	0.89	8.05	2.34
Netherlands	1.70	2.16	2.43	4.74	2.39	0.83	0.90	1.07	3.45	1.76
Norway	1.70	2.12	2.93	4.06	3.48	0.52	1.30	2.13	3.19	3.02
<b>Portugal</b>	<b>0.63</b>	<b>1.27</b>	<b>2.35</b>	<b>5.73</b>	<b>2.88</b>	<b>0.07</b>	<b>0.52</b>	<b>1.39</b>	<b>5.66</b>	<b>2.29</b>
Spain	1.09	1.68	1.03	6.81	2.47	0.52	1.15	0.17	5.79	1.97
Sweden	1.62	2.17	2.74	3.73	1.65	0.66	1.46	2.12	3.07	1.31
United Kingdom	2.05	1.90	1.19	2.93	2.00	1.26	1.01	0.92	2.44	1.79
United States	4.20	3.94	2.84	3.93	2.99	1.34	1.82	1.61	2.45	1.99
<b>World</b>	<b>0.93</b>	<b>2.11</b>	<b>1.85</b>	<b>4.91</b>	<b>3.01</b>	<b>0.53</b>	<b>1.30</b>	<b>0.91</b>	<b>2.93</b>	<b>1.33</b>

Source: Maddison (2001).

# HOW DO PEOPLE IN THE WESTERN BALKANS PERCEIVE THEIR LIVES IN THE AFTERMATHS OF THE 2008 CRISIS?<sup>1</sup>

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## **Abstract**

*In estimating the prospects for economic recovery after the 2008 global economic crisis understanding how people perceive their lives is necessary in two regards. On the one hand, it is argued that those individuals who report higher well-being are able to recover faster and feel better able to contribute to and support their organizations, communities, or countries. On the other, if the recovery of the economies is sought only in terms of economic growth, we would know nothing on how growth influences people's lives. In order to overcome the shortcomings of economic indicators, a concept of subjective well-being (SWB) has been introduced. Instead of indirect estimation of the quality of people's lives, people are directly asked to judge the level of well-being they achieve. The aim of this paper is to provide an overview of main tenets of the concept of subjective well-being, and to give an insight on the level of subjective well-being of the people in the Western Balkan countries based on the Global Well-Being Index. In this paper, we demonstrate that the people in the Western Balkans are on average experiencing lower well-being than the inhabitants of the OECD countries and the Europe as a whole. Only in the social well-being are people in the Western Balkans reaching European average.*

**Key words:** *Subjective Well-being, Western Balkans.*

## **INTRODUCTION**

In estimating the prospects for economic recovery after the 2008 global economic crisis understanding how people perceive their lives is necessary in two regards. On the one hand, it is argued that those individuals who report higher well-being

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<sup>1</sup> This paper is a part of research projects: 47009 (European integrations and social and economic changes in Serbian economy on the way to the EU) and 179015 (Challenges and prospects of structural changes in Serbia: Strategic directions for economic development and harmonization with EU requirements).

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are able to bounce back faster, take care of their own basic needs, and feel better able to contribute to and support their organizations, communities, or countries (Gallup&Healthways 2014). On the other, if the recovery of the economies in the aftermaths of the 2008 crisis is sought only in terms of economic growth, we would know nothing on how growth influences people's lives.

Economic indicators such as the gross national product (GNP) per capita do not necessarily correspond with the level of people's life conditions (Radovanovic 2013). In some countries, relatively high level of gross national product GNP per capita is not followed by the high quality of life as expressed in terms of life expectancy, adult literacy, and infant mortality (Sen 1999; Haq 1995). In addition, economic growth does not necessarily correspond with the high level of happiness people report. For example, although the United States, has achieved striking economic and technological progress over the past half century, it did not self-reported happiness of its inhabitants bi(Helliwell, Layard and Sachs 2012). Although people cannot live, let alone live a good-quality life, without goods and services, the resources they have a command of do not tell us all about the level of personal well-being they achieve (Radovanovic 2011). Thus, if we focus exclusively on economic indicators, we cannot have reliable evidence in explaining and predicting economic recovery that matter to people and their lives.

In order to overcome the shortcomings of economic indicators, a concept of subjective well-being (SWB) has been introduced. Instead of indirect estimation of the quality of people's lives, people are directly asked to judge the level of well-being they achieve. The aim of this paper is to give an overview of the main tenets of the concept of subjective-wellbeing, and to provide the empirical evidence on the level of subjective well-being of the people in the Western Balkans based on the Global Well-Being Index.

### **THE CONCEPT OF SUBJECTIVE WELL-BEING (SWB)**

The essence of subjective well-being is a personal estimation of the quality of her life. What makes a good life has been preoccupation of philosophers since ancient times. A long philosophical tradition views happiness as a driving force and a final goal of one's life (Radovanovic 2013). However, philosophers do not agree on the definition of happiness. The happiness is seen as the final goal both within eudemonism and utilitarianism, but what happiness entails is perceived differently (Ibid).

The Greek word eudemonia, translated into English as happiness, means "a life that is rich and fulfilling for the one living it" (Russell 2012:7). The Greek moral

philosophers, particularly the founders of the school within the moral philosophy known as virtue ethics, were concerned with the question: “What is the best way to live?”. They were preoccupied to define a final end of our lives – an end we pursue for its own sake, and for the sake of which we pursue all other goals. Such an end, as they believe, is eudemonia – giving ourselves a good life, where a good life involves both human fulfilment and individual fulfilment (Ibid). Eudemonia is seen as the happiness of a creature with its “characteristic mode of life” (Ibid). Since our characteristic human way of living is a rational way, meaning acting with wisdom and sound emotion is what Aristotle means by virtuous activity (Ibid). Thus, a virtuous activity is the most important thing for happiness, though not a sufficient. In other words, happiness, as seen within virtue ethics is not an affective state, but rather a fulfilled life of a human being, which can be objectively examined. This approach is known as eudemonism.

Quite a different approach to happiness can be found in the utilitarian tradition. In this approach, happiness is equated with utility and defined as a pleasure and absence of pain (Bentham 1982; Mill 2001). According to the founding fathers of utilitarianism “nature has placed mankind under the governance of two sovereign masters, pain and pleasure” (Bentham 1982:1). In other words, people by nature seek to reach as much pleasure as possible, and to avoid painful actions. Within this school, happiness is seen as an affective state and a person as the best judge of the level of well-being she achieves. As such, it is a hedonistic approach to happiness.

The concept of subjective well-being combines both philosophical traditions. Subjective well-being is defined as “a person’s cognitive and affective evaluations of his or her life” (Diener, Lucas, and Oishi, 2002: 63). Cognitive element refers to what one thinks about his or her life satisfaction in global and also in certain domains such as work, relationships, physical states, etc. The affective element refers to emotions, moods and feelings, and it can be positive or negative. It is considered positive when the emotions, moods and feelings experienced are pleasant (e.g. joy, laughter, etc.), while it is negative, when the emotions, moods and feelings experienced are unpleasant (e.g. stress, anger, sadness, etc.). The level of well-being is estimated based on the reports in the surveys. A person who reports a high level of satisfaction with her life, and who experiences a greater positive affect and little or less negative affect, has a high level of SWB.

The Global Well-Being Index created by Gallup and Healthways is one of the attempts to develop a measure of subjective well-being (Gallup&Healthways 2014). Gallup and Healthways look at whether people find daily work and life experiences fulfilling, enjoy strong relationships, feel financially secure, are actively involved in their communities, and are physically healthy. Their premise is

that when people are thriving in these areas, populations are healthier, economies are more productive, and individuals lead more fulfilling lives (Ibid).

The Global Well-Being Index includes five elements of well-being:

- *purpose* (liking what you one does each day and being motivated to achieve her goals);
- *social* (having supportive relationships and love in her life);
- *financial* (managing her economic life to reduce stress and increase security);
- *community* (liking where she lives, feeling safe, and having pride in her community);
- and *physical* (having good health and enough energy to get things done daily).

The elements of well-being are assessed through a survey of 10 questions, two for each element. The respondents are asked to assess the elements of well-being as *thriving*, *struggling*, or *suffering*. When reported as thriving, the well-being is strong and consistent in a particular element. Struggling well-being is moderate or inconsistent in a particular element. Finally, suffering is experienced well-being that is low and inconsistent in a particular element.

The greatest advantage of subjective well-being is that people and their experiences are put in the centre of attention (Radovanovic 2013). Unlike the approaches that focus on resources, the subjective well-being is concerned with people and their views and feelings. However, the main advantage of this approach is at the same time its main challenge. The level of experienced well-being is to a great extent influenced by the personality (Brickman and Campbell 1971; Headey and Waring 1992). In other words, if someone is by nature a lively, positive person, she would score high on the subjective well-being scale, although it might be that she has an ailment which makes her life difficult. Moreover, it seems that individuals have certain “equilibrium model” to which they return (Ibid). People adapt to changes in their lives and return to their baseline levels of happiness. Moreover, people adjust to the circumstances and try to make the best out of it. In other words, someone may score high on the subjective well-being scale, despite the fact that she lives in extreme poverty. Culture also influences the perception of one’s life. People in Latin America score high on subjective well-being scales, despite the fact that many countries struggle with high unemployment, high criminal rates, poverty, etc. That so many people are reporting positive emotions and higher well-being in Latin America at least partly reflects the cultural tendency in the region to focus on the positives in life (Gallup&Healthways 2014).

## THE GLOBAL WELL-BEING INDEX IN THE WESTERN BALKANS

In this section, we will analyse the subjective well-being of the people in the Western Balkans based on the *State of Global Well-Being* – the report of the results from the Global Well-Being Index poll conducted by Gallup and Healthways in 2013<sup>3</sup>. We will look at the five elements of well-being: purpose, social, financial, community and physical for the Western Balkan countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia).

Purpose well-being is high when people like what they do each day and are motivated to achieve their goals, no matter whether they work for a company, are self-employed, care for family members or pursue education, etc. (Gallup&Healthways 2014). On average only 10% of the inhabitants of the Western Balkan countries like what they do every day and learn or do something interesting each day. Among them, 7% in Albania is thriving in this element, followed by 8% in Croatia, then 10% in Montenegro, 11% in Serbia, 12% in Bosnia and Herzegovina and 14% in Macedonia is thriving in this element. All Western Balkan countries are well below the European<sup>4</sup> average, where 22% of respondents reported that they are thriving in this element and below the OECD average where a quarter of respondents score high on this element.

**Table 1. Well Being Index - Purpose**

	Thriving (%)	Struggling (%)	Suffering (%)
Albania	7	29	64
B&H	12	50	38
Croatia	8	54	38
Macedonia	14	43	43
Montenegro	10	45	45
Serbia	11	43	46
WB	10	44	46
EUROPE	22	52	26
OECD	25	52	23

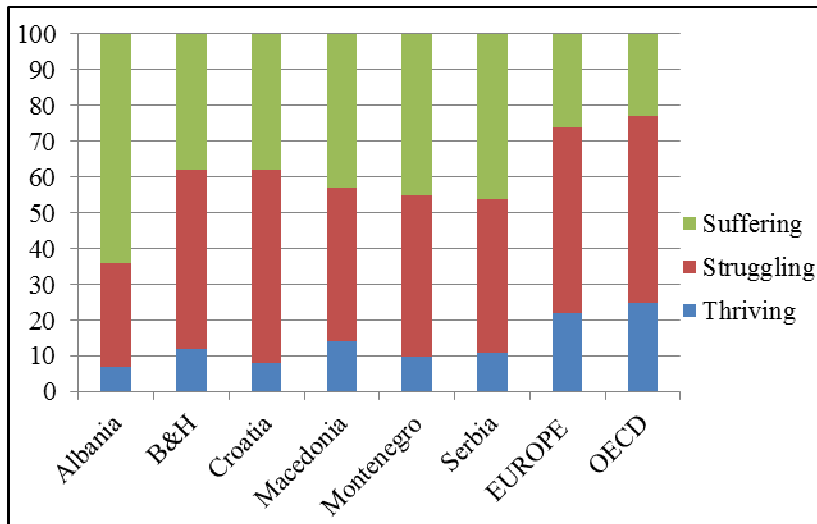
Source: Gallup&Healthways 2014

<sup>3</sup> The worldwide survey data are representative of 99% of the world's adult population. Target population in this survey is the entire civilian, non-institutionalized population, aged 15 and older. The coverage area is the entire country, including rural areas, and the sampling frame represents the entire noninstitutionalized civilian population.

<sup>4</sup> The term Europe is used as geographic term including the member s of the European Union and the countries which are not part of the EU. Thus, the scores of the Western Balkan countries are calculated within an average for Europe.

Almost half of inhabitants of the Western Balkans are suffering in purpose well-being. If they are employed, these individuals are likely to be actively disengaged in their jobs and to feel not well-rested (Ibid). They are also likely to feel they are not treated with respect, and they are far less likely to serve as advocates for their city or area than those that are thriving in this element (Ibid).

**Graph 1. Well Being Index - Purpose**



*Source: Gallup&Healthways 2014*

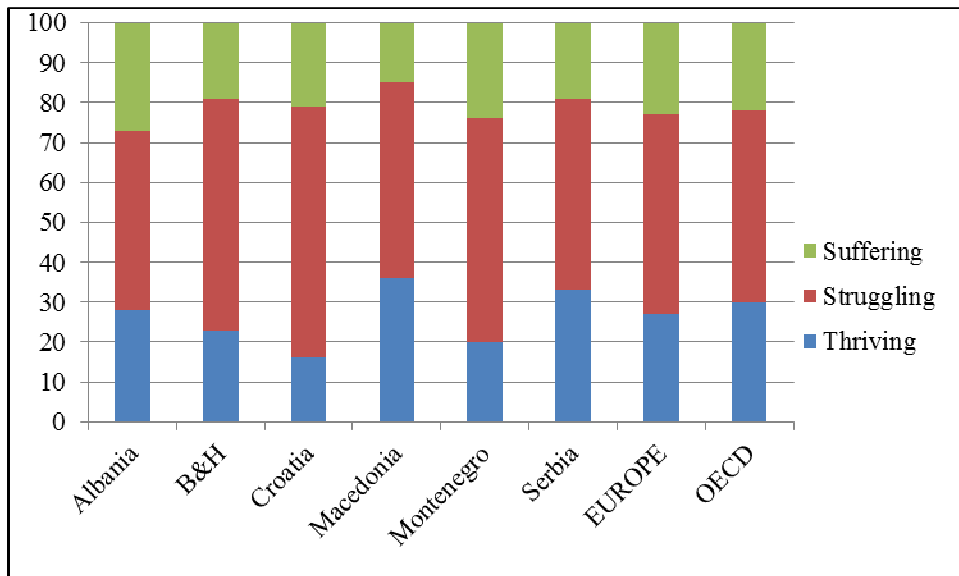
Social well-being is defined as having supportive relationships and love in one's life (Ibid). On average, 26% of the respondents in the Western Balkan countries reported that someone in their lives always encourages them to be healthy and that their friends and family give them positive energy every day. However, the differences in this element of well-being are notable between the countries of the Western Balkan region. Only 16% of citizens of Croatia are thriving in this element of well-being, followed by 20% in Montenegro and 23% in Bosnia and Herzegovina. In Albania 28% of respondents reported that they are thriving in social element, 33% in Serbia and 36% in Macedonia. Relatively more people in Albania, Serbia and Macedonia are thriving in social well-being than in Europe taken as whole and the OECD countries.

**Table 2. Well Being Index - Social**

	Thriving (%)	Struggling (%)	Suffering (%)
Albania	28	45	27
B&H	23	58	19
Croatia	16	63	21
Macedonia	36	49	15
Montenegro	20	56	24
Serbia	33	48	19
WB	26	53	21
EUROPE	27	50	23
OECD	30	48	22

Source: Gallup&Healthways 2014

Adults who are thriving in social well-being are likely to evaluate their current and future lives highly and to be engaged in their jobs (Ibid). They are also much more likely to recommend their city or area as a place to live, to help a stranger who is in need, and to donate money to charity than are those who are suffering (Ibid).

**Graph 2. Well Being Index - Social**

Source: Gallup&Healthways 2014



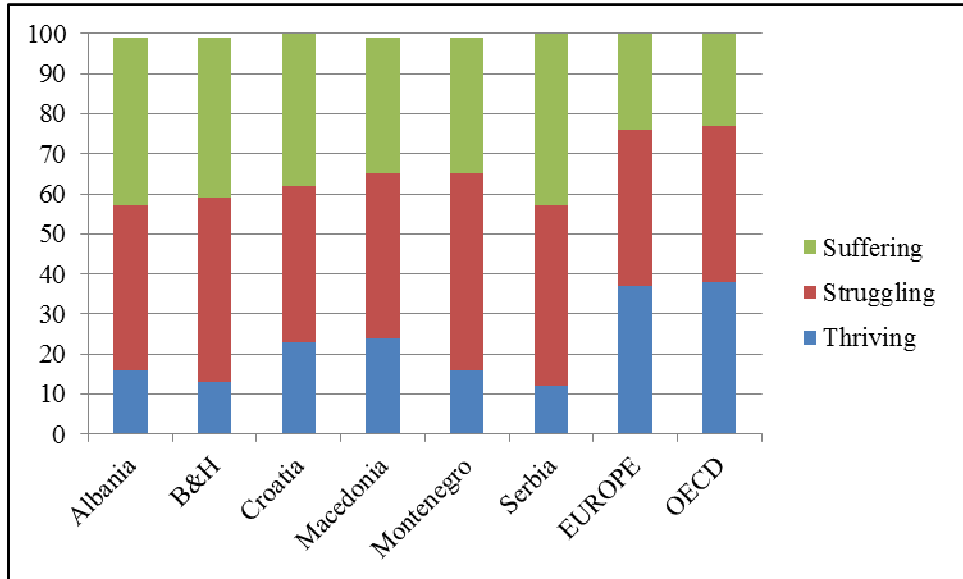
The financial element of well-being is high when people have enough money to do everything they want to do and when they do not worry about money. Effectively managing one's economic life to reduce stress and increase security is a key to financial well-being. People thriving in this element are generally satisfied with their overall standard of living (Ibid). Only 17% of the people from the Western Balkans are thriving in this element, while 37% Europeans and 38% of the inhabitants of OECD countries reported that they have enough money to do everything they want to do and when they do not worry about money. The share of those that are thriving in this element is the smallest in Serbia (12%), followed by Bosnia and Herzegovina (13%), Albania (16%) and Montenegro (16%). Relatively more inhabitants of Croatia (23%) and Macedonia (24%) are thriving in financial element than in the other Western Balkan countries.

**Table 3. Well Being Index - Financial**

	Thriving (%)	Struggling (%)	Suffering (%)
Albania	16	41	42
B&H	13	46	40
Croatia	23	39	38
Macedonia	24	41	34
Montenegro	16	49	34
Serbia	12	45	43
WB	17	44	39
EUROPE	37	39	24
OECD	38	39	23

*Source: Gallup&Healthways 2014*

It is alarming that on average 39% of the inhabitants of the Western Balkan countries are suffering in this element, while this numbers are 24% for Europe and 23% for the OECD countries. More than 40% of people in Serbia, Albania and Bosnia and Herzegovina report that they do not have enough money to do everything they want to do and that they worry about money. Adults who are suffering in financial well-being have little or no savings, they are far more likely than their counterparts who are struggling or thriving to experience stress on a daily basis and more likely to want to move permanently to another country to live (Ibid).

**Graph 3. Well Being Index - Financial**

Source: Gallup&Healthways 2014

Community element of well-being is high when people think that the city or area where they live is a perfect place for them and when they receive recognition for helping to improve the city or area where they live (Ibid). Community well-being is high when people feel save in their community, when there are opportunities for individuals, families, and friends to share in social experiences, and when community are tolerant, open, and welcoming toward new residents, tolerating differences, whether ethnic, religious, or socio-economic (Ibid). In this element, Western Balkan countries are lacking behind the European average and well behind the OECD average. Only 12% of the inhabitants in the Western Balkans are thriving in this element, while the 28% of Europeans and 32% of the OECD members are thriving in this element. Relatively the smallest number of Croatians and Bosnians are thriving in community well-being, only 10%, followed by 11% of Montenegrins, 12% Serbians and Albanians and 14% of Macedonians.

**Table 4. Well Being Index - Community**

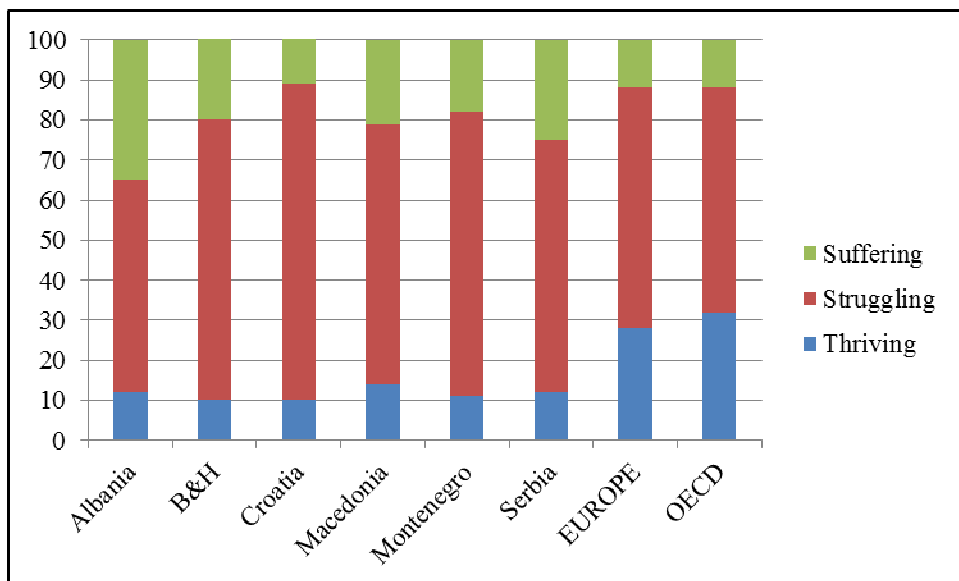
	Thriving (%)	Struggling (%)	Suffering (%)
Albania	12	53	35
B&H	10	70	21
Croatia	10	79	12
Macedonia	14	65	21

Montenegro	11	71	18
Serbia	12	63	25
WB	12	67	22
EUROPE	28	60	12
OECD	32	56	12

Source: Gallup&Healthways 2014

Majority of the people in the Western Balkans (on average 67%) is struggling in community well-being. These people are less likely as their thriving counterparts to evaluate their current and future lives highly, less likely to say they learn new and interesting things each day, and less likely than those who are thriving in this element to recommend their city or area as a place to live (Ibid).

**Graph 4. Well Being Index - Community**



Source: Gallup&Healthways 2014

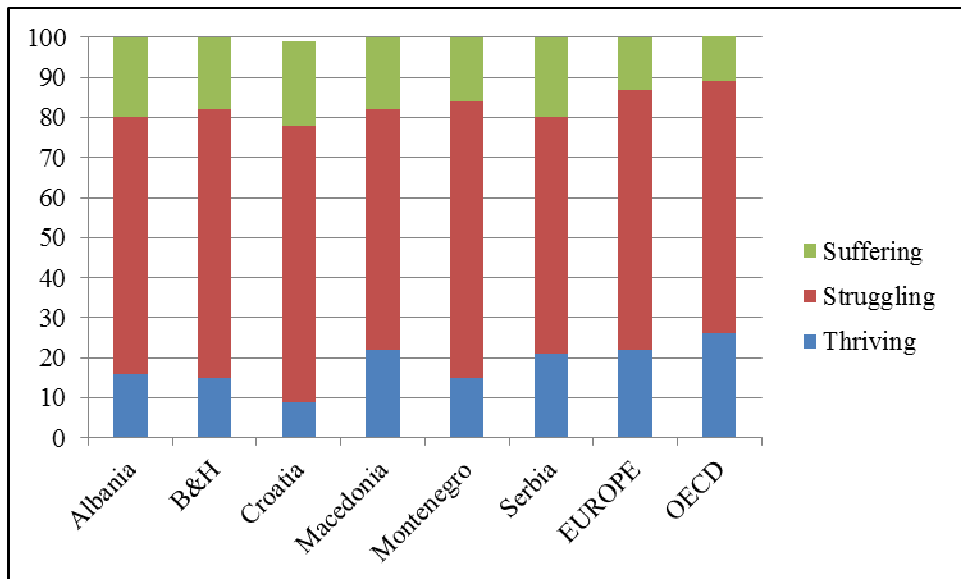
Finally, physical well-being is defined as having good health and enough energy to get things done daily (Ibid). On average, only 16% people in the Western Balkans feel active and productive every day and feel that their physical health is near perfect. This is far less than European (22%) and OECD (26%) average. The smallest share of people that are thriving in this element of well-being is found in Croatia (9%), followed by Bosnia and Herzegovina and Montenegro with 15%, then Albania (16%), Serbia (21%) and Macedonia (22%).

**Table 5. Well Being Index - Physical**

	Thriving (%)	Struggling (%)	Suffering (%)
Albania	16	64	20
B&H	15	67	18
Croatia	9	69	21
Macedonia	22	60	18
Montenegro	15	69	16
Serbia	21	59	20
WB	16	65	19
EUROPE	22	65	13
OECD	26	63	12

Source: Gallup&Healthways 2014

Majority of the people in the Western Balkans (on average 67%) is struggling in physical well-being. These individuals are less likely as those who are thriving physically to evaluate their current and future lives highly and they are more likely to carry significant stress on any given day (Ibid).

**Graph 5. Well Being Index - Physical**

Source: Gallup&Healthways 2014

When we look at the region's averages for each element of well-being, it is noticeable that the smallest number of people in the Western Balkans is thriving in purpose well-being (10%), a bit more in community well-being (12%), physical (16%) and financial (17%), while the quarter of them is thriving in social well-being.

**Table 7. Well Being Index – Western Balkans**

	Thriving	Struggling	Suffering
Purpose	10	44	46
Social	26	53	21
Financial	17	44	39
Community	12	67	22
Physical	16	65	19

The most striking fact is that more than half inhabitants of the Western Balkans, namely 59%, do not report thriving in any of well-being elements. As many as 75% of Albanians do not report thriving in any well-being element, 61% of Croatians, Bosnians and Montenegrins, 50% of Serbians and 46% of Macedonians feel the same. On average, 23% of the people in the Western Balkans report thriving in one of the well-being elements, only 9% in two, 5% in three, 3% in four and 1% in all five elements.

**Table 6. Well Being Index – Thriving in Well-being Elements**

	None	One	Two	Three	Four	Five
Albania	75	21	2	1	0	0
B&H	61	20	9	5	3	1
Croatia	61	24	8	4	2	1
Macedonia	46	25	15	9	4	1
Montenegro	61	21	8	6	4	1
Serbia	50	28	12	5	3	2
WB	59	23	9	5	3	1

*Source: Gallup&Healthways 2014*

When we look at the elements of the Well Being Index by each country, we can notice that only 7% Albanians are thriving in purpose well-being, a bit more that that – 12% is thriving in community well-being and 16% in financial and physical. A bit more than a quarter of Albanians reported that they are thriving in social well-being. A majority of Albanians are suffering in purpose well-being (64%) and little less than a half in financial well-being (42%).

**Table 7. Well Being Index - Albania**

	Thriving	Struggling	Suffering
Purpose	7	29	64
Social	28	45	27
Financial	16	41	42
Community	12	53	35
Physical	16	64	20

Source: Gallup&Healthways 2014

The smallest number of people from Bosnia and Herzegovina is thriving in community well-being (10%), a bit more than that 12% is thriving in purpose, followed by 13% of those thriving in financial well-being and 15% in physical well-being. People in Bosnia and Herzegovina thrive the most often in social well-being (23%). The greatest number of Bosnians is suffering in financial well-being (40%).

**Table 8. Well Being Index – Bosnia&Herzegovina**

	Thriving	Struggling	Suffering
Purpose	12	50	38
Social	23	58	19
Financial	13	46	40
Community	10	70	21
Physical	15	67	18

Source: Gallup&Healthways 2014

The Croatians are thriving the least in purpose (8%) and physical well-being (9%). Only 10% thrive in community and 16% in social well-being. The greatest number of Croatians, 23%, report that they are thriving in financial well-being, which is the highest for the region.

**Table 9. Well Being Index – Croatia**

	Thriving	Struggling	Suffering
Purpose	8	54	38
Social	16	63	21
Financial	23	39	38
Community	10	79	12
Physical	9	69	21

Source: Gallup&Healthways 2014

More than a third of the inhabitants of Macedonia (36%) report that they are thriving in social well-being, which is the region leader in this element of well-being. A bit less than a quarter of Macedonians reported that they are thriving in financial (24%) and physical well-being (22%). In purpose and community well-being is thriving 14% of people in this country.

**Table 10. Well Being Index – Macedonia**

	Thriving	Struggling	Suffering
Purpose	14	43	43
Social	36	49	15
Financial	24	41	34
Community	14	65	21
Physical	22	60	18

*Source: Gallup&Healthways 2014*

The Montenegrins are thriving the most in social well-being (21% of them), followed by 16% of those thriving in financial and 15% thriving in physical well-being. The smallest number of Montenegrins is thriving in purpose (10%) and community well-being (11%).

**Table 11. Well Being Index – Montenegro**

	Thriving	Struggling	Suffering
Purpose	10	45	45
Social	20	56	24
Financial	16	49	34
Community	11	71	18
Physical	15	69	16

*Source: Gallup&Healthways 2014*

Approximately third of the Serbia's population are thriving in social well-being, and 21% of them in physical. The smallest number of the people from Serbia is thriving in purpose (11%), followed by financial (12%) and community (12%) well-being.

**Table 12. Well Being Index - Serbia**

	Thriving	Struggling	Suffering
Purpose	11	43	46
Social	33	48	19
Financial	12	45	43
Community	12	63	25
Physical	21	59	20

*Source: Gallup&Healthways 2014*

To sum up, people in the Western Balkans are experiencing lower well-being in each element than the inhabitants of the OECD countries. Only in the social well-being are people in the Western Balkans reaching European average. The smallest number of people in the Western Balkans is thriving in purpose well-being (10%), a bit more in community well-being (12%), physical (16%) and financial (17%), while relatively the greatest number of people are thriving in social element (26%). The most striking fact is that more than half inhabitants of the Western Balkans, namely 59%, do not report thriving in any of well-being elements.

## CONCLUSION

This paper argues that the prospects for economic recovery after the 2008 global economic crisis understanding how people perceive their lives is necessary in two regards. On the one hand, it is argued that those individuals who report higher well-being are able to bounce back faster, take care of their own basic needs, and feel better able to contribute to and support their organizations, communities, or countries (Gallup&Healthways 2014). On the other, if the recovery of the economies in the aftermaths of the 2008 crisis is sought only in terms of economic growth, we would know nothing on how growth influences people's lives.

In order to overcome the shortcomings of the economic indicators, a concept of subjective well-being (SWB) has been introduced. The essence of subjective well-being is the personal estimation of the quality of her life. What makes a good life has been preoccupation of philosophers since ancient times and the roots of the concept of the subjective well-being can be traced to virtue ethics and utilitarianism.

Subjective well-being is defined as “a person's cognitive and affective evaluations of his or her life” (Diener, Lucas, and Oishi, 2002: 63). The Global Well-Being Index created by Gallup and Healthways is one of the attempts to develop a



measure of subjective well-being (Gallup&Healthways 2014). The Global Well-Being Index includes five elements of well-being: purpose, social, financial, community and physical. The elements of well-being are assessed through a survey of 10 questions, two for each element. The respondents are asked to assess the elements of well-being as thriving, struggling, or suffering.

In this paper we have analysed the Well-Being Index of the people in the Western Balkan countries. We have showed that the people in this region are on average experiencing lower well-being in each element than the inhabitants of the OECD countries and the Europe. Only in the social well-being are people in the Western Balkans reaching European average. The smallest number of people in the Western Balkans is thriving in purpose well-being (10%), a bit more in community well-being (12%), physical (16%) and financial (17%), while relatively the greatest number of people are thriving in social element (26%). The most striking fact is that more than half inhabitants of the Western Balkans, namely 59%, do not report thriving in any of well-being elements.

In short, although they enjoy strong relationships with their friends and family, few people from the Western Balkans find their daily work and life experiences fulfilling, most of them feel financially insecure and carry significant stress every day, and a few of them think that the city or area where they live is a perfect place for them. Such individuals are hardly able to bounce back and take care of their own basic needs in the aftermaths of the 2008 crisis.

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# KNOWLEDGE BASED ECONOMY AS A PRECONDITION FOR ECONOMIC RECOVERY OF THE WESTERN BALKAN COUNTRIES

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Aleksandra LOZANOSKA<sup>2</sup>

## **Abstract**

*In the last decade of the previous century the Western Balkan Countries were faced with more or less prolonged social and economic transformation, great political changes, and some of them with war conflicts that have significant impact on their economies. Contemporary trends of their economic recovery show that it takes place slowly and that the available resources for economic development, including the human resources, are not used rationally.*

*Having in mind the importance of the knowledge based economy Western Balkan Countries in last decade conducted reforms in the higher education and policies for improvement of the labor market efficiency. The educational reforms resulted in the increase of the secondary and tertiary enrolment rates, but not in a significant improvement of the quality of the educational system, the local availability of research and training services, the internet access in schools etc. These changes were not accompanied by the effective usage of talents. The rankings of the indicators for pay and productivity, reliance on professional management and brain drain shows that today the majority of the Western Balkan Countries are not in a better position than five years ago.*

*The aim of the research in this paper is to identify the importance of the knowledge based economy for the economic recovery of the Western Balkan Countries, as well as the necessary changes in the higher education and the labor market policy. The analysis is referring to the relevant indicators for innovation and competitiveness and their changes in the last six years.*

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**Keywords:** *knowledge economy, higher education, brain drain, economic recovery, innovation, competitiveness*

## **INTRODUCTION**

Today the importance of the knowledge based economy is undeniable, particularly for the economies that are facing with limited financial resources and emphasized economic and social problems. The experiences show that recognition of its significance was the important determinant for the recorded rapid economic development and economic recovery in many countries. Aware of the great importance of the human resources and the knowledge Western Balkan countries in last decade conducted profound reforms in the educational system, particularly in the higher education, and policies for labor market efficiency improvement.

Knowledge driven economy nowadays is larger concept. Having in mind its complexity the aim of the research in this paper is to identify relevant aspects concerning the knowledge based economy in Western Balkan countries. It covers short macroeconomic overview, analysis of the available indicators concerning the higher education and training, innovations and labor market efficiency, as well as main challenges of the region. The observation of the trends of the above mentioned aspects in last decade is done by use of different data sources: World Bank, Global Competitiveness Report (GCR) of the World Economic Forum (WEF), Statistical Reviews and Labor Force Surveys (LFS) of the National State Statistical Offices etc. This analysis refers to: Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia i.e. Western Balkan 5 countries (WB5).

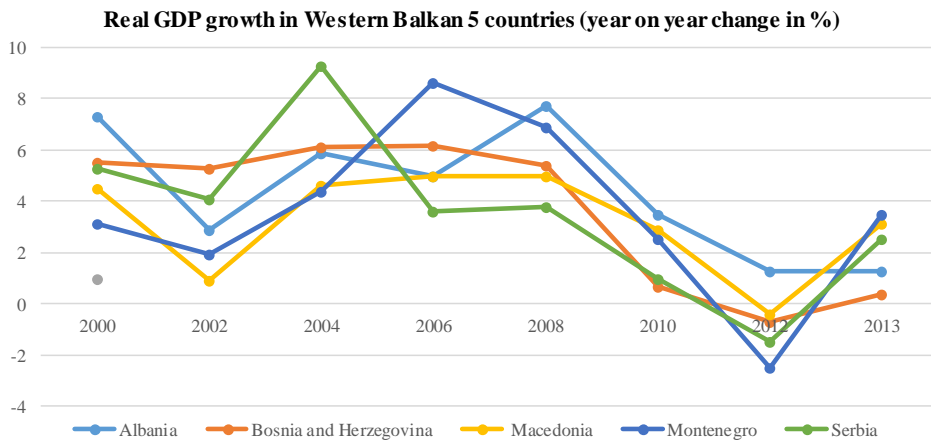
## **1. MAIN FEATURES OF THE ECONOMIC DEVELOPMENT**

In the last decade of the previous century the Western Balkan 5 countries (WB5) were faced with more or less prolonged social and economic transformation, great political changes, and some of them with war and political conflicts that had significant impact on their economies. On the beginning of the new century economic recovery starts in all countries. It was combined by macroeconomic stability, increasing investment and commitment to EU integration. This trend was interrupted with the economic crisis.

The basic macroeconomic indicators for the period 2000-2013 show that the observed WB5 recorded variable economic growth. In the pre-crisis period (2001-2008) the average GDP growth rate recorded almost continuous increase and was in range from 2.8% (2001) to 7.3% (2007). In 2008 it slowed to 5.9% because in the second half of the year most of them were affected by the economic crisis

(Figure 1). Since 2009 the annual GDP growth rates have continuously declined and in 2012 all countries (except Albania) have noted negative values of this indicator. The annual GDP growth data shows that it takes more than four years after the crisis for the countries to gain positive economic growth. In 2013 the annual GDP growth rates were in range from 0.4% to 3.5% and all of the analyzed countries (except Montenegro) still haven't reached the economic growth from 2000. In the period 2000-2013 the total GDP (in current prices) in the WB5 increased by about three times, with exception of Serbia where it was much higher (five times). Similar were the changes of the GDP per capita.

**Figure 1**



Source: <http://data.worldbank.org/indicator/>

The research of the WB5 economic development (S. Penev, A. Marušić, 2011, p.30-37) for the pre-crisis period shows that it was characterized by:

- Growth model based on high domestic consumption linked to fast credit growth and an increase in real wages;
- Significant increase of the gross domestic investment accompanied by low savings rates. It implicates the widening of the savings-investment gaps;
- Fast financial liberalization, increasing the supply of credit to households and enterprises, which resulted in trade deficit and current account deficits widening as well as increasing the private sector debt;
- All WB5 (except Serbia) had relatively low inflation, which was significantly accelerated in the first half of 2008;
- Permanent growth of the foreign direct investments, mostly related to privatization and relatively small Greenfield investments.

The WB5 growth in the pre-crisis period was interrupted when the global financial crisis was transmitted to the region through trade and financial channels, resulting in reduced external demand for the region's exports, a credit crunch, a decline in remittances, and a decline in foreign direct investment). The overall drop in economic activity in the region was accompanied by widening budget deficits and increased public and foreign debts. The general government debt increased as a result of the public sector borrowing from the IMF and other IFIs, with the aim of stabilizing the financial sector, strengthening foreign reserves and financing capital investment. After a period of intensive FDI growth, in 2008 all countries of the region except Albania experienced a decrease in FDI inflows. From 2011 Bosnia and Herzegovina, Macedonia and Serbia recorded FDI growth, while Montenegro registered further intensive decrease in FDI. The negative trend continued in the first part of 2012 (Penev, 2012, p.18-23).

In the period 2000-2013 the economic development in the majority of WB5 countries was characterized as jobless growth, accompanied by more or less pronounced decrease/increase of the unemployment and employment rates. The unemployment rates have decreased in Albania, Bosnia and Herzegovina and Macedonia, while in Serbia it noticed relatively high increase. These changes were followed by declining of the employment rates in Albania, Bosnia and Herzegovina, Serbia, and with increase in Montenegro and Macedonia. The decrease of the unemployment rate, as well as of the employment rate, in most of the WB5 means that relatively great part of the working-age population become inactive, i.e. it is out of the labor force contingent<sup>3</sup>. The indicators for the WB5 average employment rate (40.2%) show that in 2013 it was significantly lower than in EU28 (68.4%), while the average unemployment rate (22.5%) was two times higher (10.8%). These indicators and the trend of the activity decrease implicate insufficient use of the available human resources.

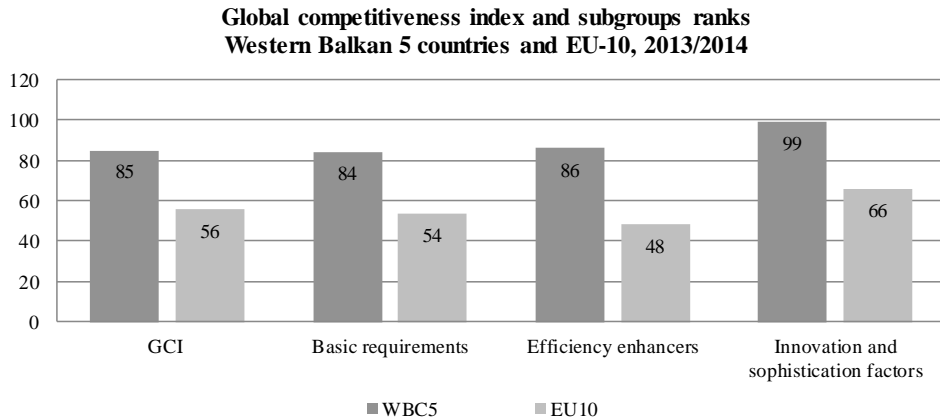
According to the WEF methodology, in the GCR the countries are classified into three stages of development: factor-driven stage, efficiency-driven stage and innovation-driven stage. The GCR data shows that in the period 2008-2014 the WB5 were in the efficiency-driven stage of development. At this stage efficient goods and services, labor and financial markets are crucial, as well as knowledge acquired through higher education, specialized training and access to latest technologies. Regarding the total Global Competitiveness Index (GCI), in 2013-2014 the WB5 are lagging behind the EU10 for almost 30 positions. Just about

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<sup>3</sup> The employment rates / unemployment rates in 2013 by countries amounts: 44.5% / 15.6%, (Albania), 30.3% / 27.6% (Bosnia and Herzegovina), 40.6% / 29.0% (Macedonia), 40.3% / 19.5% (Montenegro) and 45.2% / 20.8% (Serbia). Source: LFS 2013, for analyzed countries.

same difference in ranks is characteristic for the basic requirements and innovation and sophistication factors (Figure 2).

**Figure 2**



Source: World Economic Forum, The Global Competitiveness Reports, 2013-2014

The results of many studies, as well as the above mentioned indicators confirms that the WB5 are facing with limited resources for accelerating the economic growth and for creation of new jobs. The current situation is imposing the need to focus the attention on the human capital and knowledge, as an important precondition for faster economic recovery of the region.

## 2. SOME INDICATORS FOR KNOWLEDGE BASED ECONOMY

In last two decades the role of knowledge, as compared with natural resources, physical capital and low skill labor, has taken on greater importance. There are many definitions of the knowledge economy. Having in mind the aim of the analyze in this paper we should talk about testable definitions which “allow to measure in a robust way through national and international statistical and survey data the knowledge economy, the knowledge workforce and the knowledge-based firm”. (Brinkley, 2014, p.3) In that context, no less important is the consideration of the investment in education and research. In this terms the OECD has produced a composite indicator of “investment in knowledge” made up of: investment in R&D, investment in higher education and investment in IT software<sup>4</sup>. All this implicates that determining the knowledge based economy is very complex issue.

<sup>4</sup> By this input measure, three groups of economies are identified high, middle and low knowledge investment economies.

In order to identify the changes and the current situation concerning the knowledge based economy in the WB5, some aspects of the higher education and training, innovations, as well as the share of knowledge workers, are observed. Such an approach is determined by the available comparable data for the WB5. In these terms a set of indicators for higher education and training (Pillar 5) and innovation (Pillar 12) of the GCI are analyzed.

### a) The higher education and training

The higher education and training, as one of the twelve pillars of the GCI, provides comprehensive insight into the country's educational level of the population, the quality of the educational system as well as the availability of research and training services. The average rankings for the WB5 show that according this pillar in 2013-2014 the region marked a better position than in 2008-2009 (Table 1). On country level this conclusion could not be applied for Macedonia and Serbia. Beside this improvement in 2013-2014 the region is significantly lagging behind the EU10 that ranks on 42<sup>nd</sup> place.

**Table 1**

**Pillar 5: Higher Educational Level and Training, ranks of the Western Balkan 5 Countries**

	2008-2009 (rank out of 134)	2009-2010 (rank out of 133)	2010-2011 (rank out of 139)	2011-2012 (rank out of 142)	2012-2013 (rank out of 144)	2013-2014 (rank out of 148)
Albania	97	90	84	82	76	78
Bosnia and Hercegovina	109	86	88	86	72	63
Macedonia	73	70	72	80	81	76
Montenegro	55	57	52	48	51	50
Serbia	70	76	74	81	85	83
<b>WB5 (average)</b>	<b>81</b>	<b>76</b>	<b>74</b>	<b>75</b>	<b>73</b>	<b>70</b>

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013, 2013-2014

The changes in this pillar are determined by set of six indicators. The scores of these indicators and their rankings show that in the observed period the WB5 achieved more or less emphasized improvement.



The rankings of the *secondary enrollment* indicators shows continuous improvement of the WB5 position until 2012-2013, while in 2013-2014 it is ranked on 74<sup>th</sup> place and lags behind EU10 by 25 places (Annex 1). On country level only Bosnia and Herzegovina and Serbia in 2013-2014 have better position (73<sup>th</sup> and 62<sup>nd</sup> rank, respectively) compared to 2008-2009 (110<sup>th</sup> and 64<sup>th</sup> place). Concerning the indicator - *tertiary enrollment*, in the analyzed period the region noticed improvement but with oscillating scores and ranks particularly in last few years. Regardless of that in 2013-2014 the region is positioned on 60<sup>th</sup> place and lags behind EU10 by 28 places. The rankings show that in 2013-2014 compared to 2008-2009 all countries have improved their position (except of Montenegro). The scores and ranks data for 2012-2013 shows great changes in terms of breaking the trend of the previous years. In last two years Montenegro and Serbia remain nearly on the same position, while Albania has recorded significantly lower rank.

As for the *quality of the educational system* the WB5 average shows unfavorable changes in the position of the region. In 2013-2014 it is ranked on 80<sup>th</sup> place and has the same position as EU10. In the same year Albania, Macedonia and Montenegro have better rank than region's average, while Serbia and Bosnia and Herzegovina are distinguished with very low positions on the list (ranked on 111<sup>th</sup> and 132<sup>nd</sup> place).

In relation to the indicator - *internet access in school*, in the analyzed period the position of the region have been significantly improved (from 85<sup>th</sup> to 66<sup>th</sup> place). Irrespective of these changes in 2013-2014 the region is lagging behind EU10 for 34 places. In the observed period all WB5 (except Serbia) have improved their scores and positions concerning the internet access in school. The most significant shift in the rank of 44 places is characteristic for Macedonia.

*The local availability of research and training services* is indicator which is directly related to the development of the knowledge based economy. In the period 2008-2014 WB5 are ranked on 100<sup>th</sup> place or higher, which implicates unfavorable position regarding this indicator. In 2013-2014 the WB5 region is ranked on 102<sup>nd</sup> place and is lagging behind EU10 for 42 places. On country level improvement of the position is characteristic for Albania, Bosnia and Herzegovina and Macedonia.

For the increase of the productivity and competitiveness the *extent of staff training* is very important. In these terms in the last few years the region has recorded improvement. The ranking shows that the position of the WB5 region was changed from 97<sup>th</sup> (2008-2009) to 80<sup>th</sup> place (2013-2014). In the last year WB5 have better position than EU10 for 5 places. The data for this indicator shows that Albania, Bosnia and Herzegovina and Montenegro achieved significant improvement in

their position. At the same time Macedonia change its position from 83<sup>rd</sup> to 104<sup>th</sup> place and Serbia from 120<sup>th</sup> to 140<sup>th</sup> place.

## b) Innovations

Today the innovations are exceptionally important for promotion of the country's competitiveness and economic growth increase. The result of many studies confirms that in the countries which are innovators and leaders in the technological changes, according the real sector competitiveness demands, the technological component gets higher ponder (50%). (Grečić, 2010, p.269) The world is faced with fast technological progress and innovations which can be accepted only by highly qualified labor force. In terms when the life time of the products and machines is shorter, and the moral amortization faster, the investment in human capital is more cost-effective long-term investment. In that context, innovations are one of the key preconditions for building knowledge based economies and for the competitiveness increase of the national economies.

The numerical values of the scores and the rankings of the WB5 concerning the innovation indicators, for the period 2008-2014, gave relevant findings regarding the changes and current position of the region in this field. The ranks of the WB5 average show that in the observed period the region noted improvement of its position (Table 2). This conclusion could not be applied for Serbia. The other four countries are characterized with more or less emphasized oscillations in their position in last few years. Beside this improvement in 2013-2014 the region as a whole is ranked on 99<sup>th</sup> place and lags well behind the EU10 that ranks on 66<sup>th</sup> place.

Table 2

**Pillar 12: Innovations, ranks of the Western Balkan 5 Countries**

	2008-2009 (rank out of 134)	2009-2010 (rank out of 133)	2010-2011 (rank out of 139)	2011-2012 (rank out of 142)	2012-2013 (rank out of 144)	2013-2014 (rank out of 148)
Albania	130	121	104	102	113	119
Bosnia and Hercegovina	129	127	120	108	99	89
Macedonia	105	93	97	104	110	94
Montenegro	88	68	56	59	69	70
Serbia	91	94	107	118	124	125
<b>WB5 (average)</b>	<b>109</b>	<b>101</b>	<b>97</b>	<b>98</b>	<b>103</b>	<b>99</b>

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013, 2013-2014

The WEF observes the importance of the innovations through seven indicators: Capacity for innovation; Quality of scientific research institutions; Company spending on R&D; University-industry collaboration in R&D; Government procurement of advanced tech products; Availability of scientists and engineers and Utility patents (Annex 2).

In terms of the indicator – *capacity for innovation*, it can be concluded that after the short-term improvement (in 2009-2010 and 2010-2011) the WB5 position was worsened and in 2013-2014 the region is ranked on 103<sup>rd</sup> place lagging behind EU10 for 37 places. Although with more or less emphasized oscillations the position of all WB5 is getting better, with exception of Macedonia and Serbia.

According the indicator – *quality of scientific research institutions*, WB5 noted certain improvements. The rankings shows that in 2013-2014 the region is ranked on 78<sup>th</sup> place (99<sup>th</sup> place in 2008-2009) lagging behind EU10 for 33 places. The ranking of the WB5 shows that in this period, with exception of Serbia, significantly is enhanced the position of Bosnia and Herzegovina and Montenegro, and relatively less is improved the situation in Albania and Macedonia.

Regarding the indicator – *company spending on R&D* the WB5 marked favorable changes that are characteristic for all countries (except Serbia). The ranking shows that in the period 2008-2014 Albania has the most noticeable shift of 51 places. According the 2013-2014 data, the region is ranked on 88<sup>th</sup> place, only 9 places lagging behind EU10.

As for the indicators – *university-industry collaboration in R&D* and *government procurement of advanced tech products*, in the period 2008-2014 all WB5 (except Serbia), have improved their position, but with even more emphasized differences among them. The rankings for 2013-2014 show that regarding the university-industry collaboration in R&D, Bosnia and Herzegovina is on 37<sup>th</sup> place and Albania on 135<sup>th</sup> place (out of 148 countries). According the second indicator - government procurement of advanced tech products, Montenegro is ranked on 32<sup>nd</sup> position before all WB5. In the last year the region is ranked on 81<sup>st</sup> place (lagging behind EU10 for 18 places) for the first and on 75<sup>th</sup> place for second indicator (EU10 is ranked on 103<sup>rd</sup> place).

The changes in the scores and ranks of the indicator – *availability of scientists and engineers*, in the last several years, are manifested in a continuous worsening of the situation in majority of the WB5, as well as of the region as whole until 2012-2013. For example, in the observed period Macedonia has stepped down from 70<sup>th</sup> (2008-2009) to 92<sup>nd</sup> place (2013-2014), and Serbia from 50<sup>th</sup> on 85<sup>th</sup> place. In last year the region is ranked on 78<sup>th</sup> and EU10 on 82<sup>nd</sup> place

In relation to the indicator – *utility patents*, in 2013-2014 among the WB5 Montenegro has the highest (49<sup>th</sup> place) and Albania the lowest rank (91<sup>st</sup> place). The rankings in the observed period show improved position of Bosnia and Herzegovina, Macedonia and Montenegro, as well as of the region as a whole. In 2013-2014 WB5 in average are ranked on 64<sup>th</sup> place lagging behind EU10 for 27 places.

### **c) Knowledge workers**

The participation of knowledge workers is an important indicator for identifying the knowledge based economy. Knowledge workers' defining is not an easy question and still is an issue of comprehensive scientific debate. In the literature there are pointed out (at least) three ways we can work towards a definition of knowledge workers (Brinkley, 2014, p.16):

- All those who work in the top three standard occupational classification (managers, professionals, associate professionals);
- All those with high levels skills, indicated by degree or equivalent qualifications (NVQ level 4);
- All those who perform tasks that require expert thinking and complex communication skills with the assistance of computers.

Knowledge based economy as a precondition for economic recovery of the WB5 depends on the use of the available highly educated labor force as an active factor of progress. In this regard, significant indicator is the share of the knowledge workers in the total employed persons. The available data of the LFS for the WB5 (except Bosnia and Herzegovina) gives relevant information. The structure of the employed persons shows that the share of the managers, professionals and associate professionals is similar in Macedonia, Montenegro and Serbia, and significantly is lower in Albania (Table 3).

**Table 3****Structure (in %) of the employed according occupation, in Western Balkan countries**

	<b>Total employed</b>	Knowledge workers*	Personal services; sales; administrative / clerical**	Skilled; semiskilled; manual	Unskilled jobs
<b>Albania</b>					
2009	<b>1160000</b>	16,1	45,6	26,1	12,2
2011	<b>1160476</b>	12,6	17,3	63,3	6,8
2013	<b>992030</b>	16,2	17,9	62,8	3,2
<b>Macedonia</b>					
2009	<b>629902</b>	26,9	8,3	39,8	24,9
2011	<b>645085</b>	29,0	8,5	38,7	23,8
2013	<b>678838</b>	27,9	9,1	40,9	22,1
<b>Montenegro</b>					
2009	<b>213800</b>	29,4	21,7	40,9	8,1
2011	<b>196000</b>	32,0	19,1	41,8	7,1
2013	<b>202000</b>	30,8	21,2	41,3	6,6
<b>Serbia</b>					
2009	<b>2468688</b>	32,1	20,8	38,5	8,6
2011	<b>2166656</b>	31,9	21,0	38,2	9,0
2013	<b>2198200</b>	29,3	24,2	38,0	8,5

\* Knowledge economy jobs are managerial, professional, associate professional standard occupational classifications.

\*\* Personal service include care, recreational and some hospitality jobs.

Source: LFS 2009, 2011 and 2013, for analyzed countries

In the period 2009-2013 the share of knowledge workers in Macedonia and Montenegro oscillates and in 2013 amounts 27.9% and 30.8% respectively. Decrease of the values of this indicator is characteristic for Serbia from 32.1% (2009) to 29.3% (2013). In Albania the share of the knowledge workers remains on about 16%. These indicators show that nowadays the participation of the knowledge workers is significantly lower than in the developed countries. For example it is the same with the situation in the United Kingdom three decades ago (31% in 1984).

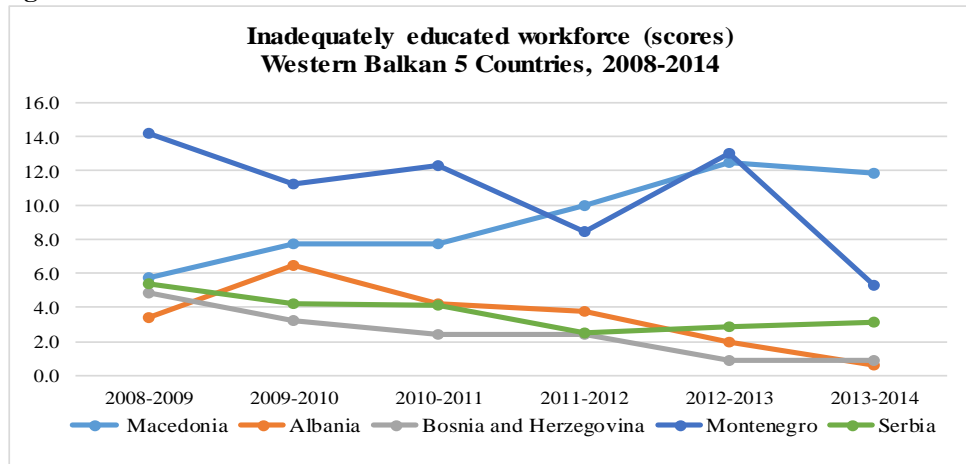
### **3. MAIN CHALLENGES REGARDING KNOWLEDGE DRIVEN ECONOMY**

Recognizing the importance of the human capital, in last decade in all WB5 were conducted reforms in the secondary and tertiary education in order to accelerate the economic growth and to improve the country's competitiveness. Common features of these reforms are: Increase of the availability of the education at all levels; Raise of the secondary and tertiary enrolments; Harmonization of the educational system and labor market needs; Improvement of the quality and efficiency of the educational system; Promotion of integrated university and three-cycle system; Introduction and development of ECTS and Diploma supplement; Increasing competitive capabilities for integration in European educational network; etc.

The above analyzed indicators for higher education and training confirms that since 2008 majority of the WB5 achieved certain progress concerning the secondary and tertiary enrollment, but still it is not on a satisfactory level. Beside that in the last two years evident are changes in terms of interruption of the positive trends. The explanation of these changes should be seen in the intensified emigration abroad and lack of relevant data for the population contingents in the country, that are necessary for calculating the enrollment rates. For example, in Macedonia since 2007 the secondary education is compulsory, and in last few years more than 90% of secondary school graduates have continued their education. It means that there should not be expected reduction of the secondary and tertiary enrollment.

Particularly unfavorable changes in the position of the WB5 are identified concerning the quality of the educational system. It is confirmed and by the scores of the indicator - inadequately educated workforce within the set of most problematic factors for doing business (Figure 3). The adverse changes are especially pronounced in Macedonia and Montenegro.

*Concerning the higher education and training main challenges for the WB5 should be seen in the further secondary and tertiary enrollment increase and the quality of the educational system improvement. No less important is the improvement of the local availability of research and training services as well as further extend of staff training.*

**Figure 3**

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013; 2013-2014

The analysis of the innovation indicators confirms that regardless the manifested oscillations in the scores and ranks, WB5 have noticed more or less improvement. But, it doesn't mean that their position can be assessed as satisfactory. Particularly unfavorable is the region's position, concerning the capacity for innovation. It is determined by the low level of expenditures in research and development as % of GDP (Table 4) as well as unfavorable changes of the indicators for company spending and R&D.

**Table 4****Research and development expenditure (% of GDP), WB5 countries**

	2000	2002	2004	2006	2008	2010	2012
Albania					0.15		
Bosnia and Herzegovina			0.02	0.02	0.02		
Macedonia	0.44	0.26	0.24	0.20	0.23	0.22	
Montenegro			1.02	1.24			
Serbia	0.97	0.73	0.32	0.49	0.38	0.79	0.99

Source: <http://data.worldbank.org/indicator/>

*In terms of innovations, as one of the key issues of the knowledge based economy, the current situation in the WB5 implicates the need of paying greater attention to the investments in research and development. Besides that, important challenges are the improvement of the university-industry collaboration and R&D and the availability of scientists and engineers.*

Table 5

## Pillar 7: Labour market efficiency, ranks of the Western Balkan 5 Countries

Indicators	2008-2009 (rank out of 134)	2009-2010 (rank out of 133)	2010-2011 (rank out of 139)	2011-2012 (rank out of 142)	2012-2013 (rank out of 144)	2013-2014 (rank out of 148)
<b>Labour market efficiency (pillar 7)</b>						
Albania	67	65	63	49	68	67
Bosnia and Herzegovina	85	94	94	85	99	88
Macedonia	113	86	71	72	94	79
Montenegro	53	53	39	45	93	58
Serbia	66	85	102	112	100	119
<b>WB5 (average)</b>	<b>77</b>	<b>77</b>	<b>74</b>	<b>73</b>	<b>91</b>	<b>82</b>
<b>Pay and productivity</b>						
Albania	10	19	16	17	33	24
Bosnia and Herzegovina	129	130	129	120	98	70
Macedonia	79	60	51	54	75	49
Montenegro	58	63	62	60	78	80
Serbia	93	66	91	103	106	118
<b>WB5 (average)</b>	<b>74</b>	<b>68</b>	<b>70</b>	<b>71</b>	<b>78</b>	<b>68</b>
<b>Reliance on professional management</b>						
Albania	103	90	82	69	73	95
Bosnia and Herzegovina	133	133	126	108	84	61
Macedonia	110	113	115	126	133	110
Montenegro	81	79	78	82	85	81
Serbia	118	118	128	133	135	135
<b>WB5 (average)</b>	<b>109</b>	<b>107</b>	<b>106</b>	<b>104</b>	<b>102</b>	<b>96</b>
<b>Brain drain</b>						
Albania	104	101	107	83	96	
Bosnia and Herzegovina	119	131	138	126	140	
Macedonia	126	125	126	142	135	
Montenegro	65	67	55	46	60	
Serbia	131	132	136	139	141	
<b>WB5 (average)</b>	<b>109</b>	<b>111</b>	<b>112</b>	<b>107</b>	<b>114</b>	

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013, 2013-2014



In the context of the knowledge based economy, as significant determinant for the economic recovery of the WB5, the labor market efficiency is of particular importance. The indicators of the GCI data give relevant information's for the use of the available human resources. The average rankings for the WB5 show that according this pillar in last two years the region registered deterioration of the position (Table 5). On country level this conclusion could be applied for Bosnia and Herzegovina, Montenegro and Serbia. According the ranking in 2013-2014 the region is lagging behind the EU10 that ranks on 71<sup>st</sup> place.

The labor market efficiency pillar is determined by three indicators. Concerning the *reliance on professional management* in 2013-2014 among the WB5 Bosnia and Herzegovina has the highest (61<sup>st</sup> place) and Serbia the lowest rank (135<sup>th</sup> place). The rankings in the 2008-2014 period show improved position of Albania and Bosnia and Herzegovina, while Macedonia and Montenegro remained on the same position. In 2013-2014 WB5 in average are ranked on 96<sup>th</sup> place lagging behind EU10 for 17 places.

In last decade most of the WB5 were faced with intensive *brain drain*. It was significantly increased in Bosnia and Herzegovina, Macedonia and Serbia. In 2012-2013 they are in the group of ten countries with the highest brain drain intensity worldwide. In the same time the region was ranked on 114<sup>th</sup>. According the changed methodology for brain drain indicator in 2013-2014 the region as a whole and the above mentioned three countries are facing with emphasized problem to retain and attract talents.

Direct consequences of the huge emigration of the highly educated staff and talents could be identified in the changes and current position of the WB5 concerning the following indicators: availability of scientists and engineers; company's expenditures on R&D; quality of scientific research institutions; local availability of research and training services. The compensation of the loss of highly educated persons and talents due to emigration is a long and slow process, especially in terms when the development of the scientific research is not significant.

In the context of the labor market efficiency should not be neglected the use of the available highly educated working-age population. The LFS data for working-age population with higher education (Table 6) shows that in 2013 the share of the inactive population is in range of 16.2% (Macedonia) to 31.9% (Serbia). Concerning the labor force with higher education the share of the unemployed persons is lowest in Montenegro (10.4%) and highest in Macedonia (24.6%). It implicates insufficient use of the available human capital which is essential for economic recovery of the WB5.

Table 6

**Working-age population, labor force and inactive population with higher education in the Western Balkan 5 Countries, 2013**

	Working-age population	Labor force	Employed	Unemployed	Inactive working-age population	Share of the inactive persons in the working-age population	Share of the unemployed persons in the labor force
Albania	258786	192020	163816	28204	66766	<b>14,7</b>	<b>25,8</b>
Bosnia and Herzegovina	252000	185000	154000	31000	67000	<b>16,8</b>	<b>26,6</b>
Macedonia	202390	169639	127974	41665	32751	<b>24,6</b>	<b>16,2</b>
Montenegro	70300	57800	51800	6000	12500	<b>10,4</b>	<b>17,8</b>
Serbia	633688	431245	356146	75099	202443	<b>17,4</b>	<b>31,9</b>

Source: Labor force surveys for 2013, for the analyzed countries

*Having in mind the current situation concerning the labor market efficiency in the context of the knowledge based economy the key challenges for the WB5 are: decrease of the unemployment and inactivity of the highly educated persons; increase of the employment of the highly educated persons; greater reliance on professional management; decrease of the brain drain as an imperative for the knowledge based economy.*

## CONCLUSION

Having in mind the limited natural resources and lack of the physical capital in the case of the WB5, the importance of the knowledge based economy nowadays is of great significance. The economic recovery of these countries after the global financial crisis takes place at slow pace and their economic success should be increasingly based on upon the effective utilization of intangible assets such as knowledge, skills and innovative potential as the key resource for competitive advantage.

The analyzes of the relevant indicators for the higher education and training, innovations, participation of the knowledge workers as well as the use of the highly educated working-age population, shows that despite more or less positive changes in the last decade, the current situation in the region, concerning the knowledge

based economy cannot be assessed as satisfactory. Particularly unfavorable is the situation with the quality of the educational system, the capacity for innovation mainly due to the low investments in research and development, the inactivity and unemployment of the highly educated working-age population, insufficient reliance on professional management and with the intensification of the brain drain.

Abovementioned unfavorable issues could be distinguished as main challenges for WB5 countries in their efforts to build knowledge driven economies. Besides that, as important challenges are identified: further secondary and tertiary enrollment increase; improvement of the local availability of research and training services; further extend of staff training; improvement of the university-industry collaboration and R&D; availability of scientists and engineers and increase of the highly educated person's employment. Successful dealing with the majority of the mentioned challenges is key precondition for brain drain decrease, which is one of the biggest problems of the region, especially if it is observed in context of demographic ageing process.

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## Annex 1

## Pillar 5: Higher Educational Level and Training, ranks of the Western Balkan 5 Countries

Indicators	2008-2009 (rank out of 134)	2009-2010 (rank out of 133)	2010-2011 (rank out of 139)	2011-2012 (rank out of 142)	2012-2013 (rank out of 144)	2013-2014 (rank out of 148)
<b>Secondary enrollment</b>						
Albania	88	91	91	100	69	95
Bosnia and Herzegovina	110	75	58	60	60	73
Republic of Macedonia	77	79	79	78	84	85
Montenegro	39	76	74	33	18	53
Serbia	64	67	67	57	58	62
<b>WB5 (average)</b>	<b>76</b>	<b>78</b>	<b>74</b>	<b>66</b>	<b>58</b>	<b>74</b>
<b>Tertiary enrollment</b>						
Albania	83	85	91	89	93	57
Bosnia and Herzegovina	73	56	70	63	68	69
Republic of Macedonia	69	60	58	58	65	68
Montenegro	40	52	42	45	55	54
Serbia	56	59	49	50	52	50
<b>WB5 (average)</b>	<b>64</b>	<b>62</b>	<b>62</b>	<b>61</b>	<b>67</b>	<b>60</b>
<b>Quality of the educational system</b>						
Albania	80	63	54	45	52	52
Bosnia and Herzegovina	92	114	102	73	106	132
Republic of Macedonia	65	59	59	75	88	70
Montenegro	57	43	37	39	38	35
Serbia	49	71	86	111	111	111
<b>WB5 (average)</b>	<b>69</b>	<b>70</b>	<b>68</b>	<b>69</b>	<b>79</b>	<b>80</b>
<b>Internet access in school</b>						
Albania	101	87	69	57	54	73
Bosnia and Herzegovina	89	76	71	81	71	61
Republic of Macedonia	84	61	54	46	46	40
Montenegro	74	60	56	55	60	71
Serbia	79	83	87	83	92	84
<b>WB5 (average)</b>	<b>85</b>	<b>73</b>	<b>67</b>	<b>64</b>	<b>65</b>	<b>66</b>
<b>Local availability of research and training services</b>						
Albania	124	110	94	100	118	113
Bosnia and Herzegovina	126	130	128	122	113	100
Republic of Macedonia	99	101	102	108	87	78
Montenegro	78	64	79	87	89	99
Serbia	74	90	100	113	125	121
<b>WB5 (average)</b>	<b>100</b>	<b>99</b>	<b>101</b>	<b>106</b>	<b>106</b>	<b>102</b>
<b>Extent of staff training</b>						
Albania	71	71	55	32	36	36
Bosnia and Herzegovina	126	131	136	137	109	58
Republic of Macedonia	83	103	119	124	126	104
Montenegro	84	65	69	66	51	63
Serbia	121	120	130	132	138	140
<b>WB5 (average)</b>	<b>97</b>	<b>98</b>	<b>102</b>	<b>98</b>	<b>92</b>	<b>80</b>

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013, 2013-2014

## Annex 2

## Pillar 12: Innovations, ranks of the Western Balkan 5 Countries

Indicators	Albania	Bosnia and Herzegovina	Macedonia	Montenegro	Serbia	WB5 (average)
<b>Capacity for innovation</b>						
2008-2009 (rank out of 134)	134	126	83	120	92	<b>111</b>
2009-2010 (rank out of 133)	120	121	86	71	82	<b>96</b>
2010-2011 (rank out of 139)	100	116	87	51	82	<b>87</b>
2011-2012 (rank out of 142)	119	124	86	53	110	<b>98</b>
2012-2013 (rank out of 144)	128	101	99	53	120	<b>100</b>
2013-2014 (rank out of 148)	121	108	94	59	133	<b>103</b>
<b>Quality of scientific research institutions</b>						
2008-2009 (rank out of 134)	133	128	95	92	49	<b>99</b>
2009-2010 (rank out of 133)	128	126	90	47	54	<b>89</b>
2010-2011 (rank out of 139)	128	104	71	36	56	<b>79</b>
2011-2012 (rank out of 142)	134	98	86	45	61	<b>85</b>
2012-2013 (rank out of 144)	132	72	100	54	67	<b>85</b>
2013-2014 (rank out of 148)	121	59	86	56	66	<b>78</b>
<b>Company spending on R&amp;D</b>						
2008-2009 (rank out of 134)	133	119	98	76	97	<b>105</b>
2009-2010 (rank out of 133)	126	122	114	59	110	<b>106</b>
2010-2011 (rank out of 139)	91	104	111	44	108	<b>92</b>
2011-2012 (rank out of 142)	51	96	109	44	130	<b>86</b>
2012-2013 (rank out of 144)	83	90	123	63	132	<b>98</b>
2013-2014 (rank out of 148)	82	86	91	54	127	<b>88</b>
<b>University-industry collaboration in R&amp;D</b>						
2008-2009 (rank out of 134)	134	125	89	68	62	<b>96</b>
2009-2010 (rank out of 133)	133	130	78	54	81	<b>95</b>
2010-2011 (rank out of 139)	138	117	74	52	71	<b>90</b>
2011-2012 (rank out of 142)	139	84	92	63	81	<b>92</b>
2012-2013 (rank out of 144)	138	48	105	60	99	<b>90</b>
2013-2014 (rank out of 148)	135	37	81	46	104	<b>81</b>
<b>Government procurement of advanced tech products</b>						
2008-2009 (rank out of 134)	119	131	111	67	92	<b>104</b>
2009-2010 (rank out of 133)	80	129	106	33	86	<b>87</b>
2010-2011 (rank out of 139)	63	116	110	28	98	<b>83</b>
2011-2012 (rank out of 142)	58	109	110	33	92	<b>80</b>
2012-2013 (rank out of 144)	46	94	102	40	115	<b>79</b>
2013-2014 (rank out of 148)	52	89	81	32	123	<b>75</b>
<b>Availability of scientists and engineers</b>						
2008-2009 (rank out of 134)	115	100	70	71	50	<b>81</b>
2009-2010 (rank out of 133)	115	122	81	65	77	<b>92</b>
2010-2011 (rank out of 139)	124	115	95	63	92	<b>98</b>
2011-2012 (rank out of 142)	126	68	114	70	83	<b>92</b>
2012-2013 (rank out of 144)	123	48	106	76	78	<b>86</b>
2013-2014 (rank out of 148)	106	27	92	78	85	<b>78</b>
<b>Utility patents</b>						
2008-2009 (rank out of 134)	88	88	88	88	49	<b>80</b>
2009-2010 (rank out of 133)	90	71	61	90	67	<b>76</b>
2010-2011 (rank out of 139)	90	69	90	90	78	<b>83</b>
2011-2012 (rank out of 142)	90	90	90	90	67	<b>85</b>
2012-2013 (rank out of 144)	119	50	59	119	119	<b>93</b>
2013-2014 (rank out of 148)	91	54	72	49	53	<b>64</b>

Source: World Economic Forum, The Global Competitiveness Reports: 2008-2009; 2009-2010; 2010-2011; 2011-2012; 2012-2013; 2013-2014

# THE IMPACT OF FOREIGN TRADE ON ECONOMIC GROWTH IN REPUBLIC OF MACEDONIA

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Iskra STANCHEVA-GIGOV<sup>1</sup>

## **Abstract**

*A number of studies have affirmed the existence of a strong and positive relationship between trade, i.e. trade openness and economic growth. However, it must be noted that neither existing theoretical models nor empirical analysis do not provide a definitive answer to the question of the existence and nature of the relationship between foreign trade or trade openness and economic growth, that is the subject of much interest and debate.*

*Taking into account the different responses to the impact of foreign trade on growth in different countries, and the absence of such research in countries such as Macedonia, imposed the need for such an analysis in this country. Republic of Macedonia is an open economy in which the foreign trade transactions constitute a significant portion of its total output and is heavily dependent on trade in their existence, so this analysis may prove to be particularly important. Therefore this paper examined two main issues: first, whether there is any link between trade openness and economic growth in the country, and, secondly, what is the nature of the relationship. Given the availability of data in order to assess the impact of foreign trade on economic growth in this paper it is used a model of multiple linear regression analysis with time series data.*

**Keywords:** *foreign trade, trade openness, economic growth, crisis, regression analysis*

## **1. INTRODUCTION**

In contemporary conditions all countries are included in the foreign trade with the rest of the world. The importance of foreign trade can't be ignored because it contributes to numerous benefits and comprehensive development of each national economy. Namely, over decades despite the trend of increasing international trade, it can be observed a tendency of increased economic growth in the world. It leads

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to the conclusion that economic growth and foreign trade are positively correlated. (World Bank, World Bank Indicators, and International Monetary Fund, World Economic Outlook)

But despite of numerous confirmations about positive relationship between these two categories however, it must be noted that existing theoretical knowledge (that mainly refers to the theories of international trade and theories of economic growth) and empirical analysis do not give a definite answer to question of the existence and nature of the relationship between foreign trade or trade openness and economic growth. Another important point is that most of the analyses have focused on developed countries. While the literature about developing countries is poor and that for small developing countries, such as Macedonia, almost no exists. Hence, the need for a consistent analysis of the relationship between openness and economic growth inevitably becomes crucial in this country. Moreover, this analysis may be particularly important for the Republic of Macedonia because it is basically an open market economy, where foreign trade transactions constitute a significant part of its total output and it is heavily dependent on trade in its existence.

## **2. CHARACTERISTICS OF FOREIGN TRADE AND ECONOMIC GROWTH IN THE REPUBLIC OF MACEDONIA**

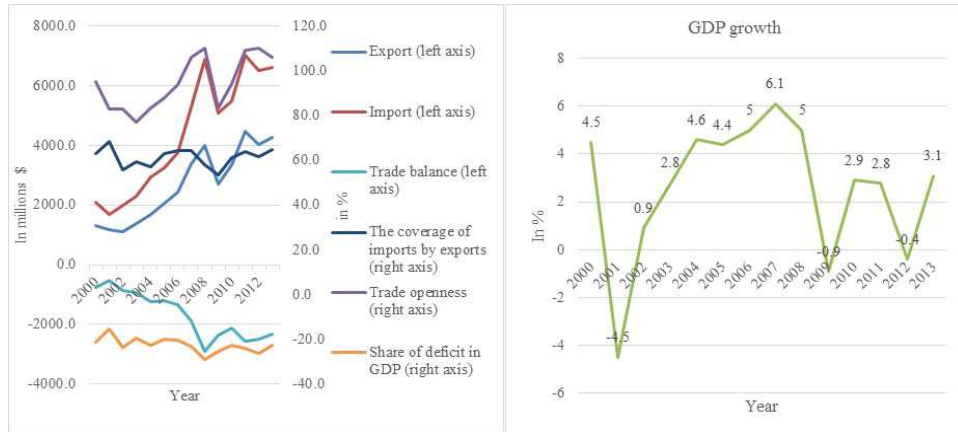
From 2000 year onwards the economy has consistently recorded positive growth rates with the exception of 2001 when the conflict led to a decline in economic activity (when is registered decline in GDP of -4.5%) and 2009 when it is recorded larger decline in economic activity of -0.9%. The last one is due to the negative effects of the global financial and economic crisis that is spilling into the domestic economy. Then in Republic of Macedonia inevitably come to the deterioration of the external position and slowing of the economic activity. Therefore it can be generally concluded that there is a connection between foreign trade and economic growth in the country, but is it so we will see in the rest of the paper (Chart 1).

Regarding to the foreign trade in Republic of Macedonia, the analysis of the movements made in absolute and relative indicators shows that progress is seen only in the area of trade openness of the economy, which in 2012 was 109,9 % and exceeds the highest reach volume of trade openness achieved in 2008 which was 106,2%. Unlike the values of trade openness of the economy, all other indicators relating to foreign exchange that are subject to analysis in this paper show disappointing values. Those are: the coverage of imports by exports, trade balance and share of trade deficit in GDP. The trade deficit as can be seen from the analyzes has constantly been enhanced. That is confirmed by the unchanged rate of



coverage of imports by exports, which in 2013 was 64.7% (similar to the value of that index in 2000 – 63.2%) and by increase in the share of trade deficit in the total GDP in the analyzed period. This condition clearly indicates the growing import dependence of the Macedonian economy (Chart 1).

**Chart 1. Foreign exchange, trade openness and economic growth in Republic of Macedonia**



Source: National Bank of the Republic of Macedonia and International Monetary Fund, World Economic Outlook

The reasons for this unfavorable condition in the trade balance should certainly be sought primarily in the structure of exports. Macedonian exports are characterized by high product and geographic concentration, with nearly 50% of exports accounted for three groups of products (iron and steel, clothing, oil and oil products), while an additional 20% represents two groups of products (food products and metal ore and metal scrap). Also in terms of the geographical distribution of exports can be concluded that 50% of exports are concentrated on only three trading partners (Serbia, Germany and Greece, and in recent years after the independence of Kosovo, the primacy of Serbia takes Kosovo). All this contributes the Macedonian economy to be extremely sensitive to shocks, such as those that occurred during 2008 as a result of the global financial crisis (for example a reduction in the price of metals on world markets and reduce the demand for textile products) (Stancheva Gigov Iskra, 2013).

Unfavorable structure of Macedonian exports is also confirmed by the dominating of products with low stage of processing, mainly raw materials and intermediate products, and the exploitation of cheap labor force and products with low value added. In this context, most of the export industries are labor-intensive (that require low skills and knowledge), and there is no many industries whose competitive

advantage is based on modern technological solutions. In economies with such a structure is to be expected unfavorable impact of trade on growth.

### 3. LITERATURE REVIEW

There are comprehensive empirical studies about the impact of trade on economic growth. Before the 1960s, research on trade effects was limited to a few specific countries. With the development of econometrics, however, many complicated methods based on a mathematical model were introduced to analyze the interactive impact between trade and economic growth.

Typical of the early studies were Michaely (1977) and Balassa (1978). Michaely used simple correlation analysis to test whether the average rate of economic growth was positively related to the change in the ratio of international trade to GDP. He found a strong positive correlation and concluded that the protectionist import substitution policies applied in many developing countries were ill advised. Balassa applied simple regression analysis to a sample of 10 countries between 1956 and 1974 and found that trade export volume were positively related to a country's rate of economic growth (Hendrik Van den Berg и Joshua J. Lewer, 2007). Dollar (1992) argued that outward-oriented developing economies achieve indeed much more rapid growth than inward-oriented developing ones. The seminal empirical studies of Sachs and Warner (1995) and Frankel and Romer (1999) provide support for the growth enhancing effect of international trade. Sachs and Warner found that the growth rate of the economies with free trade regimes is higher than the closed economies. In the same way, Frankel and Romer show that trade openness generated higher income levels in a cross section of 63 countries in the year 1985. They found a model that distinguishes three channels through which it is assumed that trade affects real income. Coe and Helpman (1995) studied the international R&D diffusion among 21 OECD countries and Israel over the period of 1971-1990, and found that international trade is an important channel of transferring technology and that a country's productivity is not only dependent on its own R&D stock but also on the R&D stock of its trade partner.

Arguably the most ambitious attempt to model the channels through which international trade influences economic growth is Wacziarg (2001). He constructed an openness index for a large sample of countries, which he then used to test six potential channels through which international trade could affect economic growth. According to Wacziarg's results, trade openness has a positive impact on economic growth: openness to trade encourages national governments to implement virtuous macroeconomic policies within the framework of international trade agreements.

It should be noted that there is some criticism regarding the empirical methodology and the robustness of some aforementioned studies (Sachs and Warner, 1995; and Frankel and Romer, 1999). For instance, Rodriguez and Rodrik (2000) argue that the growth benefits of trade openness should be reconsidered using different empirical methodology. They outline that a potential two-way causality between trade and growth and the omission of relevant control variables (of high correlation with trade openness) might also generate biased results. Rodriguez and Rodrik also draw attention to the accuracy of openness indicators. In fact, these studies use “trade volume”, which could be potentially correlated with economic institutions and geographic characteristics. In their empirical study, they estimate the impact of institutions, geography and trade on income in a set of 140 countries, in 1995. After controlling for the quality of institutions, the results reveal no significant effect of trade on growth. Besides these, there are many other recent studies that confirm the positive impact of trade on economic growth (Chen, 2009; Gonzales Rivas, 2007; Yücel (2009) etc.).

However, despite the wealth of literature that supports the view that trade enhances economic growth, there are studies that argue that the increase in openness can prevent economic growth (Rodriguez and Rodrik, 2000; Clemens and Williamson, 2002, and Vamvakidis, 2002).

From the above mentioned it can be concluded that the numerous consistent statistical results have not yet definitively answered the question what is the impact of foreign trade on economic growth.

## 4. RESEARCH METHODOLOGY AND EMPIRICAL RESULT

### 4.1. Model and Data Specification

The model that is used in this research is based on the theoretical findings, i.e. the standard production function, that result from the extended Solow model and contributions of Romer (1990) in development of new growth theory. In order to determine the variables this model also starts from the most commonly cited independent variables (with special emphasis on the works of Levine and Renelt (1992), Sala-i-Martin (1997) and Wacziarg (2001)).

The analysis of the sources of economic growth starts from the Cobb-Douglas production function:

$$Y_t = A_t f(K_t, L_t) \quad (1)$$

where:

$Y_t$  = output (real GDP)

$K_t$  = physical capital

$L_t$  = labor - number of employees

$A_t$  = productivity, i.e. the index of the level of technology or efficiency of labor expressed through changes in technology

$t$  = time trend, i.e. the time in which it is assumed that the output changes over time if the inputs change

Since this paper assesses whether and how foreign trade affect economic growth in the country by increasing productivity, it starts from the assumption that the total factor productivity can be expressed as a function of *trade openness (TO)* and *foreign direct investment (FDI)*. The inclusion of trade openness in the expression of total factor productivity is justified by new theories of economic growth, that are based on the endogeneity of technological progress, which showed that the openness of the economy can generate growth in real GDP in the long run. One of the most significant benefits associated with the degree of openness of the economy is the transfer of technology, which is usually realized through foreign direct investment. Because of that they are included as another element in the regression analysis. Hence, the equation for total factor productivity as a function of trade openness and foreign direct investment can be expressed as follows:

$$A_t = f(TO_t, FDI_t) \quad (2)$$

$TO$  = trade openness

$FDI$  = foreign direct investment

If you replace these items in the above function (1), then it will get the following form:

$$Y_t = f(K_t, L_t, TO_t, FDI_t) \quad (3)$$

The above function is nonlinear and it can be written as:

$$Y_t = \beta_0 K_t^{\beta_1} L_t^{\beta_2} TO_t^{\beta_3} FDI_t^{\beta_4} \varepsilon_t \quad (4)$$

where

$\beta_0$  = intercept;

$\beta_1 \dots \beta_4$  = coefficients;

$\varepsilon_t$  = stochastic term.

When the model is expressed in this way, it is an exponential model. In order to evaluate the coefficients in this model it is first necessary to find the logarithms of

both sides to get the equation that is linear in the logarithms of the variables, which has the following form:

$$\ln Y_t = \ln\beta_0 + \beta_1\ln K_t + \beta_2\ln L_t + \beta_3\ln TO_t + \beta_4\ln FDI_t + \varepsilon_t \quad (5)$$

The calculating model and evaluating the coefficients of the variables can express elasticity of GDP in relation to capital, labor, trade openness and foreign direct investment, respectively.

From a theoretical perspective physical capital, employment, trade openness and foreign direct investment is expected to have a positive sign, i.e.:

$$\beta_1, \beta_2, \beta_3, \beta_4 > 0$$

Gross domestic product (Y) is the dependent variable, while the variables on the right side of the equation are independent variables. In the equation real GDP is expressed in absolute value, for the physical capital is taken GDP from the previous year (i.e. from the previous quarter), trade openness is calculated as the sum of exports and imports to GDP and foreign direct investment are expressed as a percentage of GDP in order to avoid problems associated with absolute sizes. In order to assess the impact of trade on growth of the Macedonian economy, the key variables in the model are explained below.

Variable *trade openness (TO)* is used as an indicator of the level of trade between the economy and the rest of the world. Some authors support the idea that increased trade openness increases economic growth through various channels, such as: the efficient allocation of resources, increased specialization, increased domestic competition, better access to larger markets, transmission and easier adoption of international knowledge, better access to the investment and raw materials for developing countries etc. Hence, it is expected the trade positive affects the growth which is confirmed by various aforementioned works. But do not exclude the possibility that trade may adversely affect growth, given the fact that there are some findings in the literature that confirm this. In Republic of Macedonia, given the less favorable condition for foreign trade, on the one hand, and high dependence on trade in its own existence, on the other hand, the sign of the relationship between trade openness and growth is expected to be ambiguous (+/-).

The sign of the relationship between *foreign direct investment (FDI)* and GDP growth can be ambiguous. Namely, in the empirical literature is divided opinion about the contribution of FDI to economic growth. Some authors have argued that FDI has encouraged growth in economies, while others determined that there is no

positive effect of FDI on the rate of economic growth. In Republic of Macedonia, given the state of FDI is expected they to have a negative relationship with economic growth (-).

About *physical capital and employment* there is no need to comment additional, because at the base of theoretical considerations is that these two are conventional factors which certainly have a positive contribution to growth. This is confirmed not only in the theory of economic growth, but also through the practice of countries. The same findings are predicted in the analysis for the Republic of Macedonia i.e. these categories (as the leading conventional factors of growth) are expected to have a positive (+) sign of the coefficient.

Accordance with the previous it can be stated that in this paper is applied the model of multiple linear regression analysis with time series data. In order to assess the impact of foreign trade on economic growth in the Republic of Macedonia in this paper are used quarterly time series data that cover the period 2004-2012. They are derived from various sources of the State Statistical Office of the Republic of Macedonia and the National Bank of Macedonia such as statistical bulletins, annual reports and statement of accounts. The data are quarterly, because the available annual data on the same and adjusted methodology, are not sufficient to develop such an econometric analysis.

Equation (5) which is presented above is estimated using the software package XLSTAT 2012, applying the regression technique of ordinary least squares.

If the regression model is correctly specified and if all assumptions are met, then the estimated values obtained by the method of least squares are the best that can be achieved and provide a powerful group of analytical tools. The method of assessment with least squares and its procedures for the conclusion are based on the standard assumptions of regression. But, when one or more of these assumptions are not met, the estimated coefficients can be ineffective, and conclusions may be wrong. Therefore, in this paper prior to evaluate coefficients and make any conclusions based on these coefficients, are examined assumptions relating to multicollinearity, heteroscedasticity and autocorrelation errors. In this paper the testing confirms:<sup>2</sup>

- absence of multicollinearity, or strong interdependence of the independent variables<sup>3</sup>,

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<sup>2</sup> All these values are presented in Appendix 1.

<sup>3</sup> In this case the evaluation of multicollinearity is computer obtained and is shown with the indicator VIF (Variance Inflation Factors).

- there is no (systematic) relationship between the size of the residuals and the predicted value of the dependent variable, based on which we come to the conclusion that we do not find evidence of heteroscedasticity<sup>4</sup>, and
- there isn't autocorrelation between errors<sup>5</sup>.

Satisfying the three assumptions allows to start evaluating the regression coefficients.

## Results and Discussion

Regression analysis results are shown in Table 1. It consists of four regressions, presented in four columns which indicate the estimated coefficients of the respective independent variables and their levels of statistical significance. Overall, the coefficient of determination presented by the value of R<sup>2</sup> shows that about 85% (and in the four regression even 92%) of the variation in dependent variable can be explained by the variations of all the independent variables included in the model. It indicates that the model is relatively successful in the explanation of the Macedonian economic growth. The suitability of the model is verified also with the values obtained for still some other criteria for evaluation of the model such as: Akaike information criterion (AIC), Schwarz Bayesian Criterion (SBC) and so on (See Appendix 1). The obtained results largely are not statistically significant, and the signs of the coefficients are almost consistent with economic theory.

The first column lists estimated coefficients for the previously mentioned basic explanatory variables, i.e. for the first and basic regression equation of the model.

This equation has following form:

$$Y = -15.86 + 0.143 * K + 1,840 * L + 0,254 * TO - 0.018 * FDI \quad (6)$$

In the next two columns, i.e. in the following two equations category trade openness is replaced with the export and import categories, separately. This is made in order to evaluate the impact of these two categories on the growth in the country, that is to determinate which of these categories contributing more to economic growth in the country.

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<sup>4</sup> The graphic techniques are often useful for detecting heteroscedasticity. Therefore, in this paper heteroscedasticity is best evaluated by constructing diagrams of breaking up the residuals in relation to independent variables and the predicted values from the regression.

<sup>5</sup> A formal test most widely used to evaluate whether there is autocorrelation of errors is Durbin-Watson test based on residuals of the model.

These equations with the estimated coefficients receive the following form:

$$Y = -16.13 + 0.164 * K + 1,901 * L + 0,110 * EXP - 0.015 * FDI \quad (7)$$

$$Y = -15.72 + 0.122 * K + 1,835 * L + 0,330 * IMP - 0.020 * FDI \quad (8)$$

In evaluating the coefficients of physical capital in the first three regression equations can be noted positive relationship between this category and the economic growth in the Republic of Macedonia. It is completely justified and expected, given that physical capital is one of the factors of productivity, which is the most important factor of economic growth. But this relationship, as can be seen, is statistically insignificant, because according to the economic logic, the scope of physical capital in an economy increases through net domestic investment, and they are not included as a category of analysis in the first three regression equations. Already in the next, fourth regression equation, which include gross domestic investment<sup>6</sup>, immediately is changed the situation regarding the level of significance of physical capital, i.e. physical capital has not only positive impact on growth, but that impact is statistically significant with the significance level of 5%.

The form of this equation is the following:

$$Y = -10.56 + 0.240 * K + 1,340 * L + 0,162 * TO - 0.018 * FDI + 0,221 GDI \quad (9)$$

Next, if we take into account the coefficients of employment, it can be concluded that it is the only category which in all four regression equations have a positive and statistically significant impact on growth in the Republic of Macedonia with the significance level of 1%. It is completely justified if it is known that the Macedonian economy specializes in industries based on natural resources and labour-intensive industries and that its economic growth is due to the conventional inputs, and these are labour and capital. Namely, despite high unemployment, i.e. relatively low employment, this coefficient is positive and statistically significant for economic growth in the country, because Macedonia is categorized in countries with the relatively low levels of technological development through which it can't greatly improve productivity, and thus economic growth. In such conditions it is expected that economic growth will depend mainly from employment.

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<sup>6</sup> GDI is taken as a category that includes domestic investment plus net depreciation, and for which data are available quarterly for the analyzed period.



**Table 1. The impact of foreign trade on average GDP growth**

<i>Regression</i>	<b>Dependent variable is real GDP</b>			
	[ 1 ]	[ 2 ]	[ 3 ]	[ 4 ]
<i>Independent variables</i>				
Physical capital	0.143	0.164	0.122	<b>0.240</b>
	[0.95]	[1.07]	[0.82]	<b>[2.06]</b> **
<b>Employment</b>	<b>1.840</b>	<b>1.901</b>	<b>1.835</b>	<b>1.340</b>
	<b>[4.37]</b> ***	<b>[4.42]</b> ***	<b>[4.48]</b> ***	<b>[3.95]</b> ***
Trade openness	0.254			0.162
	[1.47]			[1.21]
Foreign direct investment (% of GDP)	-0,018	-0.015	-0.020	- 0.018
	[1.30]	[1.05]	[1.42]	[1.70]
Export (како % од БДП)		0.110		
		[0.84]		
Import (како % од БДП)			<b>0.330</b>	
			<b>[1.84]</b> **	
Gross domestic investment (% of GDP)				<b>0.221</b>
				<b>[4.60]</b> ***
Number of observations	33	33	33	33
R <sup>2</sup>	0.85	0.84	0.86	0.92

Note: asterisks indicate statistical significance at the \*\*\* 1, \*\* 5, and \* 10 percent level.

The estimated coefficient of trade openness in the first regression is positive (0.254) and is not statistically significant. Taking into account the fourth regression, which includes also the gross domestic investment can be drawn the same conclusion. Thus the result favored the thesis that trade openness positively affects and increases economic growth, but the overall impact is statistical insignificant. This is quite justified if taken into account all the features of foreign trade of the country.

The estimated coefficient of FDI is also stable in all regression equations to growth. It is statistically insignificant and is consistent with those studies that predict a negative sign of the relationship, i.e. a negative impact of foreign direct investment on growth. Foreign direct investment basically act as a diffuser, which facilitates the transfer of knowledge and technology as drivers of economic growth. But the situation in Macedonia is different. Most of the foreign direct investments are directed out of the productive and export-oriented sectors, and they are in the area of banking, telecommunications and activities oriented to the domestic market. Therefore missing their positive correlation with the exports, and hence with economic growth. Also, the numerous disadvantages in business performance and

innovation, and in the business environment, discourage foreign direct investment in the country. Given all this, it can be concluded that in the Republic of Macedonia it is necessary to improve the condition with the FDI that will change the results obtained in this analysis.

In assessing the impact of trade on GDP growth, economists use also export intensity and import penetration as independent variables. This is especially interesting to evaluate in the case of the Republic of Macedonia as an import-dependent economy.

In this analysis are used also indicators percentage share of exports in GDP and percentage share of imports in GDP. They are used in order to learn more about the impact of exports and imports on economic growth, separately. New regression coefficients for exports and imports are presented in column 2 and column 3, and equations 7 and 8, respectively. From the results can be seen that the variable export and variable import are positively correlated with the economic growth, i.e. they both have a positive impact on the growth rate of GDP. But the conclusions differ in the level of significance, i.e. exports is statistically insignificant as expected given the current state of the country in this category, and the import has significance level of 5%, which is another way of confirming the import dependence of the country and growing importance of this category in terms of total trade and the growth of the Republic of Macedonia. It can be explained by the fact that Macedonia exported products obtained with the small finishing or processing of imported products. This is confirmed with structure of exports and imports, according to which on the side of the top five most exported and on the side of the top five most imported products appear almost the same products (egg. petroleum and oil products, iron and steel, etc.).

Besides the import dependence of the Macedonian export, should be considered also the high import component of FDI (especially companies like Johnson Controls), which further emphasizes the importance of imports in the economy and its positive and statistically significant impact on economic growth.

## **5. CONCLUSION**

According the research conducted in this paper it can be concluded that Macedonian trade openness positively affects and increases economic growth, but the overall impact is statistical insignificant. This is quite reasonable if all features of foreign trade of the country are taken into account. However, as important features that lead to this situation can be highlighted: the lack of adequate export structure as a result of relatively low competitiveness, low productive capacity and

low value added and income; then adverse impacts on the exchange in recent years due to the global economic crisis, which was inevitably affected the Macedonian economy; inert movements regarding the changes that need to be taken through the years that are analyzed and etc.

In order to overcome such condition it is necessary to make changes and take numerous measures and policies aimed at economic growth, such as:

- To create the proper foreign trade policy which is in function of economic growth, which will change the economic development model from growth model based on consumption and imports, to the model based on the growth of production and exports.
- Adequate domestic production of export products, by assortment and quality and their promotion in foreign markets.
- Strengthening the quality of exports through the implementation of international standards, or by meeting the technical requirements and sanitary standards.
- Given the state of foreign direct investment and the results obtained from the regression analysis for their negative and statistically insignificant effect on economic growth in the country, it is necessary to take certain actions to stimulate the inflow of FDI.
- Introduction of new technologies and innovation, and reconstruction and modernization of existing capacities in the private and public sector;
- Improvement of existing and development of new infrastructure.
- Strengthening regional economic cooperation and increase its effects.

Despite these previously mentioned, there are numerous other opportunities for promotion of foreign trade of the country in the upcoming period. However, always need to consider the numerous constraints that Macedonian economy is facing right now. In the coming period the strongest risks and limiting factors that Macedonian economy and its foreign trade will face are: the high dependence on the extent and speed with which the most important trade partners of the Republic of Macedonia will emerge from the economic crisis, the dependence of the ways and the speed with which the Macedonian economy comes out of recession phase and uncertainties arising from (non) receiving the date for negotiations membership of the Republic of Macedonia in the EU are

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## APPENDIX 1

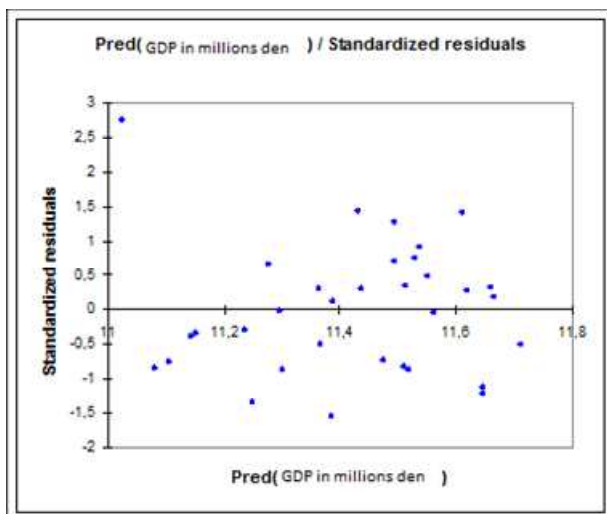
Multicollinearity statistics:

Statistic	Employment	Trade openness	FDI (% of GDP)	Physical capital
Tolerance	0,210	0,657	0,845	0,225
VIF	4,757	1,522	1,183	4,437

**Regression of variable GDP (in millions denars):**

Goodness of fit statistics:

Observations	33,000
Sum of weights	33,000
DF	28,000
R2	0,851
Adjusted R2	0,830
MSE	0,007
RMSE	0,084
MAPE	0,540
DW	2,561
Cp	5,000
AIC	-159,228
SBC	-151,746
PC	0,202



# INTERVENTIONISM IN TOURISM: ENCOURAGING OR LIMITATION OF DEVELOPMENT

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Brankica TODORVIĆ<sup>1</sup>

## **Abstract**

*Interventionism in economic and social life and EU regulations affect all sectors of the economy. The development of tourism can encourage the control and manipulation of the factors that change the life cycle of tourist destinations.*

*There are two types of factors that contribute to the development of destination: internal and external.*

*One form of intervention in the development of tourist destinations is the limitation or reversal of tourism growth induced by internal factors that are imposed by the destination manager.*

*This paper analyzes the effect of induced internal factors, primarily the input costs, the development of tourist destinations.*

**Keywords:** *protectionism, tourism, input tax*

## **INTRODUCTION**

Tourism development in modern conditions has the characteristics of sustainable development. Environmental protection is a priority objective in a number of laws, regulations and master plans. A number of factors may limit or stimulate the development of tourism and tourist destinations. Knowledge of these factors allows managers to destinations in making management decisions that direct the development of the destination to the desired direction or phase.

The emergence and application fees in the system to protect the environment at the same time and in the development of tourism. Protected areas, especially national parks, and areas is the degree of protection will encourage the development of tourism in the long term.

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Fees include various segments of the environment (water, air, climate, CO<sub>2</sub>). In 2001, a comprehensive environmental management system and environmental taxes had Sweden, United Kingdom, Netherlands and Italy. In Italy the environmental protection system is the most comprehensive and the most developed. In other EU countries environmental protection systems are established with less severe intensity in certain areas of the environment.

The meaning of the introduction and implementation of environmental taxes is to reduce the environmental pollution caused due to vehicles. In 2013 the largest number of EU countries have developed a system of environmental protection which ones are the tourist tax.

In Serbia, the eco-tax was first introduced in 2007 and charged in the Nature park "Sargan-Mokra Gora". In addition to the environmental tax Law on Republic Administrative Fees are prescribed and other forms of environmental protection within the relevant heading numbers and the need to pay entry-exit visas.

Voluntary system of environmental protection, in addition to mandatory fees, to further the conservation of the environment. EMAS is a system which envisaged the establishment of the Environmental Protection Act as a system of environmental management for industrial, public and private sector.

System of charging fees in environmental to invest in infrastructure and environmental protection which contributes to the development of tourism.

## **1. FACTORS OF DESTINATION DEVELOPMENT**

A number of factors affect the life cycle of tourist destinations. Knowledge of these factors means understanding the possibilities to what extent these factors can be controlled and manipulated them.

Factors contributing to the development of destinations are:

- Internal (intentional or unintentional) and
- External (intentional or unintentional).

Internal intentional factors may occur as a stimulant and a depressant.

*Internal induced factors* such stimulus include actions that intentionally derived from destinations such as improving infrastructure, effective marketing campaigns conducted by local tourism organizations.

*Internal factors such deliberate depressants* are used to restrict or reversal of tourism growth and impose either encouraged by the destination manager. These are entry fees and infrastructure limitations.

*Internal unintended* factors can occur within the destination. Depressants include lengthy civil war (although some wars may be deliberate) or destruction of local coral reefs caused by local pollution at the source.

*External induced factors* occurring in a country where the currency devalues so that it becomes more accessible and attractive competitive destinations. Film and radio shows are also a potential foreign-induced stimulant.

*Unintentional external factors* coming from outside destinations in unintended ways. These factors tend to be unpredictable to the character and the outcome and are generally uncontrollable by the manager of the tourist destinations. Examples of external unintended depressant include cyclones, global warming, political instability, global recession.

### **1.1. The effect of internal factors on the development of tourism**

The effects of internal factors on the development of tourism vary according to whether these factors act stimulating or disincentive to development.

There are numerous examples of action of internal factors as stimulus to tourism development.

GIS Geographic Information System is a tool that can be used for channeling tourism development along the desired path (Bishop&Gimblett, 2000). This model has been applied to Broken Arrow Canyon, tourist place in the desert of Arizona, USA. The model identifies three main market segments: mountain climbers (hikers), mountain bikers and organized tourist tours by jeep and then each segment is divided into social and isolated users.

By establishing the relationship of this information to the physical characteristics of the canyon occur maps showing the likely encounters and conflicts between groups and their impacts on different groups. Data from the simulations are used to reconfigure the network trace and review the number of visitors allowed in certain areas.

Concerts of pop and rock stars a great number of visitors from home and abroad are as well as the opening and closing of international sports competitions and



football matches (the opening of the Olympics in the United States and Greece and World Cup in France).

To encourage the development of tourism can be used historical events from the past: Pompeii-old Roman city that was destroyed by a volcanic eruption and was rediscovered in the 18th century as well as Shakespeare's birth in Stratford.

A small town in the Czech Republic, Hukvaldi, is known for being in him was born a national composer Leos Janacek which is used for tourist and cultural offer. The offer includes a music festival in the amphitheater among the ruins of the old castle on the hill which is going to scout trails through the woods, a museum exhibition in Janacek home; school where he worked Janacek's father, an elementary school that bears the name of Janacek and park which is walking looking for inspiration for composing.

Stimulus for the development of tourism can be contemporary art and festivals: Marble and sounds in Arandelovac, theater festivals: Bitez in Belgrade, Sterija Theatre in Novi Sad, acting achievements in Nis; Music festivals: Bemus, Nomus, etc.

Competition in landing a paraglider organized by Tourist Organization Zlatar, Drina regatta, events in Homolje where visitors learn about the old ways of gold panning in a river Pek, preparing vlach meals, making ferrets are a few examples that influence the development of tourism destinations.

In contrast to the activities of internal factors such stimulus is isolated and the effect of internal factors such depressants that may be imposed by the destination manager. Depressants which are imposed by the destination manager are: shooting, bombing or kidnapping of foreign tourists by local terrorists.

## **2. FEES AS A TOOL OF ENVIRONMENTAL PROTECTION**

Market-based instruments for environmental protection related to:

- Climate change and energy use
- Water supply, water quality and waste water and
- Solid waste and products.

According to the report, Annual Report on Structural Reforms (2002) in 2001. there are differences in the implementation of environmental taxes where they stand on one side of the country with limited use fees for the use of natural

resources and on the other hand, countries with a developed a comprehensive system of environmental protection in the EU.

Under modern conditions of environmental taxes should not be discriminatory where tolls should be charged instead of the time along the length of the road.

## **2.1. Characteristics of environmental taxes in the EU**

Some of the features of environmental taxes in EU countries in 2001 (Annual Report on Structural Reforms 2002, No. 167-March 2002, Economic Policy Committee):

- In Belgium, a permit system for greenhouse gas has been set up.
- In Denmark the level of green taxes increased slightly in 2001th.
- In Germany an ecological tax reform is being implemented with the promotion of renewable energies is continuing.
- Greece is characterized with relatively little use of economic instruments to protect environment.
- In Spain the use of taxes and fees for the use of natural resources is limited. However, direct government funding of environmental activities has increased significantly.
- In France, the insufficient amount of eco-taxes. CO<sub>2</sub> emissions are well below the EU average due to the high use of nuclear energy.
- In Sweden, the use of market-based instruments, including taxes, is well developed.
- Finland is characterized by the widespread use of environmental taxes to reduce CO<sub>2</sub> emissions.
- The UK has developed a comprehensive strategy to protect the environment.
- In Portugal, it takes an ecological tax reform which is aimed at improving the environmental quality in the field of water and waste.
- In the Netherlands and Austria are planning a higher level of application of market-based instruments. In the Netherlands reached a relatively high level of environmental protection.
- In Luxembourg, significantly reduced CO<sub>2</sub> emissions based on voluntary agreements with companies. Also, energy taxes are paid by the party.
- In Italy, the energy charges the highest among EU countries but also instruments for the protection of the environment most widely used.
- In Ireland, the energy intensity was reduced significantly by using fuel-efficient vehicles.

- Denmark has introduced a much lower registration tax on vehicles running more than 40 km per liter. Austria, Denmark, Germany, Luxembourg and the UK use differentiated schemes for the annual ownership tax that result in lower taxes on cars with higher energy efficiency.
- In most member states the use of electricity is taxed-the exceptions being Greece, Ireland and Luxembourg.
- Range of Member States is reported to tax agricultural use of pesticides at various degrees (Belgium, Denmark, France, Finland, Greece and Sweden), only Sweden has a tax on the use of fertilizers in agriculture.
- Extraction of ground water is taxed on a regional basis in Germany (the Länder) and Belgium (the two regions Flanders and Wallonia).
- A range of Member States has introduced a governmental tax on waste brought to landfill (Austria, Denmark, Finland, France, Greece, Italy, the Netherlands, Sweden and the UK). Denmark has a tax on waste brought to combustion-with a lower level than the tax rate for waste brought to landfills, thereby keeping incentives for proper handling. Especially Germany, Netherlands and Sweden put much focus on the more general producer responsibility of environmentally hazardous products (packaging, batteries, electrical equipment, solvents).

## **2.2. Ecological taxes in contemporary**

Regulatory basis for the introduction of environmental taxes in the EU Directive on Eurovignette. According to this directive, the calculation of tolls is based on the time a vehicle spends on the highway. Shortcomings of the existing methods of calculation and collection of vignettes is the difference between the weekly and annual vignettes. The big difference between the rates of weekly and annual vignette has the discriminatory nature of the driver who buy a vignette for the shortest period of time. In Slovenia, the biggest difference between the weekly and annual vignettes that are 15 or 95 euros. New directives whose implementation is planned on 1 January 2019 would provide for:

- 70% of the money from tolls to reinvest in infrastructure,
- calculating tolls instead of the time a vehicle spends on the highway on calculating the length of time,
- changing the tariff calculation vignette depending on the time of day on the basis of which may be affected by the reduction in the crowds (maximum tariffs will be applied no more than 5 hours a day)
- reduction of additional costs that the member states have the pollution producing heavy vehicles and
- EU rejects discriminatory tolls and taxes.

Environmental tax was introduced in the electronic toll collection system in 11 EU countries. These fees are important for the EU countries with the most intense transit traffic such as France, Germany, Austria, Belgium, the Netherlands and Luxembourg.

The new Directive introduces Eurovignette taxes on all highways of Europe until the previous Directive (2006) referred to the European road network (TEN-T).

Eco-tax will be charged freight vehicles due to environmental pollution. The fee will be determined on the basis of environmental standards for engines (Euro standard). With the introduction of this tax will reduce the additional costs incurred by EU member states pay for pollution producing heavy vehicles. With the invention of alternative means of transport to the development of innovative transport will reduce pollution and crowded.

**Table 1. Fees in the area of environmental protection in EU**

Austria	Tourism tax
Belgium	Cotisation enviornnementale
Croatia	Special taxes on motor vehicles
Cyprus	Tax of Energy Conservation
Bulgaria	Waste Management Act fees Protected Areas Act fees
Czech Republic	Water pollution fee Air pollution fee Radioactive waste fee Underground water pollution fee Highway fee exit fees
Denmark	Duties paid to the working environment fund
Estonia	Water abstraction fee Heavy goods vehicle tax
Finland	Rail tax
Germany (DE)	Taxes on pollution
Greece (EL)	Tax penalties and fines
Hungary (HU)	Tourism tax Environmental pollution charges/tax Land protection contribution, water contribution
Ireland (IE)	Vehicle&driving licence expenses
Italy (IT)	Tourist and temporary residence tax Surcharges accruing to provincial tourist offices
Latvia (LV)	Toll for the use of motorways
Lithuania (LT)	Taxes for state natural resources
Luxembourg (LU)	Tourist tax
Malta (MT)	Duty on Documents-Documents Hotels&Catering Establishments

The Netherlands (NL)	Other environmental taxes Tourist tax
Poland (PL)	Levies on environment exploitation The National Fund for Environmental Protection and Water Management-other legal payments
Slovakia (SK)	Fees connected with water pollution Fees connected with air pollution Tax on CO2 emission quotas
Slovenia (SI)	Sojourn tax Charges on use of water
Spain (ES)	Tax on effluent, exploitation of hydrocarbon and mines Tax on environment and pollution Taxes on production and transportation of energy affecting the environment Tax on stays in business tourist accommodation Other environmental taxes
Sweden (SE)	Environmental protection fee Road tax paid by enterprises Road tax paid by households United Kingdom (UK) Rail Franchises Premia

Izvor: *Taxes in Europe" database LIST OF MINOR TAXES, 2014.*  
[http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/info\\_docs/tax\\_inventory/list\\_minor\\_taxes\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/info_docs/tax_inventory/list_minor_taxes_en.pdf)

Of the 24 countries in 6 countries apply tourist taxes (Austria, Hungary, Italy, Luxembourg, Netherlands, Spain). Other taxes include various segments of the environment or general environment.

### **3. TAXES IN THE FIELD OF ENVIRONMENTAL PROTECTION AND TOURISM IN SERBIA**

Types and amounts of fees in Serbia are regulated by the Law on Republic Administrative Fees. Taxes in the field of environmental protection are included heading numbers 186-204.

**Table 2. The highest amount of fees in the environmental protection in Serbia**

Heading	Name taxes	Amount in the RSD
186	The request for approval of the environmental impact assessment study: over 1.000 m <sup>2</sup>	121.560
192	The request for issuance of integrated permits	142.460
197	For a license for the export of hazardous wastes	176.230
202	For a solution or a certificate of determining and certifying classified groundwater reserves	114.850

In addition to environmental taxes in Serbia are regulated and other fees that can be depressants for tourism development. Law on Republic Administrative Fees (Official Gazette of RS, 43/2003, 51/2003 and 61/2005) stipulates the payment of the following fees (Table 3):

**Table 3. Potential depressants for tourism development**

The purpose of the payment	Amount in the RSD
Tourist passes	4.520
Exit-entry visa for a trip	1.660
Exit-entry visas for travel	1.960
Entry-exit visa at the border crossing	9.800
Exit visa at the border crossing	5.400
A transit visa at the border crossing	4.520

In the Official Gazette of the Republic of Serbia, no. 57/14 of 30 may 2014 published adjusted rsd amounts of tariffs republic administrative costs in heading 37.

**Table 4. Adjusted dinar is the tariff heading 37**

Name compensation	Amount in the RSD
Issuance of the travel document for foreigners	1.730
Issuance of travel documents for stateless	7.510
Issuance of travel documents for refugees	3.770
Transit visa (B visa) at the border crossing for a transit	4.350
Visa for short stay (visa C) at the border crossing for a single entry, valid for up to 15 days	15.740
Temporary stay of up to three months	10.540
Temporary residence over three months to one year	15.780
Temporary stay over one year	24.960

Law on Amendments to the Law on Travel Documents ("Official Gazette RS", no. 62/2014 of 13 June 2014) is primarily reversed so. "Exit visas" or visa by the Republic of Serbia provides to its citizens.

### **3.1. Environmental tax in the nature park "Sargan-Mokra Gora"**

The meaning of the introduction of environmental taxes is reimbursement of environmental pollution. Nature Park "Sargan-Mokra Gora" is the first national park in Serbia which is charged ecological toll. Tolls will be charged at the border crossing Kotroman on the border between Serbia and Bosnia and Herzegovina.

Border crossing Kotroman located within the boundaries of the protected natural resource of great importance Nature Park "Sargan-Mokra Gora". The area is located in Zone III level of protection. This site belongs to:

- 1) IBA (IBA-Important Bird Areas) area important for birds that will be an integral part of the ecological network (quote myself) and
- 2) PBA (PBA Tara) important for butterflies in Serbia (Todorovic, 2013).

Construction of border crossing facilities Kotorman should be in accordance with the existing legislation in the field of nature protection, environmental protection and the ordinance on permitted noise level in the environment. This means the implementation of the following activities:

- Paving handling area and landscaping free surfaces,
- During construction of parking space does not form a large asphalt or concrete surfaces which can be avoided by planting individual trees,
- Containers for primary waste collection and waste placed at appropriate locations concrete,
- Infrastructure facilities of border crossings must be cabled (power, telecommunication and other),
- Anticipate protection within accidents,
- Evacuation of waste material must be conducted through a licensed organization for this job,
- Provide the maximum degree of prevention of uncontrolled diesel fuel loading operations,
- Measure the noise level in accordance with the Regulations on permitted noise level and
- Plan the unhindered movement of persons with disabilities in all paths and passages (Official Gazette of the City of Uzice, 2011).

Amounts environmental taxes for the passage of vehicles ranging from 50 to 350 rsd. Exception of payments ecological toll of persons whose vehicles are registered in the municipality of Uzice and Visegrad.

The data in the table show that the introduction of environmental taxes in Mokra Gora did not affect the movement of tourist traffic. Since 2007, when it introduced constantly growing, number of tourist arrivals and overnight stays by 2013.

**Table 5. Changes in tourist traffic Mokra Gora from 2007 -2013.**

	Arrivals of tourists						Overnight stays					
	Domestic	index	Foreing	index	Sum	index	Domestic	index	Foreing	index	Sum	index
2007.	2.551	100	515	100	3.066	100	3.750	100	1.432	100	5.182	100
2008.	3.759	147	1.423	276	5.182	169	7.687	205	2.608	182	10.295	198
2009.	5.629	220	2.957	574	8.586	280	10.297	274	5.031	351	15.328	295
2010.	6.617	259	4.069	790	10.686	348	12.345	329	6.763	472	19.108	368
2011.	7.770	305	5.039	978	12.809	418	14.685	392	7.474	522	22.159	428
2012.	7.655	300	5.884	1142	13.539	442	16.855	449	9.483	662	26.338	508
2013.	7.119	279	6.883	1337	14.002	457	17.272	461	11.140	778	28.412	548

Source: *Municipalities in Serbia, 2007-2013. Institute for Statistics RS*

The number of arrivals has increased by 4,57 times and the number of overnight stays by 5,48 times.

### 3.2. Voluntary Instruments in Environmental Protection

Voluntary instruments in the field of environmental protection related to the activities of business enterprises that are focused on the processes and products that lead to reduction of negative environmental impact.

EMAS (Eco-Management and Audit Scheme) is a system of eco-management and audit schemes checks and established the EU regulations br.1836 in 1993. This program is available to all companies since 1995, when only applied to companies in the industrial sector. Since 2001 EMAS program is available to all economic sectors including public and private companies.

EMAS Regulation has been revised and modified in 2009. Organizations shall provide material or documentary evidence showing that the organization complies with all applicable legal requirements relating to the environment (REGULATION (EC) No 1221/2009 Article 4).



The EMAS scheme involving member states of the European Union, the countries of the EEC European Economic Area (Norway, Iceland and Liechtenstein) and the candidate countries for EU membership.

In Article 44 of the Law on Environmental Protection was pointed out that the RS applied by domestic and international standards for the administration, certification and registration of environmental management systems. Legal or natural person may certify a system of environmental management according to SRPS ISO 14001. Legal and natural persons may register a certified system of environmental management for inclusion in the management and control of EU environmental (EMAS system).

The benefits of using ISO 14001:2004 can include:

- Reduced cost of waste management
- Savings in consumption of energy and materials
- Lower distribution costs.

In Article 50 of the Law on Environmental Protection stipulates the obligation:

- establishing and implementing management systems to protect the environment,
- preparation of reports and the contents of the report on the impacts of activities, products and services on the environment,
- the contents of the statement to be included in the EMAS system and availability of information about the system to EMAS and the availability of information about the system EMAS activities,
- method of checking systems EMAS in the legal and physical persons and contents of assessors and
- the content, appearance and use of the logo EMAS.

## CONCLUSION

Fees include the internal factors that act as depressants on tourism development. Imposition of multiple constraints within the tourism growth and environmental protection to the conservation and protected areas and sustainable tourism and economic development.

EU countries have introduced a greater number of taxes in the area of environmental protection even a decade ago. Developed mechanisms and environmental policy work successfully in a number of EU countries. These mechanisms are subject to change under the new EU Directive.

In Serbia there are a number of costs that protect the environment defined within certain tariff numbers. Ecological tax that was introduced in the park Sargan-Mokra Gora has not stopped the growth of tourism.

Although the fees, despite them voluntary instruments for environmental protection, by definition depressant for tourism development, ultimately, their case of successful application of the regulation, in the long run can be a stimulus for the preservation of the environment and the area will stimulate the further development of tourism.

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# MACEDONIAN YOUTH POPULATION AND PROSPECTS FOR LABOR MARKET SUCCESS

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## **Abstract**

*The influence of education background, gender, race and birthplace differences on youth labour outcomes has come to be widely acknowledged from the microeconomic point of view. This paper is based on the concept of generational differences, according to which the young Macedonian generation belongs to the Millennium Generation or Generation Y, which is believed to possess a specific set of values, attitudes and characteristics under which differ from other generations who are part of the current workforce and is the largest pool of young people in the job market today. In terms of human resources management organizations are challenging with recruitment and retaining of young talent. The paper tries to come to the knowledge of the expectations that young people have in the work / workplace, mainly by determining the preferences of young people to the sector of employment, desired characteristics of the workplace, the barriers in the hiring process, and the usefulness of formal education in finding work. Quantitative analysis of the results was carried out from the online survey.*

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## GENERATION COHORT CONCEPT

The generation cohort concept was generated in the theory of Carl Mannheim (Mannheim 1964). He criticized the previous concepts of generation theories, that they are greatly based on the chronological age and the biological factors. According to Mannheim the treatment in the past and the opinions of sociologists for the phenomenon of generations was only on the grounds of the biological rhythm of birth and death. He claims that the generation consciousness does not appear because one is born in a certain environment. According to him, the generation is represented as a unique type of social location on the basis of dynamic interaction of the birth in a particular year and social-political events which are happening during life of a particular group, especially when that group comes to a certain age. For Mannheim, the generation location is an objective fact similar to the class position. The generation location indicates to „definite modes of behavior, feeling and thought“ (Mannheim, 1964: 291). Therefore, all individuals, no matter whether they would admit it, belong to a certain generation location within a particular society.

The concept of *generation as actually*, according to Mannheim actually consists of two components: objective thought for the generation location and subjective experience of the historic consciousness. The belonging to a particular historic and cultural community is the major criteria of generation location. The current generations are formed only when a definite relation is created among the members of generations, as a result of mutual contact of the social and intellectual symptoms in the process of the dynamic destabilization. Respectively, sharing the mutual destiny (Mannheim 1964: 303) Mannheim concludes that under certain society conditions, the generations can share a collective consciousness and can become politically motivated.

Mannheim's use of the term „generation“ is in a sense of „generation cohort“ (Glen, 1977; Rosow 1978; Pilcher 1994). The generation group is defined as an assemblage of a particular population which experienced same significant event within a certain time period (Glen, 1977).

Same as Mannheim, Pilcher (1994) also notices that the forming of the generation consciousness has a tendency of appearing in relation to events and experiences in youth, when people are at a “certain age”. This period of life, the early adolescence until the early twenties, is considered to be of a key significance for the development of the belonging to a generation, because during this phase the identity is formed (Cavalli, 2004; Corsten 1999).

The academic literature suggests that each generation cohort possesses a definite range of characteristics and parameters which characterize their working and living tendency (Hill, 2002.) The characteristics of a generation can provide an insight into the values and expectations of the workplace.

## **GENERATIONS AND WORK**

According to a great number of authors (Cavalli, 2004; Corsten 1999, Glen, 1977) the belonging to a generation has a certain impact in the relation towards work. Due to this, the management, especially the management of the human resources in the managing the diversity of the workforce in the organization has to include the generation variety (Tulgan, 2000; Zemke 2000). The concept of generations and workforce, today has its prominence in the works of Margaret Mead (Mead, 1970) who tries to explain the generation gap through the divergence of the beliefs and opinions. Values according to Rokeach (1973) are defined as permanent beliefs and specific ways of preferred behavior. The values have a significant influence over the future actions and decisions made by the individual. They define the belief of people about what is fundamentally right and wrong.

The work values can be defined as opinions of the employees about what can be expected from work and how to act so that such expectations can be achieved. These are generalized expectations for various aspects of work (pay, autonomy, working conditions) as well as results linked with the work (achievement, fulfillment, status) (Dose, 1997; George & Jones 1999; Ros, Schwartz & Surkiss, 1999). The working values are hierarchically ordered in relation to their significance for the individual. The working values give the answer to the question what is significant for the individual in her/his job or life, including the question of money, social interaction, intellectual stimulation, status, fulfillment, achievements. They give the grounds for judgment of the world around us.

On the other hand, the analysis of the early theories of the organization (Murray, 1938; Lewin, 1943, Holland 1966) and later the theories of the organizational culture (Schein), show that the behavior of employees is under influence of the specific characteristics of the work environment respectively the organizational culture. The employees who fit into the working environment are more enthusiastic in relation to the job and will enjoy the same. On the contrary, those who do not fit in, the job for them might cause negative results such as boredom, bad realization, lack of enjoyment (Westerman, Yamamura, 2007).

Therefore, the generation diversity is a key factor which should be taken into consideration throughout the human resources management, despite the already

acknowledged diversity in relation to gender, ethnic belonging, age, and race. The familiarity of generations provides familiarity in the generational differences in the way of conduct, feeling and thought. This familiarity will be useful to the human resources management for better performance of the workforce, retention, awarding, benefits, development, up to dismissal in the end.

## **TODAY'S WORKFORCE GENERATIONS**

Other than the work of Margaret Mead, lately, very significant is the work of Coupland (1991), who marked the beginning of the increased interest for the generation phenomena with the publishing of the book *Generation X*. From the beginning of the 1990's, the term of generation differences has established its place within the social sciences.

The workforce today consists of individuals from four generations: Silent generation (born 1925-1945), Boomers (born 1946-1964), GenX (born 1965-1981), GenMe, also known as Geny, Millennial, nGen and iGen (born 1982-1999). Research shows many generation differences in the personal features, opinions, mental health and behavior (for example, Kessler et al. „2005; Thornton & Young DeMarco, 2001; Zhang, & Im, 2004; Wells & Twenge, 2005; for review of how these differences can influence the workplace, see Twenge & Campbell, 2008).

In the USA the Silent generation (1925 – 1945) grew up in a time of the great depression and the Second World War, as main events in their childhood. They have strong work ethics, appreciate the workplace, have work discipline, and possess stability and discipline (Glass, 2007; Lockwood, 2009). The Boomers (1946 – 1964) is the major generation in USA. Significant events in the life of this generation are the space race, rock 'n roll, and the women liberation. Baby Boomers have a tendency of being idealists and optimists (Glass, 2007; Lockwood, 2009). Generation X and Y are much smaller generations than the Baby Boomers. The Xers (1965 – 1981) were known as „the children with a key around their neck“with both working parents. They grew up in a time of high rate of divorces and massive dismissals in the 1980's. They are independent, creative, skeptical and distrustful towards the government.

Opposite this, the younger generation also known as Millennials, generation Y, Nexters (1982-1999) experienced terrorists' attacks in their formative years, including the September 11, and technology has always been part of their life. They are confident, team-oriented, and patriotic and socialized. Because of the fact that their parents usually planned their activities, they are used to having structured life (Glass, 2007, Lockwood, 2009).

In Europe, the generation Y (also called Millennials), currently is the youngest generation at the workplace. Usually those are the individuals, born after 1980. Although they share common years of birth, there are significant differences among the Millennials in Europe (Eckert, Deal 2012). Despite the national differences in the economic and political climate in the EU countries, more fundamental questions can help in the defining the Millennials in Europe, among which many are implemented in the common experience in the increase of the technological, social and economic development in Europe as a whole. Most Millennials are with high education, technologically aware and mobile unlike the other generations currently in the workforce. (Eckert, Deal 2012).

Facing with the changeable nature of work, the decrease in the employment for life and the increase of the part-time jobs (Sonnenberg, 1997), with the younger generation of employees (Millennials) there is raised awareness for the need of a constant improvement of the skills and the individual development (Hesketh and Bochner, 1993). Instead of the passive dependence on the employers to take responsibility for the development of the careers of employees, the younger generation of employees takes a more active role in the planning of their career. As a result, it is very probable that if they do not realize their own preferences in the work environment, there will be dissatisfaction and increase in mobility with this younger generation of employees.

Understanding the work values of these young individuals will help organizations in the way of structuring jobs, working conditions, compensation package and the overall policy of the human resources management for attraction of the GenMe. Thus, the manager' techniques which were effective 20 years ago, will not have the same functionality now. Despite that, the old techniques of recruitment and the old concept of work cannot be effective for the new generation. For example, many companies admit that they should be more present on the internet sites such as Facebook and use the same for recruitment. But the question is: what should be accentuated in these advertisements to attract the GenMe? What motivates the GenMe at work, and what they want outside of it? The answers to these questions should be implemented in the recruitment policy and the retention by the companies. Thus, we come to a conclusion that an empirical research for the generation work values of GenMe is essential.

## **MACEDONIAN NEW GENERATION AND WORK**

The comprehension shown below is the result of the analysis of an online survey focused on the young generation (1980 – 1999) conducted in September 2013. Below, the results of the online survey will be shown, conducted with a purposive



sample of 248 respondents through the Facebook social network. Subjects of interest were the relation of the young generation towards work. Thus, several questions were asked so that we can get a certain idea about this part of the life of the young generation. There were closed types of questions. The questions were directed towards definition of the relation towards work of the Millennials or GenMe.

The first question was to determine the sector they want to work for (chart 1). From this chart we can conclude that, 46.15% would choose the private sector, 31, 96% the state sector and 21.89% non-governmental.

**Table 1. When you would be in a position to choose, which sector would you choose to work for?**

Non-governmental sector	21,89%
State sector	31,96%
Private sector	46,15%
Total	100%

Next, which was subject of interest is about what characteristics their dream job should possess. For this purpose a multiple choice question (10 choices) was asked. The subjects were asked to rang the characteristics, so the lowest value has most importance for them. On this chart we can see the given distribution of the answers. Thus, we can notice that the top three characteristics are: safe work with a minimal possibility for damage of health, paid vacation, possibility for usage of advanced technology.

**Table 2. According to you what should characterize your dream job?**

Safe work place with a minimal possibility for damage of health	4,63
Paid vacation	4,63
Possibility for usage of advanced technology	5,19
Additional training	5,37
Work Hours	5,37
Secure post without fear of dissmisals	7,59
Frequent travel	9,63
Pleasant work atmosphere	18,15
Training and development	19,07
Salary	20,37

Next, they were asked to rank the characteristics according to the significance of what should the workplace possess. On the following chart we have a rank where the top place is the “opportunity for training and development”, at the second place is “to have clearly defined responsibilities”; the third place is “opportunity to give personal initiative”.

**Table 3. Rank of the characteristics of the workplace according to significance**

Opportunity for training and development	3,82
To have clearly defined responsibilities	5,39
Opportunity to give personal initiative	5,41
Clearly defined post within the organization	5,76
To have a clear and regular communication with the colleagues and the superior	6,27
Well structured work	6,52
To have definite instructions from my superior	7,27
To have appropriate information and support	7,54
To be in good terms with the superior	8,15
To have a thoughtful and tolerant superior	8,16
Continuous feedback from the superior	8,18
To be encouraged to ask questions	8,22
Things to be explained	9,19
Opportunity for making mistakes during work	10,12

## DISCUSSION

The Macedonian Millennial generation today is at the age of 15 to 34. Most of them and especially those who are in the early thirties spent their teenage years in a very rough historic period. The fall of Yugoslavia; the independence of Macedonia; the war conflicts in the Ex Yugoslavia; the restructuring of property as a result of the ideological restructuring of the country from socialism into capitalism. All this, followed by a great economic crisis which is present even today, with the most significant feature – high level of unemployment. On the other hand they are under a great influence of the new technology which provides easy access to information and better communication. The visa liberalization (from 2010) enables them greater mobility. Correspondingly, for the Macedonian Millennial generation we can point out that it is a technologically advanced generation or internet/mobile generation.

But as a result of the economic crisis those are people who find it difficult to get employment, they marry later, have fewer children and are closely attached to their parents.

As for the employment and about what the management can do to attract and motivate this generation cohort, it is clearly indicated that the focus should be on the individual improvement plans. This generation is looking for a personal fulfillment whereupon they can accept work easily as a natural part of their life, but only if the work is safe and without negative influence on health. For them it is important to have enough paid vacation days. It is important to be mentioned here that priority for paid vacation days is not coming from hedonism, but from the negative practice that is happening in past few years and now in private sector. Silently most of the companies in private sector have a consensus to give only two weeks of vacation yearly to their employees. This practice is not according to law but no one rise lawsuit. This practice is similar with extra working hours, especially for younger employees. It is very rear that private companies are paying extra working hours. Third, as a normal life need for this generation, and not luxury is the possession and usage of technology: computers, mobile phones and internet. The additional training is also marked as something to be expected from working life.

## CONCLUSION

Through the analysis of the literature and the results presented above, the authors of these lines can give the following advice for the human resource practice considering Millennial:

- If you hire them, give them clear responsibilities and leave room for a personal initiative;
- To increase performance have a strategy for training in continuity;
- Establish clearly defined responsibilities within organization and create open organizational atmosphere where they can always have the opportunity to ask questions;
- Perhaps the establishment of a mentor system in the organization will be of great help, where the experienced will teach, help and lead the less experienced;
- Work on the development of managers and promotion of all manager's skills: technical, concept, and particularly the human;
- Delegate and give feedback in continuity;
- Use and support the use of modern technology;

- Have faith in your Millennial, and they will justify it with hard work, for which they would expect a good salary.

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**PART III.**

**GLOBAL CRISIS**

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# THE INFLUENCE OF THE GLOBAL FINANCIAL CRISIS ON THE LIQUIDITY OF BANKING SECTOR IN REPUBLIC OF MACEDONIA

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Biljana ANGELOVA<sup>1</sup>

## **Abstract**

*Last financial crisis that shook Global financial system, especially the banking sector, is emphasized how huge is a challenge for maintaining good policy on liquidity and revisions on existing policies, measures, principles, practices in the field of liquidity and broader, in each sphere of work in modern banking.*

*This paper consist two aspects of consideration – influence of the financial crisis on banking sector at local level and the impact of the global financial crisis to the liquidity of the banking sector in Republic of Macedonia.*

*First approach consider banking crisis and reasons for their outburst, reasons for emerging last contemporary financial crisis and measures for dealing with economic recession. Particularly, will be consider the consequences of the global crisis to financial and banking sector on global level.*

*The second approach is dedicated to the impact of global financial crisis to the banking sector of Macedonia, particularly to the liquidity and long-term financial stability of the banks. For this issue is given brief profile of the banking sector in the Republic of Macedonia and the measures for governing with liquidity. In order to present current situation and prospective in this sector after the crunch, will be consider effects of global crisis to the economy and financial sector and particularly the effects to the liquidity of the banking sector in Republic of Macedonia.*

**Key words:** *contemporary financial crisis, liquidity, banking sector, indebtedness, regulation*

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## INTRODUCTION

Contemporary and last financial crisis from 2007 reveal the sensitiveness and “fragrances” of the favorable financial markets and instruments and assault some crucial financial principles which are the base of the liquidity management, even at the big international banks. Particularly were affected those banks which were deeply involved in deferent operations on financial markets (particularly securitization and deals with the contemporary financial instruments), banks which hold minimal sources of liquid assets and were not prepared for the liquidity shocks which took place, banks that didn’t respect the basic rules and principles in liquidity management and banks which haven’t established the appropriate framework for risk management.

These contributed some of the most renowned banks and financial institutions quickly to become “infected” by the financial crisis that later grown into economic recession. Unfortunately, the effects of the global financial crisis are still not overcome taking into consideration that Macedonian banking system is the part of the global banking system. Mitigating circumstances are those that: Macedonian banking sector based on traditional banking, slight involvement into international financial flows, sound capitalization, and prudential framework. In front of all of us still stay the challenge to consider the effects of the crisis to the global banking sector, particularly to liquidity, policies and measures applied by the foreign and domestic banks in order to learn the lesson and overcome disorders caused by the financial crisis.

There is a huge literature that threats reasons for banking crisis and it’s divided between the proponents of the micro and those who advocacy for macroeconomic reasons. Mostly noted microeconomic reasons for bank crunches are:

- Bad banking practices (inappropriate capital structure, inappropriate score of the credit risk which results in outstanding debts, insufficient diversification of the loan portfolio, huge M&A in banking sector e.t.c);
- Inappropriate interior polices (incentives for selling credits, particularly awarding of bank’s officers in line with approved loans);
- Over-employed;
- Postponed acceptance of contemporary information technology – new software.

Macroeconomic reasons are mostly noted as a main catalyst for financial crisis, although it doesn’t release the management from responsibility. Macroeconomic shocks, as oil crisis in 70’ can affect banks, even those who have good management.

The third groups are reasons connected with the system, in terms of unfavorable business environment for development of efficient banking sector, like:

- High degree of state property in banking sector can disrupt this industry. If state-owned banks enjoy special privileges, this can impair competition and limit the possibilities of banks in terms of diversification;
- Directing credit works by governments can prevent banks to develop their own skills in managing credit risk;
- Inadequate legal framework may limit the efficiency of the banking system;
- The underdeveloped market securities can concentrate too much risk in the banking system.

Banking crises may occur as a result of rapid changes in the environment in which banks operate. For example, in the early 90's Mexico passed through a rapid process of privatization of its commercial banks, combined with measures of financial liberalization and unexpectedly decrease in the demand for loans by the public sector. Rapid expansion of credit works which followed these changes, combined with poor supervision led to crisis in financial sector in 1994.

### **GLOBAL FINANCIAL CRISIS FROM 2007 – EMERGING, REASONS AND EVOLUTION**

The world today is faced with the worst economic crisis after that of 1919-1933. In August 2007, French bank BNP Paribas has written off debts from three investment funds signaling illiquidity of certain segments of the markets securities in the United States. This marked the beginning of the crisis (see Krugman, 2009 pg. 165). The both crisis – contemporary and those in 1929, appeared in the economically most powerful country in the world. In the beginning last global economic crisis was manifested as a financial crisis triggered by high risk residential mortgages and it seemed to be overcome relatively quickly with aggressive monetary policy of the Central Bank of the United States and with a strong injection of liquidity by the central banks of other developed countries. But such reaction of banks was not successful. The high-risk residential mortgages initially created problems to the secondary market for housing credits, then to the other markets of securities, jeopardizing the safety and liquidity of financial institutions. These definitely caused turbulence in the real sector of the economy and afterward pushed the global economy into a severe recession.

Usually, sharp recession is preceded by a strong expansion of economic activity and creating economies of bubbles, increase in the prices of shares, strong growth of real estate's prices, etc. These are periods when financial flows are separated of

actual economic flows. It's a relatively simple mechanism through which financial crises spill over on the real sector of the economy. But, once created bubbles, sooner or later, begin to shoot. When this happened to real estates' prices in the United States, where the crisis began in 2007, first suffered construction industry (activities with strong induced effects on many sectors of the economy) and unemployment began to rise. Rising unemployment reduce the purchasing power of the households. They have become poorer because their obligations to back earlier taken loans for buying real estate's became larger than their actual value. The initial effects of rising unemployment and impoverishment of households have been multiply and lead to further decline in aggregate demand and consumption power. Committee of the National Bureau of Economic Research (NBER) noted that the top of the economic activity in the United States was reached in December 2007. The peak, marks the turning point when the expansion (in the United States lasted from November 2001 to December 2007, 73 months) goes into recession. Accordingly, the official date of recession start in the United States was December 2007. And, when the United States goes into recession, almost no country can remain immune to the economic turbulences in the world's most powerful economy. That was during the Great Depression (1929-1933), after the Second World War and especially today, in the era of globalization. The basic mechanisms for transmission negative implications of the recession in the United States to other economies in the world are: foreign trade and international movement of capital and technology.

The losers who suffered by the recession in the United States were many countries (Rubini, 2009) in the world: China, which suffered actual losses due to decreased export opportunities in the United States; then Indonesia, Malaysia, Taiwan and South Korea, countries of which China purchases raw materials, like timber and rubber and various other components installed into the final product for the American market; Latin America whose products (copper, minerals, etc..) ends to the markets of the United States and China; developed EU countries that suffered significant losses due to reduced demand for their exports to the United States; Japan, as a major exporter of electronic devices and cars etc.

Rising unemployment is associated with the recession, but, from the moment when economies enter into recession until the unemployment rate start to grow rapidly there is a time lag. On the other hand, one should bear in mind is that unemployment continues to grow rapidly some period after the end of recession, so that unemployment becomes persistent and prolonged process. The recession officially began in the United States in the fourth quarter of 2007 and unemployment began to grow strongly in the transition between the third and fourth quarter of 2008. In April 2009, unemployment in the United States reached 8.9% with envisioning that in the future unemployment will still increase.

Eurozone unemployment exceeded 8% in December 2008 and in May 2009 stating 9.2%. The losses of jobs due to the recession in some countries were extremely high. In the United States-for example, from September 2008 to the end of the year 2.6 million workers lost jobs and this trend extended in 2009. The number of employed persons in the euro area (EU-16) in the first quarter of 2009 decreased compared to the previous for 0.8% or 1.22 million people lost thier jobs. In the same period the number of workers in the euro EU-27 also decreased by 0.8% or 1,916,000 people stay without their jobs.

Inflation rates in developed countries have fallen significantly since 2008 and remain very low in 2009 and 2010. The risk of deflation is a real danger to the economies, Bearing in mind that inflation rates of 1% is virtually deflation is a warning signal due to numerous of negative consequences that can be caused by deflation.

When discussing for the exit of the crisis, should be taken into account all mentioned features of the crisis and the expectations of the investors for the future events. Simple logic tells us that whenever participants in economic life expect "bad times" they hesitate of investments, as a result, employment is reduced and consequently these accelerate recessive movements. Conversely, expectations for end of the recession has encouraged investors. According to a survey by the National Association for Business Economics in the United States, conducted in November 2008 showed that 90% of respondents were pessimistic about economic events, or believed that the crisis and low growth rates will be a characteristic for 2009 as well. In accordance with a survey conducted in May 2009 by the National Association for Business Economics in the United States, 74% of respondents believe that the recession will end in the United States in the third quarter of the year, while 19% said that expected the end of the recession in the fourth quarter. But despite all forecasts global economic crisis has not ended so quickly and the effects of it continued to feel (although with reduced intensity) in 2010, 2011 and even in 2012. Domino effect that started the global economic crisis was main reason for later escalation of the European debt crisis, which in turn still left space for economic pressures in the forthcoming period.

As reasons of the crisis are often cited: non-prudential mortgage debt, residential bubble, the global imbalance between surpluses of some countries (China, Japan, Germany) against deficits (USA, UK), securitization, lack of transparency, unreliable findings of rating agencies, deregulation, shadow banks, off-balance sheet finance, failures in risk management, financial innovations, complexity of financial instruments, the inability of investors always to make optimal choices, excessive borrowing, relaxing the regulation of borrowing and etc. But, the most important among all these are: imbalances in the world economy; non-monetary

financial institutions and their "innovative financial instruments"; credit expansion and economies of balloons; transparency and corruption scandals; weaknesses in regulation and deregulation; inability of investors to make optimal choices. Most detailed structure of the reasons that triggered the global economic crisis presented Jickling (2010) and members of the Committee of Congress in their analysis "Causes of the Financial Crisis", where they cited a total of 26 separate causes of the global crisis. (see: Table 1).

**Table 1. Structure of reasons for global economic crisis**

- Legislation for deregulation;
- Relaxed regulations regarded to leverage (allowing investment banks to work with companies with high leverage);
- Fragmented regulation of financial institutions;
- Lack of systemic risk regulator (shadow banking, hedge funds, non-banking financial derivatives dealers etc).
- Securitization
- Rating agencies
- Banking shadow
- Off- balance sheet financing
- Financial innovation and complexity
- Failure of systems for risk management
- Excessive leverage
- Reckless issuing mortgages;
- Increase of prices (creating bubbles) the real estate market to unsustainable levels;
- Lack of transparency and accountability in the mortgage business / finance;
- Initiation / directing banks to engage in imprudently mortgage lending by the state to help low-income groups.
- Human weaknesses / shortcomings (limited rationality)
- Inadequate software models
- "Black Swan" theory

*Source: Jickling (2010)*

## **IMPACT OF THE GLOBAL FINANCIAL CRISIS TO THE BANKING SECTOR**

As a fundamental difference between world economic crisis of 2007 and the one from the 30's is that during the Great Depression were hurt the deposit bases of banks and the collapse of a number of banks due to the loss of golden reserves, and later abandonment of the gold standard.

Today the problem is the existence of big number of high-risk financial instruments (derivatives) of banks. Actually, originally approved loans to households and enterprises from commercial banks were repackaged and sold on the secondary markets like financial securities provided with appropriate financial instruments or structured financial derivatives. Markets, rating agencies and financial advisers believed that investors can protect themselves against risks through appropriate combination of structured financial instruments. Because of the complexity of international markets many regulatory agency did not conduct effective supervision. The euphoria grew, financial institutions bought structured financial derivatives and "pumping" the balance. The impact of the crisis was different from country to country. Most affected were the middle size banks that were active on a markets with complex products or were dependent on loans as a way of funding. The big banks during the crisis failed to retain more resources and created profit from the so-called "Flight to quality". While small banks that were funded mainly by deposits of population were less affected by the crisis.

The crisis has shown that banks dependent by securing funds from financial markets are much more vulnerable than other banks that rely on traditional sources of funding. Many banks have relied on short-term funding in the interbank market, then those same assets were invested in long-term illiquid assets. In mid-2007, occur a change in the behavior of the borrowers of funds that they borrowed less on banks that are not funded by traditional sources (with deposits). It imposed changes at creditors who introduced reducing the amounts borrowed, shortening the period for which they borrowing and changes in the assessment of collateral. All these factors significantly complicate the survival of banks that did not have a sufficient level of liquid assets or continued sources of financing.

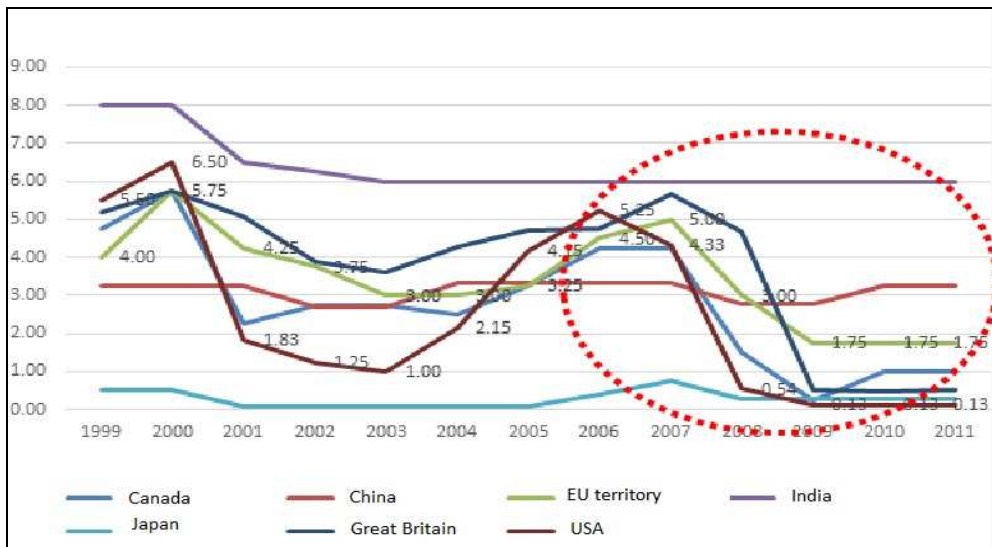
Financial crisis shown that those banks which depended by providing sources of financing from the financial markets are much more vulnerable than the rest of the banks who depend on a traditional sources of financing. Banks that have shown discipline in their actions and not financed with short-term funds were least affected by the crisis. During the crisis many banks are faced with outflow of deposits. Most authentic were banks in the United States, among which were banks that had a week lost of even 13% of the deposit base or 50% of the deposit base for a period of six months. Outflows of deposits was due to the phenomenon of "flight to quality", i.e. transfer of deposits from more risky to less risky financial institutions, wherein more secure banks increased their deposit base. Although there was a competition in the interest rates offered to attract deposits, for less stable banks were considered those that offered higher interest rates in order to cope with liquidity problems.



Global financial crisis and economic recession was the reason for destroying financial markets' stability, which influence to their opportunity to make rational resources allocation. This has a great importance not only for financial sector but for the whole economy taking into consideration that financial markets are blood flow and brain of the economy. (See: Tennant, 2010;Stiglitz, 1993, pg. 23).

The force with which global crisis hits liquidity and solvency of the financial markets and institutions can be seen through the reaction of monetary authority on global level after the attack of the first wave of the crisis. The frozen of the global financial flows was a signal for Central banks to take over global action and rapidly (without precedence in the history) decreased referent interest rates in order to relax financial flows and enable normal functioning of the financial institutions. On the graphic below is shown the trend of decreasing interest rates in a period 2000-2005 and afterward, their increasing immediate before crisis as well as a historical decreasing of the referent interest rates as a response to global crisis (which in line with some respective economists is one of the reasons for emerging global crisis).

**Chart 1. Referent interest rates in selected economies on a global level – short-term rates in %**

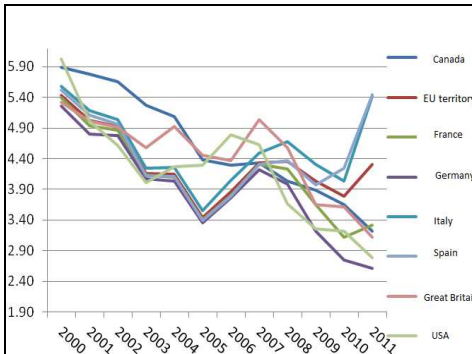


Source: *International Financial Statistics (IFS)*

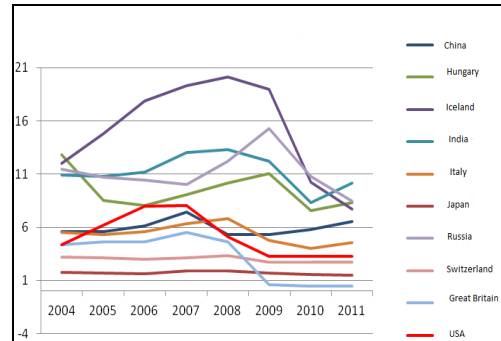
Expansive credit policy before crisis was replace with restrictive policies – sharp criteria for borrowing, decreased supply of credits and increased price of the financial capital (credits). These was a result from the limited access to capital and increasing of its price, increased aversion to risks by the investors, increased

insecurity in the real sector and rapidly deteriorated performances of the businesses and population. In the graphs below are shown increased interest rates for the first class clients at the biggest bank in USA and then after the first wave of crisis and it's spreading on global level, spillover effects on the banks in Great Britain, India, Russia, Island, Italy e.t.c.

**Chart 2. Long-term interest rates in Selected economies (in% on annual level)**



**Chart 3. Interest rates for lending (for the best clients in %)**



Source: *International Financial Statistics, International Monetary Fund, April 2012.*

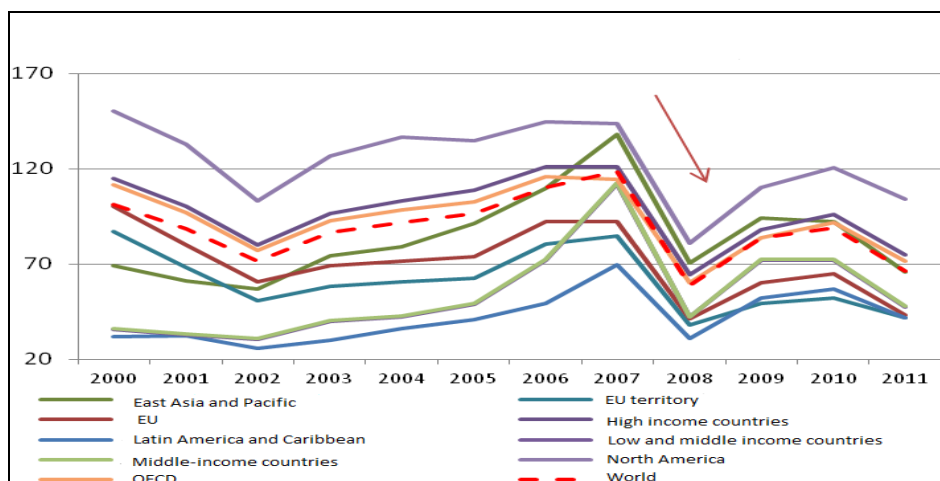
In the graph 2 is obvious that interest rates on the state bonds have been increased, mostly in USA, Britain, Italy and Spain. Increased of interest rates on state bonds in Japan and Germany was smallest. The analysis of these trends after the crisis shown that trends stay the same, while interest rates on the state bonds significantly stay on high level in the countries where still have existed prolonged risks – EU region particularly in Spain and Italy.

Decreased credit activity that trigger decreased economic activity in real sector, additionally contribute for increasing negative effects and closing the “magical circle” – smaller supply of capital, higher price, sharper criteria for borrowing, difficult access to credits, problems in real sector, increasing in non-functional loans, e.t.c. Biggest decreased of credit activity had in countries with biggest growth – OECD and USA. The biggest decreased in credit activity had Island, USA, Japan, Canada, China while Spain, G. Britain, Italy and France had an increased in credit activity, despite of the difficult economic situation (later these was a reason for faster growth of their budget deficits and public loan).

Considering the influence of financial crisis on stock market can be find the strong impact of the crisis on stock markets, manifested with dramatically decreased of price on shares in average from 119% of GDP in 2007 on 59% of GDP in 2008.

The graphic below show the market capitalization of companies listed on the national stock markets in % of GDP.

**Chart 4. Market capitalization of companies listed on national stock markets (% of GDP)**



Source: National Bank of Republic of Macedonia, Annual Report, 2013

## IMPACT OF THE GLOBAL CRISIS ON THE MACEDONIAN BANKING SECTOR

In the beginning of 2013 Macedonian banking sector is composed of 16 banks and 7 savings with approximately 500 branches spread over the whole territory of the country. Twelve of totally sixteen banks have dominantly foreign capital. From the beginning of financial crisis and its affection on banking sector in the country between 2008 and 2012 is observed decreasing trend in employment in this sector, and reverse trend of increasing employment after 2012. The capital origin from EU has the biggest share, concerning the total foreign capital invested in the country.

Monetary policy conducted by the Central Bank is based on price stability. Among variety range of monetary instruments the basic is interest rates management and over this measure is moderate the level of the liquid assets and exchange rate. On this way Central Bank achieve its primary purpose – price stability<sup>2</sup>. Macedonia as a small, open and export-dependent country can't be immune to these global trends which reflected in adverse conditions in the financial and real sector. The negative

<sup>2</sup> See Setup and implementation of the monetary policy of the Central Bank. <http://nbrm.mk/?ItemID=1CAB35826FC7C34CAF5125D125E46147>

effects of the global financial crisis on the Macedonian economy emerged with a certain delay, i.e. till the collapse of the "Lehman Brothers" and the period immediately after, were no significant effects manifested in the financial and real sectors. This "time leg" i.e. postponed effect was emerged due to the low level of globalization of the financial sector, conservative bank's practices and prudential policies of the Central Bank. Spillover effects of the crisis spread over the whole economy through the corporative sector. Decreased exports on traditionally EU markets, due to the hibernation during the crisis on one side, and big import dependence of the economy (huge import of electricity, fuel), caused large trade deficit and problems in current account.

The modest effect of the global financial crisis on the Macedonian economy is due to the primarily conservative management model of the banks, practiced in Macedonia. Main features that characterized Macedonian banking system are:

- The small exposure to risky instruments, which otherwise could cause panic in the domestic market of securities;
- Low reliance on financing by non-residents, coupled with a strong deposit base,
- High degree of liquidity and capitalization on banking sector.

The collapse of the "Lehman Brothers" (15 September 2008) was the reason for the rapid disruption of global markets, a sharp increase of liquidity risks and threaten the solvency of financial institutions. A small, open, import-dependent country (trade integration from 60% of exports only in EU) as Macedonia could not remain immune and the effects on the same were quickly transferred, first by the collapse of the foreign effective demand, and then by reducing the supply of capital on global markets, increased cost of capital, reduced volume of private transfers and reduced inflow of foreign investments in the country.

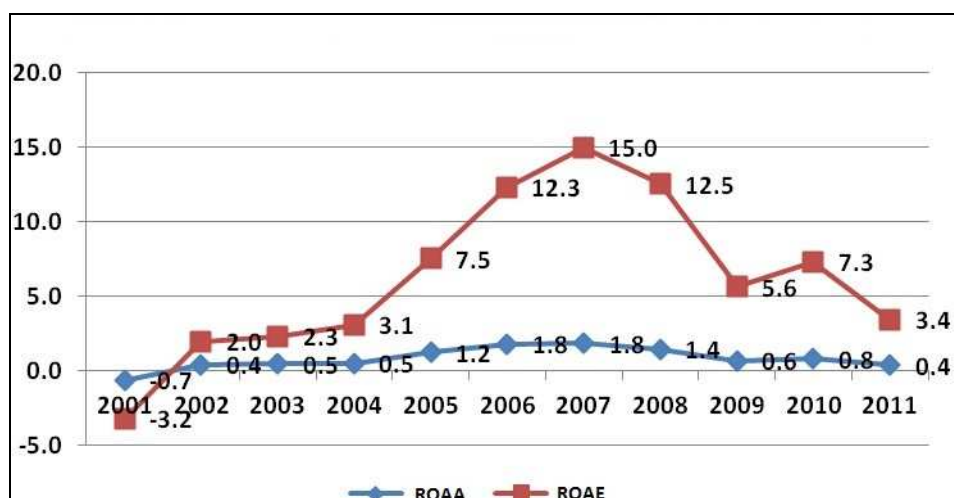
The onset of the crisis reflected many segments of the banking sector - first stop reducing the rate of non-performing loans to gross loans and the same from 6.5% at the end of 2008 rose to 10.5% in mid-2010 after which it stabilized. This was a result from worsening of real sector and deteriorating portfolios of many clients of banks in the country. In the second quarter of 2014 it reaches 11.80%. Most of non-performing loans in 2014 have small banks (16.9%); (8.1%) middle size and 13.2% big banks.

Adequacy of the capital stay on a very stable level: 16.8% in 2011 and 16.9% in the second quarter of 2014.

Structure of the loans in terms of residents and non- residents has very favorable structure: 99.6% of debts origin by residents and 0.4% by non-residents.

Profitability of the banking sector was also significantly affected, given on the one hand the increased cost of capital and reduced access to it, while on the other, worsening real sector and reduced demand for loans, particularly from profitable businesses. Profitability of the banking sector peaked in 2007 (ROE = 15) when the global crisis began, followed by a dramatic decline and its return in 2011 on the pre-crisis level of 2004 (ROE = -1.0%). The healing of the banking sector after 2011 has been manifested in increased ROE ratio and in 2014 it stays 5.4% (see Chart 5, below).

**Chart 5. Profitability of banking sector in Republic of Macedonia**



Source: National Bank of Republic of Macedonia, Annual Report 2013.

Liquidity ratio (liquid assets /total assets) remained sound in the whole period, during the crisis and after and stay 30.2% in 2011 and 30.5% in 2012. Liquidity ratio between liquid assets and short-terms liabilities stay stable and are amounted to 37.4% in 2011 and 45.8% in the second quarter of 2014.

Reduced activity and rising risks in the real sector, reducing the creditworthiness of the population and reduce financial capacity of corporate sector has led to a reduction of the supply and access to credit and reduced demand for them. As a result, monetary aggregates significantly decreased and reached bottom in September 2009 when they amounted: M1 = -4.53 %, M2 = -2.95 % and M3 = -1.9 %, followed by their stabilization period.

Total credit expansion has upgraded trend in relative and absolute figures, i.e. at the end of 2007 it was amounted apx. 3 bill.€ and in 2014 (2Q) apx 6.5 bill. €;

Interest rates span has increased significantly from the fourth quarter of 2007 to the fourth quarter of 2010, which shows a "hunger" for the liquidity of the financial markets in the country. Interest rates distance between deposits and credits in MKD was 3% in 2011 and arise to 3.7% in second quarter of 2014 for MKD and 4.6% in 2011 which arise to 4.9% in second quarter of 2014 for credits in foreign exchange.

## CONCLUSIONS

The financial crisis that began in the last quarter of 2007 and spillover the global economy, reveal all defects in the financial and banking sector, and affected financially integrated and developed economies and peripheral developing economies which are small "players" in the global financial market (mostly through the global decline of effective demand).

After the financial crisis of 2007, Economic Science did not offer adequate solutions immediately, but modify existing and well known policies, only gave logistical support (see Colander and beyond others., 2009; Lawson, 2009). World famous economist Krugman points out several shortcomings: First, arrival of the crisis has not predict; Second, even the possibility occurrence of such a crisis, which has left the world off guard and was quickly spread, was not predicted; Third, they have failed to offer useful advice about what to do but offered only mixed "phone of votes", without specific economic response. (See more details Krugman, 2011). What is the reason that this crisis economists failed to predict, as the worst international crisis since the Great Depression of the 1930s? Most of mainstream financial economists believe that financial crises are simply unpredictable, following the effective market hypothesis of Eugene Fama and associated hypothesis of spontaneous movement.

Macedonia as small, open and import's dependant country can't stay immune on these globally unfavorable trends in the financial and real sector, which reflected on the Macedonian economy. But, the shock wave of the global crisis in Macedonia has much smaller effect than it was in the developed economies. The modest effect of the global financial crisis was a result of the conservative model of management in the banking sector, small exposure to risky instruments and small dependence in funding by non-residents, strong deposit base, high liquidity and capitalization of the banks. Mainly, spillover effects were reflected on:

- Increasing ratio of non-performing loans to gross loans;
- Decreasing in profitability ratios;
- Slight decrease in liquidity ratios;
- Significantly decreased of monetary aggregates;

- Increased in interest rates margins between deposits and credits in MKD and foreign currency which show a "hunger" for the liquidity of the financial markets in the country.

Macedonian banks remained stable and highly capitalized although the circumstances were difficult on international markets. Their immunity is not a result only to the low integration with international financial markets but their orientation to finance domestic economic activity, prudential policies of risk management and high capital strength. Macedonian banking system has maintained a satisfactory level of resistance to the potential liquidity shocks. Yet, when the global crisis has reached the zenith it was effected to liquidity ratios, that decrease steadily during 2008. Due to developments on the international money markets and liquidity problems in the banking systems of European countries in 2008, Central Bank of Republic of Macedonia has adopted a new decision for liquidity risk management, that was introduced at the end of 2008 to enable stable liquidity position of the banks. As a result, in early 2009 the downward trend was interrupted, start the hilling of the banking sector and the rates of liquid assets became positive. Improving the liquidity of the banking system continued in early 2010. The level of liquid assets available to the banks in the last two years is enough to face with the shocks associated with the possible outflow of deposits, as the most important source of funding. The analysis (stress test) conducted in 2013 shows that the banking system is still vulnerable to eventual withdrawal of deposits of the twenty largest depositors in comparison with the simulation of withdrawal of 20 % of the households' deposits, due to the presence of a high concentration of deposits in some banks.

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Decision for management with liquidity risk of banks („Official Gazette“, 126/2011)

# GLOBAL FINANCIAL CRISIS: CAUSE, CONSEQUENCES AND THE IMPACT ON SERBIAN ECONOMY

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Milena LAZIĆ<sup>3</sup>

## ***Abstract***

*The worldwide financial crisis that began in 2007 was set off by the collapse of the subprime mortgage market in the USA. A combination of bad loans packaged in MBS (mortgage-backed securities) and type of credit insurance called CDS (credit default swaps) followed by the fall in property prices has led to the biggest drop in stock market index since the Great Depression in 1930 in USA. A credit default swaps and mortgage-backed securities are designed to transfer the credit exposure of fixed income products between parties. Those derivative products transferred part of the risk of USA mortgage market to global market. Almost a quarter of the USA credit derivatives are bought by foreign banks, which led to global recession when the mortgage bubble burst. The developing countries are in a particularly difficult position because remittances and capital inflows decreased, and some investors have begun the withdrawal of capital from these countries. This article presents the impact of the financial crisis on the Serbian economy. Consequently, the fall in growth rates, the rise of unemployment, the increase of public deficit and debt and the decline in capital flows will be observed.*

**Key words:** *Global Financial Crisis, growth rates, unemployment, public deficit, public debt, capital flows*

## **1. INTRODUCTION**

After several years of easy credit, excess liquidity and cheap debt, the financial markets unraveled between the summer of 2007 and the end of 2008. Those years are the beginning of the biggest crisis after the Great Depression. In September 29,

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2008 by the time the markets closed, \$1.2 trillion had vanished and the Dow Jones had hemorrhaged 777.68 points, most points ever lost in a single day of trading in the history of the New York Stock Exchange.

The causes of the crisis are widely known. US had a rapid rise in house prices and housing that created a bubble. When the bubble burst and housing prices started to fall sharply, balance of loan debt, of a growing number of home owners, was much greater than the value of houses and flats taken on credit. Subprime borrowers began defaulting in mass, pressured by rising interest rates and falling home prices that made refinancing or selling a home difficult challenge (Stowell, 2010). Two Bear Stearns hedge funds that invested in subprime securities declared bankruptcy in July 2007. American Home Mortgage and Indy Mac which are two of the ten biggest mortgage lenders also filed for bankruptcy. Furthermore, one of the biggest investment banks, Lehman Brothers declared bankruptcy in 2008. The rest of the finance industry took wide restructuring and government bailout.

The US mortgage crisis spilled-over to Europe and the rest of the world. Banks, mostly in Western Europe, increased their holdings of MBS and CDO on the US market in years before this crisis. This means that these banks shifted from buying and selling in international markets for relatively safe products such as government bonds to much riskier financial investments based on American mortgage-backed securities (Fligstein, 2014). When the US mortgage bubble burst, the economies in the European Union found themselves in trouble. They responded by pumping liquidity in the financial sector and government bailout.

In this paper we will show how the crisis, which originated in the US, affected the Serbian economy. We will observe the main economic indicators such as growth rate, industrial production, unemployment, public deficit, public debt and capital flows.

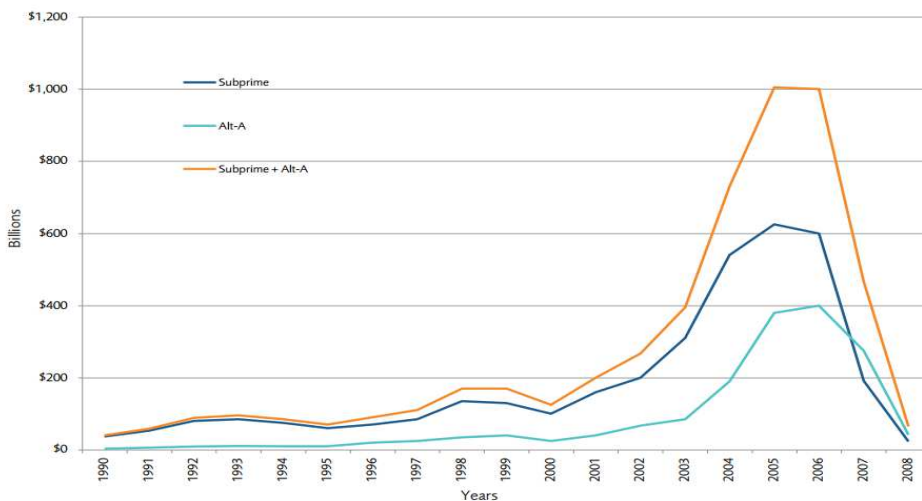
## **2. SECURITIZATION**

Asset securitization is the issuance of securities using pool of similar assets as collateral (Liaw, 2008). There are mortgage-backed securities and asset backed securities. Asset backed securities are backed by assets such as loans, leases, credit card debt, a company's receivables, automobile loans etc. In this paper the emphasis will be on mortgage-backed securities. Accordingly, mortgage securitization is the process of combining mortgages into pools and then dividing them into portions (tranches) that can be sold as securities in the capital market (Stowel, 2010).

The process of securitization has changed the way how commercial banks operate. Until the arrival of securitization, commercial banks held illiquid loans in their balance sheets. With the help of mortgage securitization commercial banks have the opportunity to reduce the risk of illiquid loans, repackage them in liquid securities and sell pools of mortgages to government-sponsored enterprises (Fannie Mae, Freddie Mac or Ginnie Mae) in addition to private type customers (most to investment banks and hedge funds). With the creation of market for the former illiquid financial instruments banks reduced their risk, and therefore lower interest rates on home loans which contribute to greater home ownership.

The benefits of securitization can be misleading and can cast a shadow on the risks involved in this complex product of financial engineering. By selling mortgages they have originated, commercial banks transfer credit and interest rate risk on other side (institutional or individual investors), thereby lenders did not have an obligation to respect strict landing standards. This problem contributed to the development of subprime loans and in the worst cases NINJA loans (no income, no job and no assets). In the graph below (Figure 1) we can see subprime mortgage origination from 1990 to 2008.

**Figure 1. Value of Subprime and ALT-a Mortgage Originations**



Source: *Inside Mortgage Finance*

\*ALT-A - A classification of mortgages where the risk profile falls between prime and subprime

Securitization mortgages, especially subprime mortgages, were at the epicenter of financial crises 2007-2008, creating trillions of dollars in investment losses and created worldwide recession.

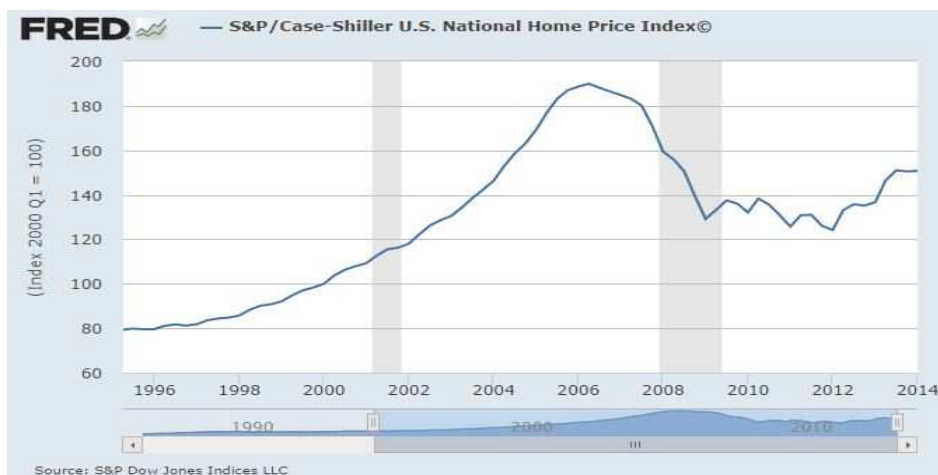
### 3. COLLATERAL DEBT OBLIGATIONS - CDOS

A CDO is a general term that describes securities backed by a pool of fixed income assets. These assets can be bank loans (CLOs), bonds (CBOs), residential mortgages (RMBS) and many others. A CDO is a subset of asset-backed securities (Liaw, 2008).

When retail or commercial bank approves loans like mortgages, auto loans or credit card loans, these loans are then sold to an investment bank which repackages them into CDO which is then sold to investors. Principal and interest payments made on the loans are redirected to investors. The collateral gives CDO a value. If the underlying loans go bad, the bank transfers the risk to the investors. Banks sliced CDO into various risk levels or tranches. The senior tranche is the safest, because senior tranche has first priority on assets if underlining assets default. Junior tranches are riskier and offer higher interest rates.

CDO in the nineties was very diversified and brought stable yields and earned a reputation as a stable instrument. In 2002 many banks used subprime loans as only collateral. In the years preceding the crisis, house prices increased significantly which made these instruments highly popular. While house prices rose there was no problem with the values of CDO and MBS. During that time Case-Shiller index (Figure 2) shows constant growth and peaked in the end of 2006. Case-Shiller is used to measure the nominal value of home prices in the United States and shows a housing price boom from 1996 to 2007.

**Figure 2. Case-Shiller index**



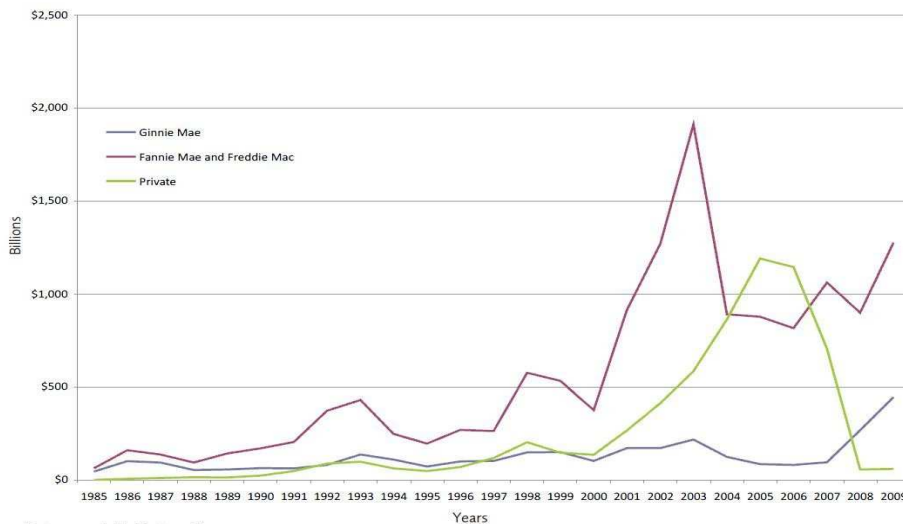
Source: S&P Dow Jones Indices LLC

When we talk about these instruments, we must mention the role of the state in creating the bubble. President George W. Bush in 2003 said the following:

*“We want more people owning their own home. It is in our national interest that more people own their own home. After all, if you own your own home, you have a vital stake in the future of our country.”*

On the occasion George W. Bush (signing the American Dream Downpayment Act 2003) called on lenders by the end of the decade to create 5.5 million new minority home owners and promised that the state would subsidize the purchase of houses for families with lower incomes. This way the administration encouraged lenders to relax the requirements for granting loans and asked government agencies GSEs (Fannie Mae, Freddie Mac and Ginnie Mae) to support the subprime market. GSEs were main players on MBS market. The graph below presents issuance of mortgage backed securities.

**Figure 3. Issuance of MBS**



Source: *Inside Mortgage Finance*

It can be seen that the issuance of mortgage backed securities by GSEs was slowing down in 2004 after which they emerged as the biggest buyers in the market. In fact, from 2000, Fannie and Freddie bought loans with low FICO scores, loans with very low down payments and loans with little or no documentation—Alt-A loans (Di Venti, 2008) Fannie and Freddie bought 25.2% of the record \$272.81 billion in subprime MBS sold in the first half of 2006, according to Inside Mortgage Finance Publications. In 2005, Fannie and Freddie purchased 35.3% of all subprime MBS,

the publication estimated. The year before, the two purchased almost 44% of all subprime MBS sold (Berg, 2006)

GSEs were severely affected by the credit crunch. Fed gives Fannie Mae and Freddie Mac access to discount window; that was a sign to investors that the US government would back those companies.

Investment banks were also affected. Large banks such as UBS, Merrill Lynch and Citigroup announced big write-downs related to investments in MBS. Lehman Brothers, fourth largest investment bank in the US, reported big quarterly loss (2.8 billion \$) in June 2008 (first since 1994 IPO). In the end Lehman Brothers filed for Chapter 11 bankruptcy protection on September 15, 2008. This was largest bankruptcy in US history.

#### **4. CREDIT DEFAULT SWAPS - CDS**

Credit default swaps played an important role in the credit crunch. Some investors called the credit default swaps on subprime mortgages the “bet that blew up Wall Street” and “the worst Wall Street invention” because CDSs took second place to subprime mortgages in terms of total losses caused. According to the International Swaps and Derivatives Association, the CDS market exploded over the past decade, from \$180 billion in 1998 to \$6 trillion in 2004 and \$57 trillion in 2008.

CDSs are derivative contracts designed to spread risk and reduce exposure to credit events such as default or bankruptcy. In a CDS, one party (the protection buyer) makes periodic payments to a second party (the protection seller) in exchange for a payoff in the event a third party (reference entity) defaults on its debt obligations. In this paper the interest is on CDS on mortgage backed securities.

In principle, the hedging benefits of credit default swaps CDS on mortgage backed securities should have made it possible for subprime risk to be located with those investors and institutions for which bearing such risk was most efficient. In the beginning, when the economy was strong and prices of houses went up protection sellers made a lot of money. But when the housing bubble burst, the CDS market crashed and caused severe losses. Best example is AIG (American International Group), largest CDS issuer. As a result of severe losses AIG was bailed out by the U.S. government in \$85 billion deal, because the U.S. government was concerned about the danger a collapse could pose to the financial system.

## **5. GLOBALIZATION OF US MORTGAGE CRISIS**

The crisis became a global problem. Banks in other developed countries joined the market for American MBS and CDO. Almost a quarter of the USA credit derivatives were bought by foreign banks- Us exported crisis in the rest of the world. By joining that market, those banks decided to emulate the tactics of the highly profitable American banks. The 10 countries that were the largest holders were the UK, Belgium, Ireland, Japan, Germany, Iceland, the Netherlands, Norway, Switzerland and France. All of the largest holders of American MBS were advanced industrial societies and 9 out of 10 were in Western Europe (Fligstain and Habinek, 2014). As in U.S. and Europe the crisis worsened, the other countries in the world suffered the consequences of the collapse in global demand. Developing countries, including Serbia, have been particularly affected. Main foreign trade partners of Serbia and investors in Serbian economy reduced exposure and returned the capital in own economies. Remittances and capital inflows have declined; in some cases, withdrawing from these countries. In the remainder of this paper we will see how the crisis has affected the Serbian economy. Some of the key indicators would be considered.

## **6. EFFECTS OF THE GLOBAL CRISIS ON THE SERBIAN ECONOMY**

The effects of the global financial and economic crisis could not have been limited to the financial sphere only. Although it originated in the financial sector, the crisis quickly spread to the real sector affecting both developed and undeveloped countries. The global economic crisis influenced the slow-down of the global trade, reduction of gross domestic product and inflow of new investments, unemployment rate, public debt and fiscal deficit rate. Following from this, the measures of the anti-crisis economic politics taken by governments of the developed countries are directed towards salvation of both the financial, as well as the real sector of the economy. The key principles of the state interventions are taken by pumping additional liquidity on the burden of tax payers, as well as by printing money by the central banks. Moreover, measures of economic politics in the developed countries are directed towards expenditure incentives, tax reductions, increase of minimum wages and pension. In other words, the emphasis in these measures is placed on stimulating demand and consequently stimulating the rate of growth of the GDP. On the other hand, under the above mentioned circumstances, less developed and countries in transition, due to insufficient production on the home market, perform surplus import thus increasing their foreign debt.

Republic of Serbia has been in the process of transition since 2000. Although there are noticeable reforms in the economic sector compared to reforms in the



institutional, legal and political sector, the pace of the process of transition is not satisfactory and is considerably unequal.

Observing the period from 2000 to 2009 in isolation (years when the influence of the global crisis on the performances of the domestic economy are noticeable), there are positive tendencies in the movement of the basic macroeconomic indicators. Thus, there was a real growth of GDP of 5.6 % in 2001, the export of goods was increased by 10.5 % and the import was increased by 28 %. The following year presents the maintenance of macroeconomic stability and economic growth. With the exception of 2004 (when the rate of growth of real gross domestic product was 2.4 %) in the period by the time the crisis started, the real growth rates of GDP present significant values. In 2004 there was a positive growth rate of 8.3 %, as well as growth of industrial and agricultural production of 8 % and 18 %. The growth in 2004 has not been repeated since. It is significant to note however that towards the end of the period observed, the economic performances were in the shadow of current political events. Namely, it is characteristic that in the years 2007 and 2008 there were two election cycles and the attention of the public was mainly preoccupied by problems with Kosovo and Montenegro. During that period the inflation was twice presented in two digits, while the pace of growth of GDP in 2008 was more moderate thus making the real growth rate 5.4 %.

Table 1 presents the movement of basic macroeconomic indicators in the period before and after the crisis, or the presentation of its effects on the domestic economy.

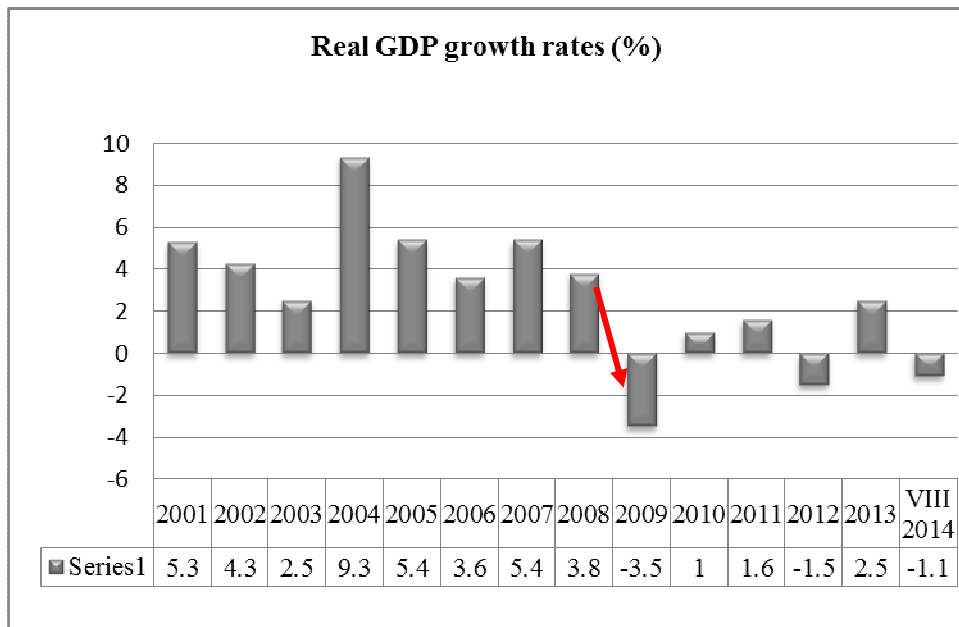
**Table 1. Movement of basic macro-economic indicators 2001-2013**

Year	01	02	03	04	05	06	07	08	09	10	11	12	13
GDP, real growth (%)	5.3	4.3	2.5	9.3	5.4	3.6	5.4	3.8	-3.5	1	1.6	-1.5	2.5
Inflation (%)	40.7	14.8	7.8	13.7	17.7	6.6	10.1	6.8	8.1	6.1	11.1	-1	2.6
FDI bln EUR	0,2	0,5	1,2	0,8	1,2	3,5	1,8	1,8	1,4	0,9	1,8	0,2	0,8
Foreign debt, % of GDP	105.	72.9	66.9	55.3	52.2	37.7	30.9	29.2	34.8	44.5	48.2	60.2	63.8
Industrial product. (%)	1	1.80	-3.0	7.1	0.8	4.7	3.7	1.1	-12.1	2.9	2.1	-2.9	5.5

*Source: Statistical Office of the Republic of Serbia, Statistical yearbook*

As stated in previous sections, the global economic crisis started at the end of 2007 in USA. However, its effects on the domestic economy were experienced in the last quarter of 2008 when the crisis started to spread globally.

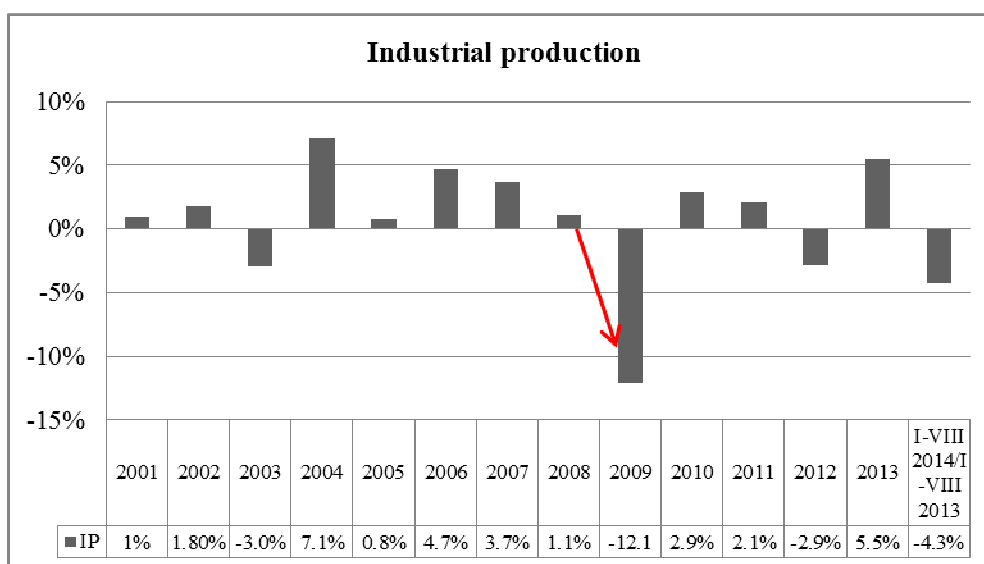
**Figure 4. Real GDP growth rates, 2001 – VIII 2014**



Source: Statistical Office of the Republic of Serbia

Cumulatively, the slow pace and inadequacy in the realization of the process of reforms, as well as the unfavorable movements in the international market culminated in negative real GDP growth rate in 2009. Following a modest growth of 1 % during 2010, the real GDP growth rate in 2011 was 1.6 %, and according to data published by Statistical Office of the Republic of Serbia, the drop of this aggregate in 2012 was 1.5 %..

Figure 5 shows movements of industrial production from 2001 to August 2014. From the presented figure, sharp fall of 12.1% was first of all negative consequence of Global Financial Crisis.

**Figure 5. Industrial production, 2001 - VIII 2014**

Source: Statistical Office of the Republic of Serbia

During the crisis period (from 2008 until July 2014) the number of people employed by employers, according to data published by Statistical Office of the Republic of Serbia, decreased for around 284.000 employees. By percentage, the decrease in number of employed persons in the same period is cumulatively 14.21 %, or 0.04 % average per year. The compared data about the movement of formally employed persons and unemployment rate according to Labor Force Survey are presented in Table 2. The trend of reduction of employed persons is present in 2013, as well as in 2014, which is an indicator that the combined effects of the crisis and problems in privatization are still felt.

**Table 3. Movement of the Unemployment rate in Serbia, 2001 - VII 2014**

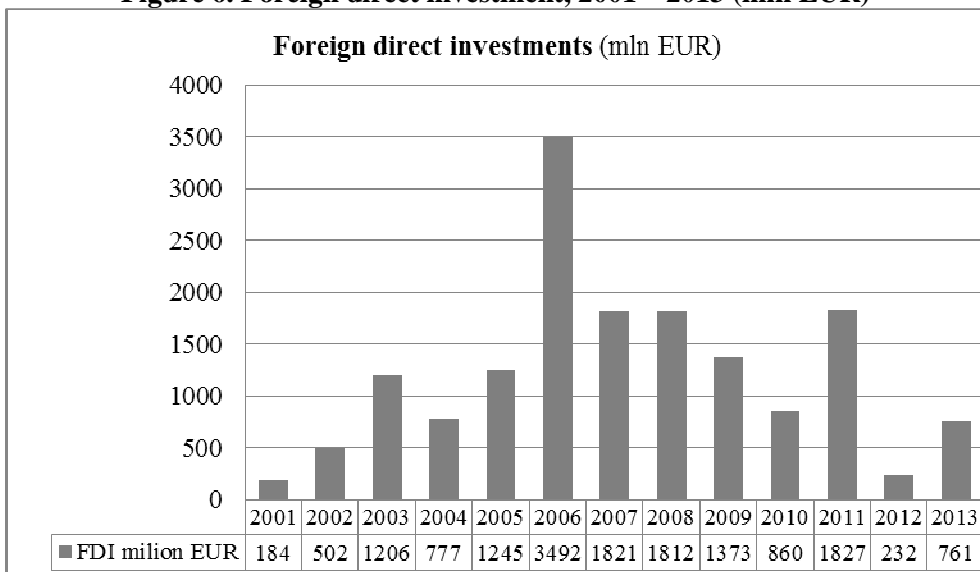
Year	Unemployment rate	
	Formal	According to Survey
<b>2001</b>	23.20%	12.20%
<b>2002</b>	25.30%	13.30%
<b>2003</b>	27.80%	14.60%
<b>2004</b>	25.90%	18.50%
<b>2005</b>	26.80%	20.80%
<b>2006</b>	27.80%	20.90%
<b>2007</b>	26.80%	18.10%

Year	Unemployment rate	
	Formal	According to Survey
2008	24.60%	14.40%
2009	26.00%	16.10%
2010	26.90%	19.20%
2011	27.70%	23%
2012	28.60%	22.40%
2013	29.50%	20.10%
VII- 2014	29.64%	20.30%

Source: Statistical Office of the Republic of Serbia, ZP20 and the National Unemployment Bureau

Cumulatively, foreign direct investments in Serbia from 2001 reached a level of almost 15.9 billion EUR, and the highest annual inflow was observed in 2006 and it was 3.3 billion EUR. Unfortunately, the highest percentage of these investments comes from privatization or taking over of companies privately owned, and to a lesser extent from *Greenfield* investments whose inflow would have a positive impact on the domestic economy in the future period. By observing the inflow of foreign direct investments per year from Figure 6, we notice a negative trend of movement of this indicator. The exception is year 2011 when there was a significant inflow on the basis of the taking-over of the trade chain Delta Maxi by Delhaize group in the amount of 932.5 million EUR.

**Figure 6. Foreign direct investment, 2001 – 2013 (mln EUR)**

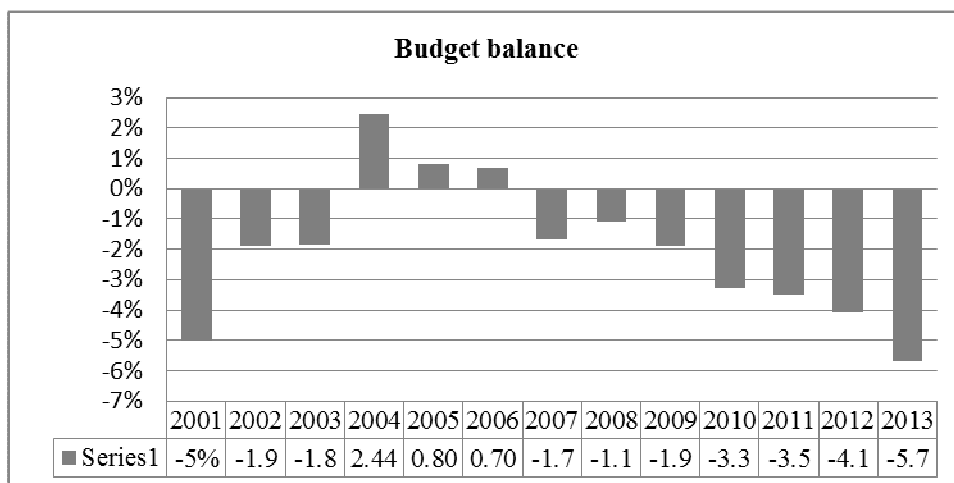


Source: Government of Finance, Current macroeconomic movements, 2014

The current account of the balance of payment since 2004 is characterized by a constant deficit, the highest one observed in year 2008 (7.2 billion EUR). The growth of the deficit of current transaction from 2009 is noticeable. It is a result of the decrease of demand and import which were caused by the current economic crisis.

The deficit of goods exchange reached the highest level in 2008 when it was 9,040 billion EUR (or 28 % of GDP). Despite numerous monetary and fiscal measures, Serbia still has high import needs caused by trade deficit. Although the coverage of import by export is increased from 33 % in 2004 to 71.14 % in 2013, the high deficit in the current account is still one of the key macroeconomic imbalances in Serbia. This deficit is financed from foreign funds (donations, new credit loans), as well as by postponement of payment of the foreign debt.

**Figure 7. Budget balance, 2001 - 2013**

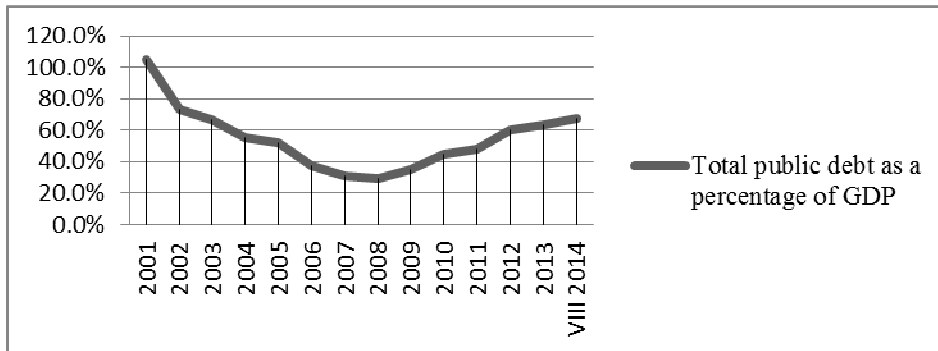


Source: Government of Finance, Current macroeconomic movements, 2014

Other than the above mentioned, constantly present problems in the domestic economy are the constant growth of foreign debt, as well as permanent growth of budget deficit. This trend, after the year 2008, is noticeable in all the significant foreign-trade partners of our country, as well as within the EU member states. The crisis whose influence quickly spread from USA to Europe caused a trend of general growth of foreign debt and fiscal deficit thus further causing the creation of the situation known as the *Europe Debt Crisis*.

Figure 6 presents the movement of the public debt of Republic of Serbia in period 2001-2013.

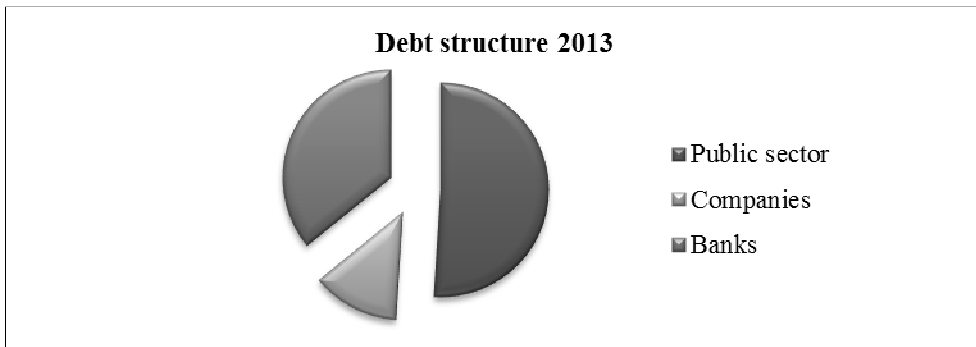
**Figure 8. Movement of foreign debt, 2001 – VIII 2014**



Source: Government of Finance, Current macroeconomic movements, 2014

Figure 8 represents structure of the public debt of Republic of Serbia in 2013.

**Figure 9. Structure of the public debt of Republic of Serbia in 2013**



Source: Government of Finance, Current macroeconomic movements, 2014

It is evident that due to the reduction of inflow of foreign investments and the global recession there is a constant growth of the foreign debt of our country. The foreign debt of the Republic of Serbia at the end of 2013 was 25.8 billion EUR which is 121 million EUR more that it was at the end of 2012. The participation of the foreign sector at the level of countries from the region was approximately 51 % of the total foreign debt.

## 7. CONCLUSION

We began by pointing out that the worldwide crisis originated in the USA and spilled-over to Europe and rest of the world. The crisis was set off by the collapse of the US housing market and caused the biggest recession since the Great

Depression. The main cause of the problem are credit derivatives, such as CDO (collateral debt obligation), MBS (mortgage backed securities) and CDS (credit default swaps). As those securities began to lose their value in 2007 and 2008, banks in the USA began to fail. Those instruments were extensively sold all around the world to banks and other investors. In that way crisis was exported from US to rest of the world, mainly Europe. In the years after 2008 governments intervened aggressively in order to stabilize their financial institutions and economy. Europe was severely affected; many countries fell into the problem of excessive rise of public debt and deficit. Serbia was one of them. In the period before the crisis, economic growth and increase in the level of living standards were based on borrowing and capital inflows, not on a strong and competitive economy. Thus, it is clear that the described model of economic growth was unsustainable, which is confirmed by the global financial crisis. In fact, due to the collapse of first the American and then the global financial markets, the inflow of foreign capital in Serbia was significantly reduced. Reduced capital inflows also meant a reduced offer of foreign currency in the foreign exchange market, which caused the domestic currency against the euro committing to significantly lose value. The global crisis affected the macroeconomic environment in the country, the GDP recorded a negative growth rate, there was increase in unemployment, fall in investment and an increase in illiquidity of the economy.

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# CROWDING-IN AND CROWDING-OUT EFFECTS OF PUBLIC AND PRIVATE INVESTMENTS IN THE PORTUGUESE ECONOMY

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## **Abstract**

*This study analyzes the effects of public and private investment on Portuguese GDP in the period 1960-2013. After a brief review of the literature based on works developed primarily in the context of VAR analyzes, such as Pereira and Andraz (2005) and Afonso and St. Aubyn (2008), an alternative econometric strategy is proposed. The use of VAR models to estimate the magnitude of crowding-in and crowding-out effects associated with these two components of the investment has not been robust. So we opted for the use of ADL models to estimate the behavioral equations of the variables output, private investment, public investment and the real exchange rate. For each of the four equations considered in this study the methodology of Krolzig-Henry (2001, 2005) was applied. Additionally, we also estimate a system of simultaneous equations by SUR method and calculated the multipliers of the exogenous variables, represented by the current external transfers and the short-run nominal interest rate. It was also tested a model with the first three equations of the system being in this case the real exchange rate an exogenous variable. The results point to the existence of a complementarity between private investment and public investment and in any way for their substitutability. Public investment has positive effects on output and on private investment. The appreciation of the real exchange rate don't have a very significant impact on private and public investment, but in return have a negative effect, and slow to cancel on output, confirming the presence of a Dutch-disease phenomenon in the Portuguese economy.*

**Keywords:** *Crowding-in, crowding-out, Portuguese Economy, private investment, public investment, ADL and SUR.*

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**JEL Classification:** C32, E22, E62.

## 1. INTRODUCTION

Historically, the Portuguese economy has been characterized by severe economic growth problems, particularly evident when compared their performance in terms of per capita Gross Domestic Product (GDP) with its major trading partners of the current European Union (EU). Some of the determinants of this evolution are: i) the existence of serious distortions in financial markets, which led to a reduced volume of private investments; ii) the deficient transportation infrastructures, whether road, rail or sea which greatly difficult trade and the development of the industrial structure of the country; iii) the persistence of successive fiscal imbalances, based on an inefficient tax base, have contributed to low productivity and inefficient public investment in the economy as well as iv) a trend appreciation of the real exchange rate, in particular in recent years, which has hampered the already traditionally low competitiveness of the Portuguese economy.

Given these problems, the entry of Portugal in 1986 in the European Economic Community (EEC)<sup>3</sup> was presented as an opportunity<sup>4</sup> to implement major reforms in the goods and services market, in the job market, as well as for the development of modern physical infrastructure such as roads, highways, ports, airports and railways, essential to output growth. Co-financing and transfer programs of structural and cohesion funds of the EU to the Portuguese economy<sup>5</sup>, especially after 1989, represent a huge opportunity for private investment and also for public investment, promoting output growth. These funds were added to the traditional remittances.

With this work we try to analyze the crowding-in and crowding-out effects of public on private investment and GDP of the Portuguese economy in the period 1960-2013. To this end, the behavior of variables such as GDP; Private Gross Fixed Capital Formation (GFCF); State GFCF and the real effective exchange rate based on unit labor costs (a measure of competitiveness of the economy) are studied. Additionally, we consider the nominal short-term interest rate, in order to integrate the cost of financing, and a variable called "external funds", which is the sum of the structural and cohesion funds with remittances, fundamental variable to evaluate the importance of the external current transfers.

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<sup>3</sup> Current European Union.

<sup>4</sup> After the gold of Brazil in the nineteenth century and the large flows of remittances from the 60s and 70s of the twentieth century.

<sup>5</sup> Approximately 95 million of euros per day.

Based on the econometric behavior of these variables, we should know if private and public investment are substitutes or complementary for output growth. We analyze also the influence of financial costs, external funds and real exchange rate on private and public investment in Portugal and, consequently, on output. Real exchange rate may have a negative influence on output leading to a possible presence of a Dutch-disease phenomenon in the Portuguese economy.

We estimate a set of single equations by using ADL models (Autoregressive Distribute Lag models), as well as a system of simultaneous equations by SUR (Seemingly Unrelated Regression) method. Will be also calculate multipliers for external funds, interest rate and real exchange rate.

We intend to answer to some problems associated with VAR (Vector Autoregressive) models. In fact, the use of VAR models, although common, are not always accompanied by the indication of the module of the roots of the associated matrix and we cannot know if the system is stable; frequently the estimations are carried out with first-differences, with no reference to ECM (Error Correction Model) processes which makes them not efficient if they are cointegrated; and the same VAR type and order is estimated for different countries ignoring countries specificities. We overcome this limitations using the econometric strategy of Henry and Krolzig (2001, 2005) to individual equations and after estimating a simultaneous equation model based on these individual equations.

The present paper is structured in four sections, including the introduction. Section 2 provide a brief review of the literature of crowding-in and crowding-out effects of private and public investment. Section 3 presents the data, the econometric strategy in the empirical part and discusses the results obtained. Finally, section 4 presents the main conclusions.

## **2. CROWDING-IN AND CROWDING-OUT EFFECTS: BRIEF LITERATURE REVIEW**

As we said above, we try to evaluate the effects of public and private investment on the Portuguese economy. These effects can take two forms: crowding-in effects and crowding-out effects.

The crowding out effect corresponds to a situation in which after an increase in state public investment there is a reduction in private investment and other components of aggregate expenditure (real crowding-out), that can be sensitive to changes in interest rates (financial crowding-out). These effects are explained by

the fact that resources are scarce and there exists in the economy a transmission mechanism between financial markets and goods' markets.

In fact, when policy-makers increase their spending (or reduce taxes) this increase is magnified by the income multiplier effect. The increase in aggregate expenditure will push prices and increase the demand for money which in turn will cause an increase in short-run nominal interest rates<sup>6</sup>. This increase in interest rates will, in turn, may cause a decline in private investment and other components of aggregate expenditure more prone to changes in interest rate. This reduction of some components of aggregate expenditure, after the increase in public investment, is the crowding-out effect (Blanchard, 2008).

In turn the crowding-in effect<sup>7</sup> is a situation in which there is an increase in private investment as a result of increased public investment, for example, through the construction or improvement of physical infrastructure such as roads, highways, water and sanitation, ports, airports and railways. Indeed, as is mentioned by Afonso and St. Aubyn (2008)<sup>8</sup>, the importance of public investment is usually highlighted in the implementation of expansionary fiscal measures, promoting the growth of potential output, which create conditions to increasing productivity and a greater level of private investment, especially when the latter is subjected to adverse shocks. Thus, the confirmation of the existence of crowding-in effects in an economy may be a very relevant argument to reject austerity plans in recession times<sup>9</sup>.

In recent years there has been a renewed and growing interest in the study of these phenomena. Is not so surprising that there is a vast theoretical and empirical literature on the subject. However, it is not our intention in this paper to make an exhaustive and detailed analysis of the literature but a synthetic review in view of our analysis of output and private investment of the Portuguese economy.

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<sup>6</sup> Interest rates may also increase through the emission of public debt to finance the increase in government expenditure. It is therefore not surprising that in recent times, following the current economic and financial crisis and the revision of the Stability and Growth Pact (SGP), there have been some proposals by policy-makers to reduce or even eliminate some public investments. The Portuguese case is very illustrative of this reality if we look at what has been set out in paragraph nº 6 of *Memorando de Políticas Económicas e Financeiras* set to Portugal under the Financial Assistance Program to the country (Governo de Portugal, 2011: 2).

<sup>7</sup> See, for example, Aschauer (1989a) and Hatano (2010).

<sup>8</sup> Which in this section we will follow.

<sup>9</sup> Again, the Portuguese case can be a good example to test this reality, which demonstrates the relevance and actuality of this paper.

Aschauer (1989a) with a VAR analysis tried to measure the effects of public investment on aggregate economic activity (output) as well as the effects of public investment on private investment. The conclusion of the study indicate that for the United States, public investment has a global crowding-in effect on private investment and that public and private investment (capital) can be seen as complementary. In this context, from the point of view of economic policy, the fundamental question is to know when public investment would be productive and, therefore, could contribute positively to economic growth via private investment decisions. Aschauer (1989b) goes further, arguing that the observed decrease in productivity in the United States in the 70s was due largely to the decline in public investment. This idea is also shared by Mundell (1990).

Based on a panel of 14 OECD countries Argimon, González-Páramo and Roldán (1997) also confirm the existence of a crowding-in effect on private investment through public investment, via the positive impact of infrastructure on the productivity of private investment.

Other studies also attempted, in the context of a VAR methodology, to analyze the effects of public investment on economic output. Such was the case of Mitnik and Neumann (2001) who estimated a VAR model with GDP, private investment, public investment and public consumption for six industrialized countries. The results of their study indicate that public investments tend to have positive effects on the output, with no evidence of the presence of crowding-out effects. In turn, Voss (2002), taking as variables the GDP, public investment, private investment, real interest rates and the price deflator of private and public investment, estimated a VAR model for the United States and Canada for the period 1947-1996 and concluded that shocks on public investment have crowding-out effects on private investment. Following the same methodology, Kamps (2004) and Perotti (2004) analyzed not only the effects of public investment on output, but also on the labor market, concluding by the presence of crowding-in effects especially in employment.

More recently, Andrade Duarte and Berthomieu (2006) analyzed the role of public expenditure on economic growth for the case of European Union countries. Taking as reference the model of Barro (1989) and the period from 1960 to 2002, the authors used panel data and time series, and a wide range of econometric methods, where, which includes co-integration estimation methods of Kao and Chiang (2000) and the generalized method of moments (GMM), having concluded that there is a positive relationship between public expenditure and output. The thesis defended by Avila and Strauch (2003) of the existence of a negative relationship between the level of public expenditure and GDP, it was not confirmed by the analysis of these authors for the case of EU countries.

In turn, Sonaglio, Braga and Campos (2010) observed the existence of crowding-out effects (substitution) between public investment and private investment in the Brazilian economy for the period 1995-2006. Using a Vector Error Correction (VEC) method, the authors found that interest rate, tax rate and average price of capital goods had a negative effect on investment, thus indicating that fiscal policies that aim at reducing taxation, promotion of capital goods production and reduction of interest rates may influence positively investment in order to promote sustained economic growth<sup>10</sup>.

Based on the pioneering work developed by Aschauer (1989a, 1989b), Hatano (2010) also investigated the effects of public investment on private investment in the case of the Japanese economy<sup>11</sup>. The results of their study show that there is a cointegration relationship between private capital and public capital and the estimation results allowed him to conclude by the presence of crowding-in effects (complementarity) between public investment and private investment.

In what concerns the works involving the Portuguese economy, we have among others the studies developed in the last fifteen years by Esteves (1998), Pereira (2000, 2001), Pereira and Andraz (2001, 2003 and 2005), Afonso and St. Aubyn (2008) and Afonso and Sousa (2009)<sup>12</sup>.

The exploratory analysis<sup>13</sup> developed by Esteves (1998) is very curious, at once by the distant period considered to analyze the presence of crowding-out effects in Portugal, 1879-1910. The author estimates a model by three Stages Least Squares (3SLS) in order to analyze how the public debt crisis of the 1890s have contributed to the existence of crowding-out effects in the Portuguese economy. Specifically, the author tries to test the existence of a positive relationship between nominal interest rate (taken as cost of capital) and the real changes of domestic public debt. The results indicate the existence of a moderately evidence of crowding-out. In fact, in the medium term, the relationship between the interest rate and the change in debt fades completely.

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<sup>10</sup> Using a panel of 145 countries for the period 1960-2007, Furceri and Sousa (2009) also seem to suggest that government expenditures produces important crowding-out effects that negatively affect consumption and private investment.

<sup>11</sup> Inspired by the works of Aschauer, many other studies have been developed for specific-countries. As we said, it is not our purpose to analyze this literature exhaustively. However we leave here the reference to some of these studies, such as Merriman (1990 also for Japan, Berndt and Hansson (1992) for Sweden, Shah (1992) for Mexico, Lynd and Richmond (1993) for the UK, Seitz (1994) for Germany, Sturm and de Haan (1995) for the Netherlands, Otto and Voss (1996) for Australia and Pereira and Roca (1999) for Spain.

<sup>12</sup> Again, among these, we will review those with conclusions more relevant to our analysis.

<sup>13</sup> As designated by the author.

In turn, Pereira and Andraz (2005) investigate the effects of public investment in transportation infrastructures such as national roads, municipal roads, highways, ports, airports and railways, on output, private investment and employment in Portugal in the period 1976-1998, i.e. in the post-Revolution of April 1974 to the date when Portugal joined the Euro Zone. The choice of this period is purposeful, in that in their analysis the authors seek to enter into account with the large volume of structural and cohesion funds received by Portugal.

Using a VAR model and a simulation analysis of shocks, the authors conclude that public investments have a strong positive effect on output, private investment and employment. The results show in particular that one euro in public investment increases output in the long-run by 9.5 euros, which corresponds to a rate of return of 15.9%. The public sector would thus collect 3.3 euros in future tax revenues for each euro spent in public infrastructure. In turn, for each euro invested in the public sector, private investment increases 8.1 euros<sup>14</sup>. For each millions of euros of public investment, 230 additional jobs would be created. Moreover, public investment in transportation infrastructures would increase long-run labor productivity. So there would be strong long-run budgetary benefits resulting from public investments in the form of increased future tax revenues.

In this perspective it would be perfectly justifiable a strategy based on investments in public infrastructure insofar as they contribute to a greater output and employment growth, but also to a better budgetary position through a higher tax revenue in the future. Pereira and Andraz (2005) conclude that investments in public infrastructures are crucial for the Portuguese growth strategy.

Using a methodology similar to that used by Pereira and Andraz (2005), Afonso and St. Aubyn (2008) also estimated macroeconomic return rates associated with public and private investments for seventeen countries (fourteen EU countries plus Canada, Japan and the United States) for the period 1960-2005.

They show that public investment had contractionary effects on output in five countries, particularly in Belgium, Canada, the Netherlands, Ireland and the UK, with the simulation analysis of shocks (impulse response functions) indicating that positive impulses in public investment led to a decline (crowding-out) in private investment. In turn, for eight countries - Austria, Denmark, Finland, Greece, Portugal and Sweden - there were expansionary (crowding-in) effects on private investment following public investments.

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<sup>14</sup> Everything seems to indicate to the existence of a strong complementarity between public and private investment, that is to say, for the presence of crowding-in effects in the Portuguese economy.

Afonso and St. Aubyn (2008) also found that with the exceptions of Finland, Italy and Sweden, the partial rate of return of public investment was positive. In turn, taking into account the induced effect on private investment, the total rate of return associated with public investment was generally lower, with the exception of France, and negative for the cases of Austria, Finland, Greece, Portugal and Sweden, countries where the increase in GDP was not sufficiently high to offset the total investment effort. On the other hand, the private investment impulses, were always expansionary in GDP terms, although public investment has responded positively to private investment in only three cases (Belgium, Greece and Sweden).

### **3. EMPIRICAL ANALYSIS**

The empirical study is presented in this section. We begin by presenting the database, the econometric strategy, the estimates for each equation and finally a simultaneous equation model with 4 and 3 equations and the respective multipliers.

#### **3.1. Data Base**

The period is from 1960 to 2013. The variables were taken from the macroeconomic data base of the European Commission, AMECO, from the statistics of the Bank of Portugal and also from the Services Directorate for Economic and Financial Affairs of the Ministry of Foreign Affairs. This database will be made available to those who request it from the authors.

The variables that ultimately are part of our models are: *ig*, public investment - logarithm (log) of Government GFCF; *ip*, private investment - log of private GFCF; *y*, output - log of GDP; *tcr*, real exchange rate - log of the real effective exchange rate based on unit labor costs; *etj*, rate of interest -  $=(1 + r)$ , with *r* the nominal short-term interest rate; and *sf*, external current funds - the log of the sum of the structural and cohesion funds with remittances. Variables, beyond the interest rate, are measured at constant prices.

#### **3.2. Econometric strategy**

The strategy followed in the literature of this subject is not always rigorous. The use of VAR models is not accompanied by an indication of the module of the roots associated the matrix of the VAR – this doesn't allow to check if the model is stable –; impulses are not presented with the respective confidence intervals; and estimations are made with first differences without any reference to ECM processes which makes them inefficient when the variables are integrated processes of order 1 (I(1)). Also the fact that some studies seek to answer the hypothesis



under study for several countries leads to not seek VAR models that are more appropriate from a national perspective.

To respond to these problems we started to test the nature of stationarity of our variables. They are I(1) which means that we can choose to study the co-integration or estimate VAR models that integrate the dynamics of the evolution of these variables. As regards the co-integration in general we reject it using the Johansen test and, when this was not so, the roots of the VAR associated matrix were outside the unit circle. This means the process is not stationary. With our data the application of VAR models has not been very robust. Reducing the VAR to Near-VAR models leads in practice to abandon the characteristics of interdependence of these models. Thus, in a first stage we opted for the use of ADL (augmented distributed models) models for the variables that we want to represent. For each equation we have applied the methodology of Hendry-Krolzig, Hendry, D. F. and H.-M. Krolzig (2001) and Hendry, D. F. and H.-M. Krolzig (2005).

The estimation of the equations of the product, the private and public investment and the real exchange rate allows us to answer to the question if public investment is crowding out private investment. After this study we estimate, in a second stage, a simultaneous equations model with these variables using the SUR methodology (seemingly unrelated regressions) and we calculate the multipliers of the exogenous variables of the model. We used two systems: one with 4 endogenous variables (equations 1-4) and another with 3 endogenous variables (equations 1-3). With these two models we also try to answer to the above question of crowding out.

The behavior hypothesis considered are the following:

$$y = \beta_0^y + \beta^y(L) \cdot y + \alpha^y(L) \cdot ip + \gamma^y(L) \cdot ig + \lambda^y(L) \cdot tcr + \phi^y(L) \cdot etj + \mu^y \quad (1)$$

$$ip = \beta_0^{ip} + \beta^{ip}(L) \cdot y + \alpha^{ip}(L) \cdot ip + \gamma^{ip}(L) \cdot sf + \phi^{ip}(L) \cdot etj + \mu^{ip} \quad (2)$$

$$ig = \beta_0^{ig} + \beta^{ig}(L) \cdot y + \alpha^{ig}(L) \cdot ig + \gamma^{ig}(L) \cdot sf + \phi^{ig}(L) \cdot etj + \mu^{ig} \quad (3)$$

$$tcr = \beta_0^{tcr} + \beta^{tcr}(L) \cdot tcr + \alpha^{tcr}(L) \cdot ip + \gamma^{tcr}(L) \cdot ig + \phi^{tcr}(L) \cdot sf + \lambda^{tcr}(L) \cdot etj + \mu^{tcr} \quad (4)$$

$\alpha(L)$ ,  $\beta(L)$ ,  $\gamma(L)$  e  $\phi(L)$  represent polynomials lags. We consider that output depends on public and private investment, the level of competitiveness of the economy, measured by the real exchange rate, and financing costs represented by the interest rate. Private investment is considered to be dependent on the level of output, financing costs and external transfers. The same is admitted for public

investment. Finally we take the real exchange rate determined by the level of investment, external transfers and interest rate.

### 3.2.1. Individual Equations Model

In this section we present the main results associated with the estimation by the ADL method of the four individual equations behavior previously reported, namely: (1) output equation; (2) private investment equation; (3) public investment equation and (4) real exchange rate equation.

#### (1) Output Equation

**Table 1. Output Estimation**

Var	Coefficient	S.E.	T	NS	Other Indicators
y_1	0.904	0.029	30.60	0.00	sigma=0.018
Constant	1.074	0.222	4.84	0.00	Adj.R^2=0.999
ip	0.163	0.026	6.27	0.00	AR 1-2 test: F(2,43)=0.138 [0.87]
ip_1	-0.101	0.033	-3.04	0.00	RESET23 test: F(2,43)=0.726 [0.49]
ig	0.055	0.019	2.97	0.00	
ig_1	-0.049	0.022	-2.25	0.03	
tcr	-0.115	0.029	-3.94	0.00	
Etj_1	-0.266	0.076	-3.52	0.00	

We see in Table 1<sup>15</sup> the value of the standard deviation of the estimated error is very small, less than 2%, we have also no problems of autocorrelation of errors and misspecification of the model (the RESET test with squared and cubed errors). The coefficient of the lagged public investment excludes the null hypothesis at the level of 3% and for all other coefficients such exclusion is for values lower than 1%. Output is determined by investment with private investment effect greater than public investment. Output is negatively affected by the real exchange rate and the interest rate. These results match what a priori was expected. We should note that

<sup>15</sup> In the first column we have the explanatory variables; in the second the coefficient values; in the third the standard-errors associated with the estimated coefficients; in the fourth the T values; in the fifth the probability values associates with the T; and finally in the last column some other statistical information, the standard error of the estimation, the adjusted regression coefficient, a LM test for the autocorrelation of errors 1 and 2, and finally the RESET test for model misspecification.

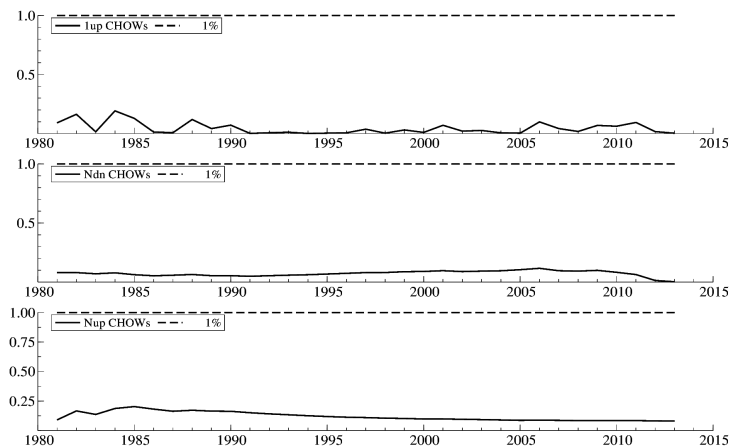
in terms of this equation we have complementarity between private and public investment.

In Figure 1 we have the actual and estimated values obtained with this equation and in Figure 2 the three types of stability tests proposed by Hendry, DF and JA Doornik (2001, pp 240-1.). The tests were estimated with 20 initial observations. The first is based on the estimation of forecasting 1 period ahead; the second on error variances of the estimation period and the remaining period; and the third is the common Chow test for constancy of parameters. We should beware of very high and persistent values in the case of the second test and above all be attentive to the values of the last test. In any case the values are standardized to 5% corresponding to 1 in the various graphs.

**Figure 1. Actual and fitted values of output**

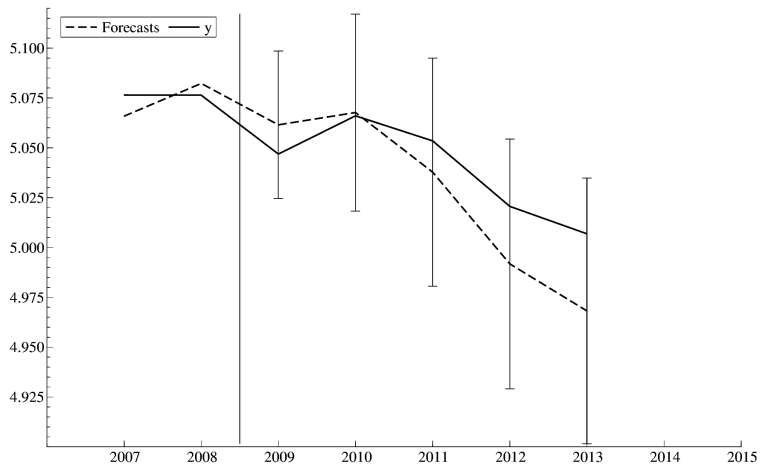


**Figure 2. Stability tests for the coefficients of the output equation**



Output estimated values are very close to actual values and we can accept that coefficients are stable. We have re-estimated the equation without the 10 last observations (years) and we have used it to dynamically forecast these 10 observations (Figure 3). We see that the forecast values are within the confidence interval of 95%. We perceive the effects of the strong reduction of investment, private and public, and agents' economic confidence in recent years, in the period under financial assistance.

**Figure 3. Dynamic forecast for the last 10 years**



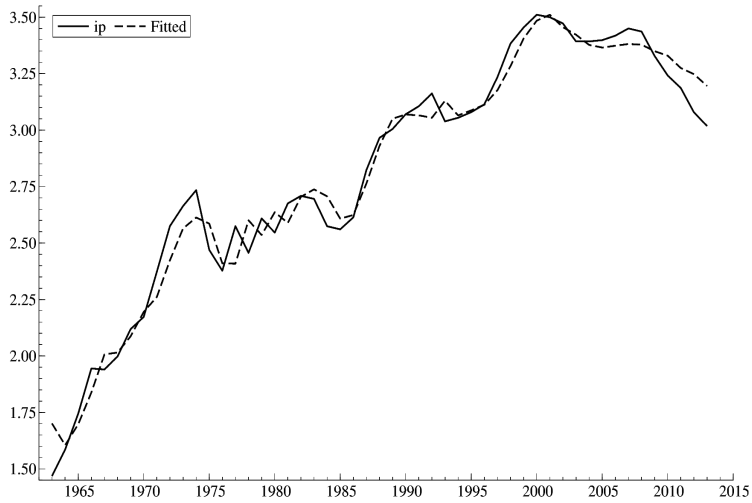
**(2) Private investment equation**

**Table 2. Private investment estimation**

Var	Coefficient	S.E.	T	NS	Other Indicators
ip_1	0.624	0.063	9.94	0.00	sigma=0.079
Constant	1.873	0.351	5.34	0.00	Adj.R^2= 0.979
sf	0.212	0.038	5.61	0.00	AR 1-2 test: F(2,40)=0.016 [0.98]
Etj_1	-2.182	0.413	-5.28	0.00	RESET23 test: F(2,40)=3.358 [0.05]

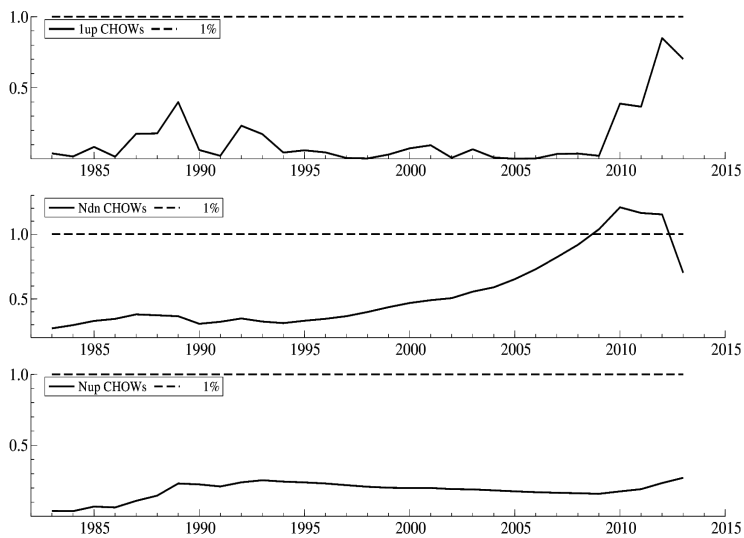
As regards the robustness of the estimation these results are slightly inferior to the output equation. Only at critical levels less than 3.3% we cannot reject the correct specification of the equation (RESET). Anyway we should draw attention to these values given the great difficulty that always represents the estimation of private investment values. The influence of financial costs and external funds is obvious. The latter has a key role in explaining private investment in Portugal.

**Figure 4. Actual and fitted values of private investment**



In Figure 4 we can check the good fitting of investment to current severe restriction policy measures and the decrease in economic confidence of economic agents. Fitting values are higher than those actual registered since 2010. In Figure 5 we can see some coefficients' instability for the years of the current crisis (second test).

**Figure 5. Stability tests for the coefficients of the private investment equation**



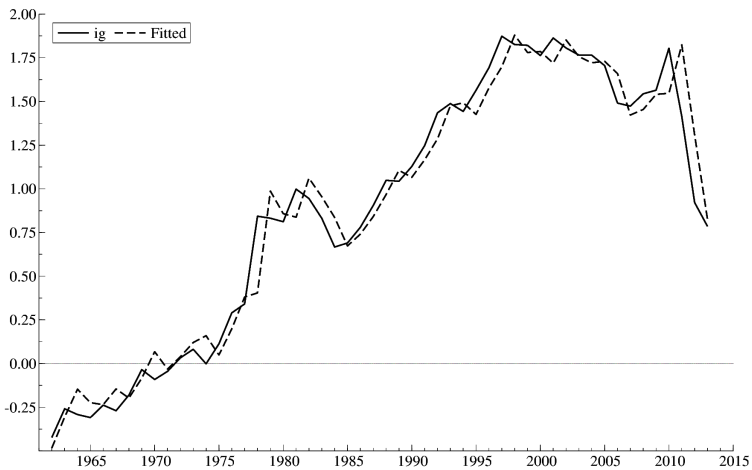
(3) Public investment equation

Table 3. Public investment estimation

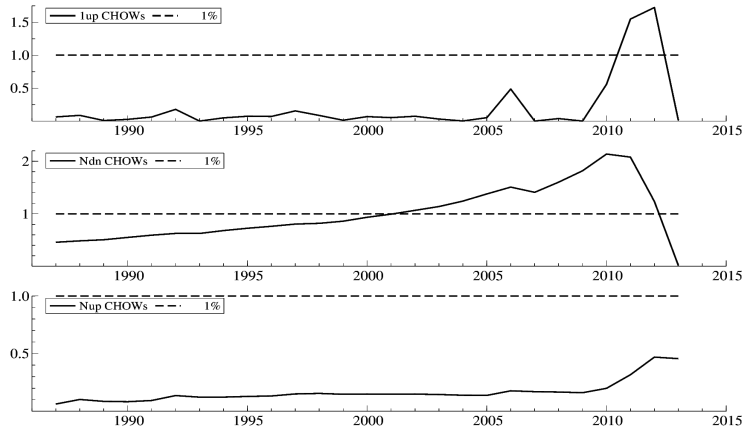
Var	Coefficient	S.E.	T	NS	Other Indicators
ig_1	1.173	0.139	8.42	0.00	sigma=0.142
ig_2	-0.241	0.133	-1.81	0.08	AR 1-2 test: F(2,47)=0.345 [0.71]
sf_1	0.011	0.005	2.28	0.03	RESET23 test: F(2,47)=0.295 [0.75]

The average error of the estimate is now higher (14%), which reflects the discretionary behavior of this variable. Apart from being an auto-regressive process of order 2, public investment depends on external funds. The null hypothesis for the coefficient of this variable is rejected at the level of 5% (2.7%, more precisely). Again we have no problems of autocorrelation of errors and misspecification of the equation.

Figure 6. Actual and fitted values of public investment



In Figure 6 it is clear the over-estimation of investment in recent years and in Figure 7 the stability of the coefficients in terms of the first two tests is questionable. Only the last of these tests do not rule out the stability of the coefficients of the equation.

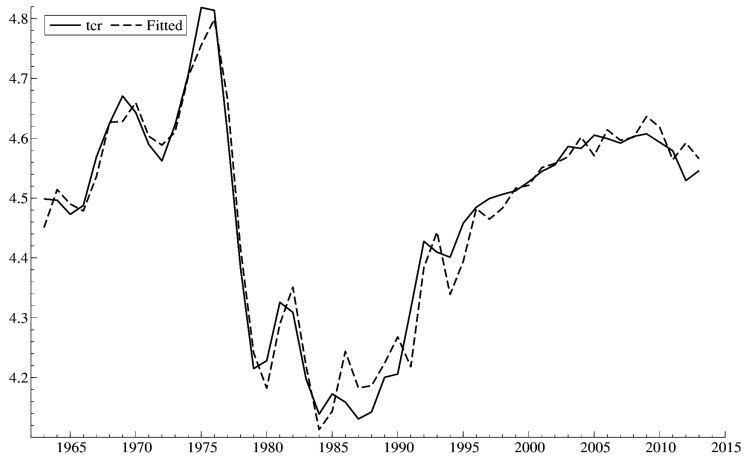
**Figure 7. Stability tests for the coefficients of the public investment equation****(4) Real exchange rate equation****Table 4. Real exchange rate estimation**

Var	Coefficient	S.E.	T	NS	Other Indicators
tcr_1	1.373	0.125	11.0	0.00	sigma=0.040
tcr_2	-0.969	0.184	-5.27	0.00	Adj.R^2=0.950
tcr_3	0.313	0.109	2.86	0.01	AR 1-2 test: F(2,42)=1.3502 [0.27]
Constant	1.721	0.362	4.75	0.00	RESET23 test: F(2,42)=0.297 [0.74]
ip_1	0.111	0.031	3.62	0.00	
ig_1	-0.086	0.023	-3.71	0.00	
Etj	-0.635	0.138	-4.60	0.00	

We see in Table 4 that the fitted values are very close to actual values: an average error of only 4%. The estimation has no problems of autocorrelation of errors and also of specification. The real exchange rate depends positively of private investment and of reductions of the interest rate. Public investment is negatively associated with the real exchange rate. This result confirms the idea of a phenomenon of Dutch-Disease in the Portuguese economy where private investments depend positively on external funds and on decreases of the interest rate (equation (2)) and these investments have a strong component of non-tradable

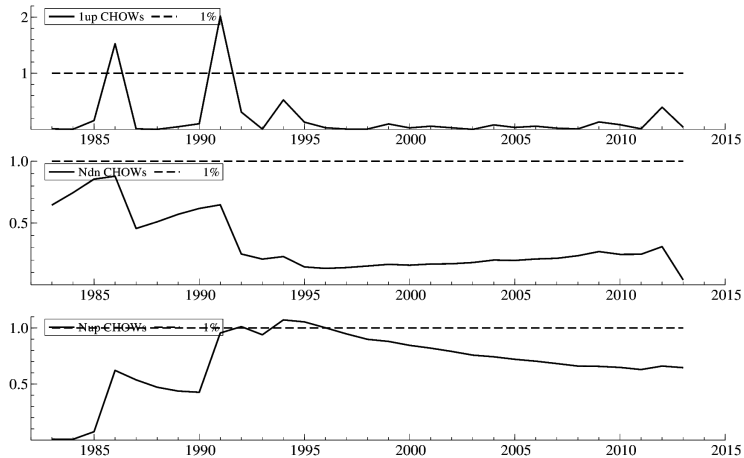
goods leading to increased values of the real exchange rate – a loss of competitiveness of the Portuguese economy (Andrade and Duarte (2013)).

**Figure 8. Actual and fitted values of the real exchange rate**



In Figure 8 we can see the high degree of adherence of fitted to actual values. It is noteworthy the quality of the estimation in years with abrupt changes.

**Figure 9. Stability tests of the coefficients of the real exchange rate equation**



The equation of the real exchange rate reveals instability of the coefficients in the period of Portuguese accession to the (now) European Union and during the currency crisis of the early 90s when the Portuguese currency was devalued.



In conclusion from the individual equations we should stress the complementary role of public to private investment. In fact public investment will not adversely affect private investment and output, what happens it is just the reverse: public investment has a positive direct effect on output and has also an effect on external competitiveness and so create conditions for private investment which in turn has a positive influence on output.

### 3.2.2. Simultaneous equation models

After the estimation of individual equations we now estimate a system with the four equations already presented. Our endogenous variables are the output, the private investment, the public investment and the real exchange rate. The exogenous variables are external funds and the interest rate. As can be seen (Table 5) individual equations behavior remains the same when we estimated them as a system.

**Table 5. SUR estimation of the 4 equation model**

	y				ip				ig				tcr			
	Coef.	S.E.	T	NS	Coef.	S.E.	T	NS	Coef.	S.E.	T	NS	Coef.	S.E.	T	NS
Const.	0.698	0.195	3.58	0.00	1.312	0.324	4.05	0.00					1.644	0.328	5.01	0.00
y_1	0.885	0.024	36.34	0.00												
ip	0.260	0.021	12.09	0.00												
ip_1	-0.186	0.028	-6.55	0.00	0.677	0.060	11.36	0.00					0.104	0.028	3.69	0.00
ig	0.053	0.015	3.55	0.00									-0.080	0.021	-3.76	0.00
ig_1	-0.039	0.018	-2.23	0.03					1.154	0.136	8.51	0.00				
ig_2									-0.220	0.129	-1.71	0.09				
tcr	-0.053	0.025	-2.10	0.04												
tcr_1													1.378	0.114	12.12	0.00
tcr_2													-0.979	0.165	-5.93	0.00
tcr_3													0.335	0.098	3.43	0.00
etj													-0.620	0.126	-4.93	0.00
etj_1	-0.133	0.069	-1.92	0.05	-1.488	0.374	-3.98	0.00								
sf					0.165	0.035	4.70	0.00								
sf_1									0.011	0.005	2.17	0.03				
sigma	0.018				0.086				0.139				0.037			

The robustness characterizing individual estimates remains in this model. In Table 6 we have the values of the multipliers of the exogenous variables after an isolated shock of value 1.0 in period 1.

**Table 6. Multipliers for external funds and interest rate**

sf	M_y	M_ip	M_ig	M_tcr	etj	M_y	M_ip	M_ig	M_tcr
<b>1</b>	0.043	0.165	0.000	0.000	<b>1</b>	0.033	0.000	0.000	-0.620
<b>2</b>	0.036	0.112	0.011	0.017	<b>2</b>	-0.446	-1.488	0.000	-0.854
<b>3</b>	0.029	0.076	0.012	0.034	<b>3</b>	-0.342	-1.008	0.000	-0.725
<b>4</b>	0.023	0.051	0.012	0.037	<b>4</b>	-0.268	-0.683	0.000	-0.475
<b>5</b>	0.019	0.035	0.011	0.028	<b>5</b>	-0.214	-0.462	0.000	-0.301
<b>6</b>	0.016	0.024	0.010	0.016	<b>6</b>	-0.173	-0.313	0.000	-0.241
<b>7</b>	0.013	0.016	0.009	0.009	<b>7</b>	-0.138	-0.212	0.000	-0.229

External funds have an important role on private investment and, consequently, on output. A 100% increase on external funds would lead to a growth of 16.5% and 4.3% on private investment and output, respectively. The effect lasts longer on output than on private investment. Output growth is not higher due to the negative effect that is exerted by the appreciation of the real exchange rate. The rise in the interest rate turns out to have an important effect on private investment and on output. Its effects on real exchange rate take longer to cancel that on private investment. Due to the relation between interest rate and real exchange rate the effect of the rise of this variable on output is positive in the first year. Changes in interest rate do not affect public investment in our model.

Changes in external funds lead us to take the private and public investment as complementary also in terms of response to shocks, and not as substitutes.

We also have estimated a model with the first three equations and now the real exchange rate appears as an exogenous variable. As the results of the SUR estimation are very close to those obtained with the previous model we omit their values. We include only the values of the multipliers in Table 7.

**Table 7. Multipliers of external funds, interest rate and real exchange rate**

sf	M_y	M_ip	M_ig	etj	M_y	M_ip	M_ig	tcr	M_y	M_ip	M_ig
<b>1</b>	0.041	0.167	0.000	<b>1</b>	0.000	0.000	0.000	<b>1</b>	-0.085	0.000	0.000
<b>2</b>	0.036	0.113	0.011	<b>2</b>	-0.577	-1.485	0.000	<b>2</b>	-0.075	0.000	0.000
<b>3</b>	0.032	0.077	0.013	<b>3</b>	-0.508	-1.007	0.000	<b>3</b>	-0.066	0.000	0.000
<b>4</b>	0.028	0.052	0.012	<b>4</b>	-0.447	-0.683	0.000	<b>4</b>	-0.058	0.000	0.000
<b>5</b>	0.025	0.035	0.011	<b>5</b>	-0.394	-0.463	0.000	<b>5</b>	-0.052	0.000	0.000
<b>6</b>	0.022	0.024	0.010	<b>6</b>	-0.347	-0.314	0.000	<b>6</b>	-0.046	0.000	0.000
<b>7</b>	0.020	0.016	0.010	<b>7</b>	-0.306	-0.213	0.000	<b>7</b>	-0.040	0.000	0.000

The effects of external funds are felt, as above, on output and private investment, but mainly on private investment. The effects on output are slower to disappear. Changes in interest rates have a similar temporal dynamics' effects like external funds, but now only in the second period output and private investment will react. The shock of the real exchange rate does not affect private or public investment and they have a negative and slow to cancel effect on output.

In short, once again we are witnessing a dynamic evolution of the economy in which private and public investments are complementary and in no way substitutes.

#### **4. CONCLUSION**

With this study we have analyzed the effects of public and private investment on the output of the Portuguese economy in the period 1960-2013. By modelling output we know if private and public investment are complementary (crowding-in effects), or substitutes (crowding out effect). It was also our aim to evaluate the influence of financial costs, external funds and real exchange rate on private and public investment in Portugal.

Contrary to the majority of studies developed on this topic we have not used a VAR model. The estimation of a VAR model would be very little robust. We opted for the estimation of individual equations following the methodology proposed by Henry and Krolzig (2001, 2005) and of simultaneous equations models using ADL and SUR models, respectively.

The empirical study confirm the presence in the Portuguese economy of a complementarity (crowding-in) effect between private investment and public

investment, and not a substitutability (crowding-out) effect. It was also possible to see that shocks (appreciation) in the real exchange rate did not have a significant impact on the private or public investment, but on the other hand, led to a negative effect, and slow to cancel, on the output, confirming thus the idea of the presence of a phenomenon of Dutch-disease in the Portuguese economy.

Financial costs and external funds played a role in explaining private investment in Portugal and therefore the output evolution. In turn, public investment depended on external funds, which could be explained by the relevant importance of the various cofinancing programs carried out in recent years in the Portuguese economy within the framework of structural and cohesion funds from EU.

The simultaneous equations models confirm the individual equations estimations. Our conclusion confirms the presence of a crowding-in effect of public investment on private investment and as a consequence its positive effect on output. Another result is the absence of negative effects of public investment on economic competitiveness.

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# EXCHANGE RATE MEAN REVERSION WITHIN A TARGET ZONE: EVIDENCE FROM A COUNTRY ON THE PERIPHERY OF THE ERM

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## **Abstract**

*The aim of this study is to assess to what extent the Portuguese participation in the European Monetary System has been characterized by mean reverting behaviour, as predicted by the exchange rate target zone model developed by Krugman (1991). For this purpose, a new class of mean reversion tests is introduced. The empirical analysis of mean reversion in the Portuguese exchange rate shows that most of the traditional unit root and stationarity tests point to the nonstationarity of the exchange rate within the band. However, using a set of variance-ratio tests, it was possible to detect the presence of a martingale difference sequence. This suggests that the Portuguese foreign exchange market has functioned efficiently, allowing us to conclude that the adoption of an exchange rate target zone regime has contributed decisively to the creation of the macroeconomic stability conditions necessary for the participation of Portugal in the euro area.*

**Key Words:** *Martingale difference sequence, mean reversion, stationarity, target zones and unit roots.*

**JEL Classification:** C32, C51, F31, F41, G15.

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## 1. INTRODUCTION

Exchange rate mean reversion within the band is one of the main predictions of the target zones literature, since it is expected that the exchange rate is stationary around the central parity.

Although exchange rate mean reversion is widely referred to in the literature (Krugman, 1991; Svensson, 1992, 1993; Rose and Svensson, 1994), and usually taken as a natural property of a target zone regime, only a small number of studies have been devoted to the analysis of its empirical validity. Most of this work has been based on standard Augmented Dickey-Fuller (ADF) unit root tests and focused on the most stable and credible bands, ignoring the currencies on the periphery of the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS). In our study we attempt to overcome this insufficiency.

For this purpose, we studied the stationarity of the Portuguese escudo against the Deutschmark, based not only on the traditional unit root and stationarity tests (ADF, KPSS, Perron and Lanne tests), but also on a set of variance-ratio tests (Hamilton, 1994; Maddala and Kim, 1999; Marques, 1998; Andrade, 2004).

The paper is structured as follows. Section 2 presents the theoretical approach based on the target zone model developed by Krugman (1991). Section 3 explores the existence of mean reverting behaviour in the exchange rate of the Portuguese escudo against the Deutschmark. Finally, Section 4 draws some conclusions.

## 2. EXCHANGE RATE MEAN REVERSION: A THEORETICAL APPROACH

According to the basic target zone model proposed by Krugman (1991), the behaviour of the exchange rate within the band depends on an aggregate fundamental and its expected rate of change:

$$s(t) = f(t) + \alpha E_t[ds(t)] / dt, \quad \forall t \text{ and } \alpha > 0, \quad (1)$$

where  $s(t)$  is the log of the nominal exchange rate at time  $t$ ,  $f(t)$  is the fundamental at time  $t$ ,  $\alpha$  is the absolute value of the semi-elasticity of the exchange rate with respect to its expected rate of change and  $E_t$  is the conditional expectations operator on the available information at time  $t$ , according to the rational expectations hypothesis.



The fundamental is the sum of two components,

$$f(t) = m(t) + v(t), \quad (2)$$

the domestic money supply,  $m(t)$ , and a term representing a composite money demand shock, usually referred as “velocity”,  $v(t)$ . It is thus assumed that “velocity” follows a Brownian motion with drift  $\mu$  and instantaneous standard deviation  $\sigma$ :

$$dv(t) = \mu dt + \sigma dz(t), \quad \mu \text{ and } \sigma \text{ positive parameters and } v(0) > 0, \quad (3)$$

where  $z(t)$  is a Wiener process with  $E_t[dz(t)] = 0$  and  $E_t[(dz(t))^2] = dt$ , that is,  $f(t)$  is the equivalent of a continuous random walk (Merton, 1992; Campbell, Lo and Mackinlay, 1997; Maddala and Kim, 1999; Demange and Rocher, 2005).

This assumption implies that the exchange rate under a free floating regime is also a Brownian motion. Therefore, changes in the fundamental will translate into equal changes in the exchange rate,  $ds(t) = df(t)$ .

In a target zone (TZ), it is assumed that the intervention rule is based on a floating band for the fundamental,  $f_L \leq f(t) \leq f^U$ , and that, if necessary, the fundamental will be regulated to remain within the band. This implies that the fundamental follows a regulated Brownian motion with constant drift and instantaneous standard deviation<sup>4</sup>:

$$df(t) = \mu dt + \sigma dz(t) + dL(t) - dU(t), \quad (4)$$

where  $L(t)$  and  $U(t)$  are the lower and upper regulators, defined as continuous and increasing functions of  $t$ , so that  $dL(t)$  represents increases in the money supply, positive only if  $f(t) = f_L$ , and  $dU(t)$  represents decreases in the money supply, positive if  $f(t) = f^U$ . Under these circumstances the exchange rate function establishes a non-linear relationship between the exchange rate and its fundamental, as illustrated in Figure 1.

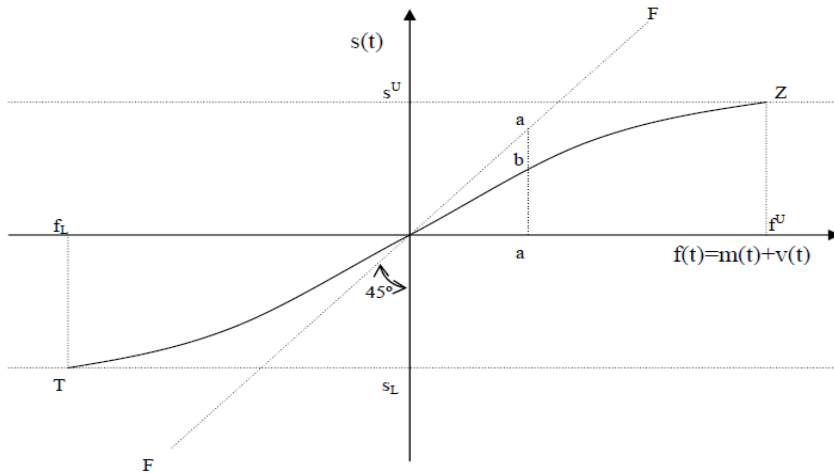
The straight-line FF represents the equilibrium exchange rate in the free floating case. A shock in  $v(t)$  leads to a proportional change in  $f(t)$  and  $s(t)$ . The exchange

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<sup>4</sup> Harrison (1985) and Karatzas and Shreve (1997) provide a formal presentation of these processes. Duarte, Andrade and Duarte (2013) presents a survey of the literature.

rate TZ function is tangent to the edges of its floating band, where  $s_L = s(f_L)$  and  $s^U = s(f^U)$ , represented by the curve TZ, non-linear, and S-shape, respectively.

**Figure 1. Exchange Rate in a Perfectly Credible Target Zone**



The behaviour of the exchange rate in a TZ with perfect credibility leads to two main results. First, the slope of the curve TZ is always less than one. This feature is called the “honeymoon effect” (Krugman, 1987). The exchange rate function thus appears less sensitive to changes in the fundamental than the corresponding free floating exchange rate. The “honeymoon effect” thus implies that a TZ is inherently stabilising. Second, the curve TZ becomes flatter, reaching a zero slope at the edges of the band. This result is known as a “smooth pasting” condition.

These results imply that the exchange rate within the band displays mean reversion. This mean reversion is an important general property of exchange rates in the context of a TZ because it is expected that the exchange rates are stationary around the central parity.

### 3. EXCHANGE RATE MEAN REVERSION: THE PORTUGUESE CASE

The framework of the Portuguese monetary and foreign exchange policy changed on April 6 1992 when the Portuguese escudo joined the ERM of the EMS (Duarte, Andrade and Duarte, 2010). This was made possible by the better convergence of the Portuguese inflation rate to the European Union’s average level and, in particular, to Germany (Duarte, 2009). The central parity was fixed at 86.9393 escudos against the Deutschmark and the Portuguese escudo was allowed to fluctuate within a band of  $\pm 6\%$ .

From that date onwards, there was a formal commitment to keep the Portuguese escudo within the band, the credibility of the disinflation policy increased and thus facilitated the pursuit of the price stability goal. This foreign exchange policy course was maintained until the end of 1998. Table 1 summarizes these events.

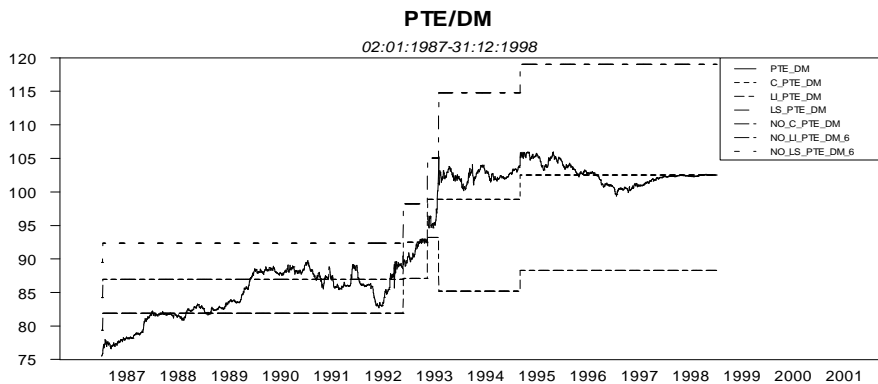
**Table 1. Bands for the Portuguese Target Zone**

Period / Date	Band	PTE/DM		
		Lower Edge	Central Parity	Upper Edge
6 April 1992	±6%	81.9	86.9393	92.336
23 November 1992	±6%	87.108	92.488	98.232
13 May 1993	±6%	93.197	98.9177	105.042
2 August 1993	±15%	85.179	98.9177	114.811
6 March 1995	±15%	88.277	102.505	119.033

Source: Banco de Portugal (1987 to 1998).

In Figure 2 we depict the behaviour of the Portuguese escudo exchange rate against the Deutschmark as part of the PTE/DM band. Besides the TZ period, we simulated, from January 2 1987 to April 5 1992, an unofficial band of ±6%, with an unofficial central parity (No\_C\_PTE\_DM) and unofficial intervention edges (No\_LL\_PTE\_DM\_6 and No\_LS\_PTE\_DM\_6) equal to those adopted when the PTE joined the ERM of the EMS<sup>5</sup>.

**Figure 2. The Behaviour of the PTE/DM Exchange Rate**



Source: Banco de Portugal (1987 to 1998).

<sup>5</sup> See Appendix I for a complete list of variables and Appendix II for a description of the data used.

As we can see, the PTE/DM exchange rate had been relatively stable since the beginning of the 1990s. This was the result of the pegging of the Portuguese escudo to the Deutschmark, which allowed the Portuguese currency to benefit from the credibility, stability and discipline associated with the tacit acceptance of the anti-inflationary stance of the Bundesbank's monetary policy.

Under these circumstances, we began to study the stationarity feature of the exchange rate using the most common unit root tests: the Augmented Dickey-Fuller, usually known as ADF tests (Augmented DF)<sup>6</sup>.

The variable to be studied is the difference between the nominal exchange rate and its central parity (position of the exchange rate within the band). The number of lags to be used to avoid the autocorrelation problem in the errors was chosen through an LM autocorrelation test. Table 2 shows the results of the ADF tests for the PTE/DM exchange rate deviation against the central parity (DC\_PTE/DM).

**Table 2. Augmented Dickey-Fuller Unit Root Tests**

Regime	Lags (LM Test)	Deterministic Variable	$t_{ADF}$ Test $t_{p=1}$	$Z_{ADF}$ Test $N \cdot (\hat{\rho} - 1)$
1	3	—	-2.27**	-10.22**
2	0	T	-2.87	-6.82
3	0	T	-2.69	-14.43
4	0	C	-2.84**	-4.70**
5	0	—	-2.25**	-5.28
6	2	—	-1.57	-4.91
7	2	T	-2.30	-10.77
8	1	—	-0.97	-2.35
9	2	T	-3.06	-13.19
10	1	T	-2.26	-9.76
11	0	—	-2.55**	-10.97**

**Note 1:** As usual, the notation (\*), (\*\*) and (\*\*\*) represents the rejection of the null hypothesis at a significance level of 10%, 5% and 1%, respectively. H<sub>0</sub>= Null Hypothesis of presence of unit root.

**Note 2:** C= With Constant; T= With Trend; — = Without Constant and without Trend.

<sup>6</sup> Statistics  $t_{p=1}$  and  $N \cdot (\hat{\rho} - 1)$ , where N is the number of observations. See Dickey and Fuller (1979), Phillips (1987) and Phillips and Perron (1988).

As we can see, for the whole period of participation of the Portuguese escudo in the ERM (regime 1), the  $t_{ADF}$  and  $Z_{ADF}$  tests both accept the stationarity of the exchange rate for a significance level of 5%. This strong evidence of mean reversion is certainly linked to the numerous intra-marginal interventions by the Portuguese monetary authorities.

Particularly interesting is the mean reverting behaviour during the period when the Portuguese escudo was pegged to the Deutschmark (regime 11). The pegging of the escudo to the reference currency of the EMS imposed an ambitious goal of disinflation on the Portuguese economy. This resulted in the adoption of a nominal stabilisation policy for the escudo that had positive reflections noted in increased credibility, strengthened by the reduction in inflationary expectations.

It is still possible to observe mean reverting behaviour in the exchange rate in the periods prior to Portugal joining the European Monetary Union (EMU), regimes 4 and 5, although in the latter case the results are not so clear.

It was not possible to empirically confirm the presence of mean reverting behaviour in the PTE/DM exchange rate for the remaining exchange rate regimes.

Besides finding periods of nonstationarity in the exchange rate, alternating with periods of stationarity, the ADF tests detected strong mean reversion in the exchange rate within the band throughout the TZ period, thus reflecting the high degree of confidence of economic agents as to the ability of the Portuguese monetary authorities to intervene, if necessary, to defend the band of the escudo.

The results of the KPSS stationarity test show a completely different picture. It was impossible to find mean reverting behaviour in the exchange rate within the band, in any of the exchange rate regimes tested.

The test proposed by Denis Kwiatkowski; Peter Phillips; Peter Schmidt and Yong Shin, known by KPSS, takes stationarity as the null hypothesis (Kwiatkowski, Phillips, Schmidt and Shin, 1992). The non-exclusion of the null hypothesis, conditional on the level of information available for the variable, therefore leads us to accept the stationarity characteristic of the series involved. In the KPSS test, we used the lags truncation parameter given by  $l = \text{Int}\left(4 \times \sqrt[4]{\frac{T}{100}}\right)$ , where T is the total number of observations (Lutkepohl, 2004). Table 3 summarises the results of the KPSS test.

**Table 3. KPSS Stationarity Test**

Regime	Parameter l	$\eta_{\mu}$ Test	$\eta_{\tau}$ Test
1	8	2.81	2.15
2	4	2.14	0.52
3	4	1.74	0.16*
4	5	2.32	0.67
5	7	5.46	2.42
6	5	0.51*	0.47
7	7	12.17	1.95
8	4	1.75	0.29
9	7	5.35	1.69
10	7	9.94	0.89
11	4	0.77	0.17*

**Note 1:** (\*\*\*) , (\*\*) and (\*) represents the non rejection of the null hypothesis at a significance level of 10%, 5% and 1%, respectively.  $H_0$ = Null Hypothesis of stationarity.

**Note 2:**  $\eta_{\mu}$ = KPSS statistic to a process around a constant;  $\eta_{\tau}$ = KPSS statistic to a process with constant and around a trend.

As we can see, in none of the eleven exchange rate regimes was it possible to accept the stationarity characteristic of the PTE/DM exchange rate.

Following these results we analysed the stationarity characteristic of the exchange rate in the presence of a structural break in the series. For this purpose, we carried out the unit root tests both with the structural break of Phillips-Perron and in accordance with the proposals made by Lanne, Lutkepohl and Saikkonen (2002).

The purpose of the Phillips-Perron test is to examine the existence of a unit root in variables with deterministic trends, assuming as null hypothesis the presence of a unit root (Perron, 1989; Perron, 1997). The test tried to answer the problem of having series that are stationary around a trend, but suffer a shock, leading us to conclude that they have a unit root - and incorrect conclusion (Andrade, 2004). The way to solve the problem is to determine endogenously the period when the shock occurred (date of break in the series). Three different types of structural change are usually identified, known as the IO1 model, IO2 model and AO model. In the first case, we test a change in the interception at the moment of the break. In the second case, we test a change in both the interception and the slope. Finally, the third structural break hypothesis considers a model to be estimated with a change in the slope without discontinuity in the trend curve.

Table 4 summarises the results of the Phillips-Perron unit root tests with a structural break for the PTE/DM exchange rate.

**Table 4. Phillips-Perron Unit Root Tests with Structural Break**

<b>Regime</b>	<b>Lags (LM test)</b>	<b>Model (IO1; IO2; AO)</b>	<b>Date of Break</b>	<b><math>t_{\alpha=1}</math> Test</b>
2	0	AO	21 May 1992	-3.38
3	0	AO	15 January 1993	-3.1
7	2	AO	21 April 1997	-3.28
9	2	AO	18 August 1997	-3.21
10	5	AO	19 November 1987	-2.28

**Note 1:** (\*), (\*\*) and (\*\*\*) represents the rejection of the null hypothesis at a significance level of 10%, 5% and 1%, respectively.  $H_0$  = Null Hypothesis of presence of a unit root.

**Note 2:** In terms of exchange rate regimes analysed, we considered only the cases where the ADF test confirmed that there was a trend.

From Table 4, is possible to conclude that neither the IO1 nor the IO2 models allowed the detection of the presence of any structural break in the exchange rate series. It was only possible to detect the existence of structural breaks by using an AO type model.

For the five regimes in which the existence of a deterministic trend in the exchange rate deviation against the central parity was confirmed, the value of  $t$  associated with alpha equal to unit ( $t_{\alpha=1}$ ) did not allow the rejection of the null hypothesis of presence of a unit root in any of the cases analysed, thus suggesting the nonstationarity of the variable around a trend with structural break.

The unit root tests of Lanne, Lutkepohl and Saikkonen (LLS) also allows to analyse the stationarity characteristic of the series in the presence of structural breaks, considering for the purpose four possible models of structural changes in the variables (Impulse Dummy, Shift, Exponential Shift and Rational Shift)<sup>7</sup>. The null hypothesis is the presence of a unit root. The dynamic equation is obtained using the Schwarz criterion for the choice of the number of lags in accordance with the exclusion of first order autocorrelation in the errors. Table 5 summarises the results of the LLS test.

<sup>7</sup> See Lanne, Lutkepohl and Saikkonen (2002), Saikkonen and Lutkepohl (2002), Lanne, Lutkepohl and Saikkonen (2003). The specification used does not include a trend.

**Table 5. LLS Unit Root Tests with Structural Break**

Regime	Model	Data of Break	Lags	LLS Test
1	<i>Impulse Dummy</i>	13 May 1993	2	-2.37
	<i>Shift</i>	23 November 1992	2	-1.82
	<i>Exponential Shift</i>	23 November 1992	2	-1.86
	<i>Rational Shift</i>	23 November 1992	2	-1.91
2	<i>Impulse Dummy</i>	6 October 1992	2	-2.34
	<i>Shift</i>	19 August 1992	2	-2.48
	<i>Exponential Shift</i>	19 August 1992	2	-2.52
	<i>Rational Shift</i>	19 August 1992	2	-2.52
3	<i>Impulse Dummy</i>	31 December 1992	2	-2.34
	<i>Shift</i>	28 January 1993	2	-2.43
	<i>Exponential Shift</i>	28 January 1993	2	---
	<i>Rational Shift</i>	28 January 1993	2	-2.38
4	<i>Impulse Dummy</i>	2 August 1993	2	-2.30
	<i>Shift</i>	3 August 1993	2	-1.91
	<i>Exponential Shift</i>	3 August 1993	2	-1.85
	<i>Rational Shift</i>	3 August 1993	2	-1.85
5	<i>Impulse Dummy</i>	2 June 1995	2	-2.38
	<i>Shift</i>	22 September 1995	2	-2.38
	<i>Exponential Shift</i>	22 September 1995	2	---
	<i>Rational Shift</i>	22 September 1995	2	-2.35
6	<i>Impulse Dummy</i>	13 May 1993	2	-2.32
	<i>Shift</i>	23 November 1992	2	-1.85
	<i>Exponential Shift</i>	23 November 1992	2	-1.86
	<i>Rational Shift</i>	23 November 1992	2	-1.91
7	<i>Impulse Dummy</i>	6 March 1995	2	-2.33
	<i>Shift</i>	6 March 1995	2	-2.31
	<i>Exponential Shift</i>	6 March 1995	2	---
	<i>Rational Shift</i>	6 March 1995	2	-2.23
8	<i>Impulse Dummy</i>	20 November 1992	2	-2.38
	<i>Shift</i>	23 November 1992	2	-1.82
	<i>Exponential Shift</i>	23 November 1992	2	---
	<i>Rational Shift</i>	23 November 1992	2	-1.76
9	<i>Impulse Dummy</i>	13 May 1993	2	-2.38
	<i>Shift</i>	13 May 1993	2	-1.80
	<i>Exponential Shift</i>	13 May 1993	2	---
	<i>Rational Shift</i>	13 May 1993	2	-1.99
10	<i>Impulse Dummy</i>	12 January 1987	2	-2.37
	<i>Shift</i>	28 January 1987	2	-2.25
	<i>Exponential Shift</i>	28 January 1987	2	-2.25
	<i>Rational Shift</i>	28 January 1987	2	-2.36
11	<i>Impulse Dummy</i>	28 February 1991	2	-2.38
	<i>Shift</i>	28 February 1991	2	-2.21
	<i>Exponential Shift</i>	28 February 1991	2	---
	<i>Rational Shift</i>	28 February 1991	2	-2.15

**Note 1:** (\*), (\*\*) and (\*\*\*) represents the rejection of the null hypothesis at a significance level of 10%, 5% and 1%, respectively. H0= Null Hypothesis of presence of a unit root.



As we can see, for the eleven foreign exchange regimes analysed it was not possible to accept the presence of mean reverting behaviour in the exchange rate in the presence of a structural break.

To conclude our study, we also implemented a set of stationarity variance-ratio tests (see Table 6 and 7) based on the analysis by Cochrane (1988) and Campbell and Mankiw (1987) and also in accordance with the corrections proposed by Wright (2000) in respect to the conventional variance-ratio tests used by Lo and Mackinlay (1988) and Poterba and Summers (1988).

**Table 6. Stationarity Test of Cochrane and Campbell**

Regime	K	J(K)	A <sub>1</sub>
1	5	0.66	0.82
	10	0.67	0.83
	30	0.73	0.87
2	5	1.17	1.08
	10	1.47	1.21
	30	2.10	1.45
3	5	0.75	0.87
	10	0.59	0.77
	30	0.48	0.69
4	5	0.78	0.88
	10	0.85	0.92
	30	1.10	1.05
5	5	1.02	1.01
	10	1.00	1.00
	30	1.02	1.01
6	5	0.62	0.81
	10	0.61	0.80
	30	0.67	0.84
7	5	0.74	0.87
	10	0.70	0.84
	30	0.64	0.81
8	5	0.77	0.89
	10	0.76	0.88
	30	0.81	0.91
9	5	0.62	0.80
	10	0.63	0.80
	30	0.72	0.86
10	5	0.74	0.86
	10	0.66	0.82

Regime	K	J(K)	A <sub>1</sub>
	30	0.75	0.87
11	5	1.16	1.08
	10	1.16	1.08
	30	0.91	0.96

**Note:** K= Number of observations after the data in analysis; J(K)= statistic of Cochrane and Campbell obtained from the variance-ratio; A<sub>1</sub>= Value of permanence of a unit shock.

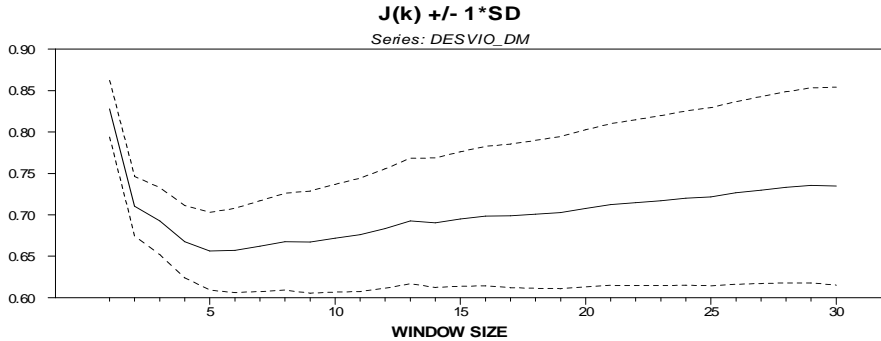
The stationarity test of Cochrane and Campbell is used under the hypothesis of an AR1 process. With this test, if a variable is stationary, or stationary around a trend, then the J(K) statistic of Cochrane and Campbell obtained from the variance-ratio will tend to zero (Cochrane, 1988; Campbell and Mankiw, 1987). The purpose of the test is further, to see if there is mean reverting behaviour by studying the persistence over time of a unit shock on the variable. In our case, we tried to analyse the effects of an innovation of 1% on the exchange rate over 5, 10 and 30 days periods.

As can be seen in Table 6, in none of the exchange rate regimes does the value of the J(K) statistic of Cochrane and Campbell obtained from the variance-ratio tend to zero, so the exchange rate does not show mean reverting behaviour. In none of the eleven cases examined was the unit shock produced in the exchange rate eliminated with the passage of time. The innovation has permanent effects, as shown by the very high values record by A<sub>1</sub>. In some cases, it is observed that even when only 5 days have gone by after the existence of the innovation on the variable, its effects are explosive. This situation occurs, for example, in regime 2, where, in the wake of a shock of 1% on the exchange rate, its effects are amplified to 1.08%; 1.21% and 1.45% after 5, 10 and 30 days, respectively.

These results can be regarded as empirical non-confirmation of the mean reversion properties of the exchange rate within the band.

Figure 3 represents the behaviour of the J(K) statistic of Cochrane and Campbell in the context of the variance-ratio, for example, for the target zone period.

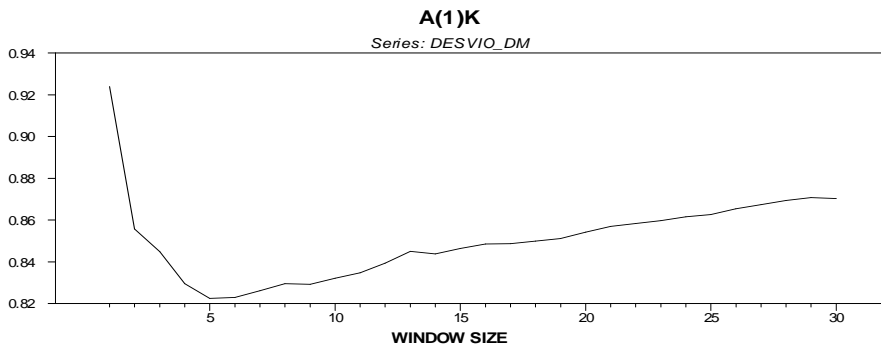
**Figure 3. Behaviour of the J(K) Statistic of Cochrane and Campbell in the Context of the Variance-Ratio (Regime 1)**



As can be observed, the value of the J(K) statistic does not tend to zero as time goes by, so the PTE/DM exchange rate does not show mean reverting behaviour within its floating band. But, despite the fact that the J(K) statistic does not tend to zero, the analysis of the lower standard deviation of the exchange rate shows that there was some stability in the series within a given period of time (after 5 days), in spite of the non-existence of mean reversion.

The effects of a unit shock on the exchange rate over time, again for the target zone period (regime 1), are illustrated in Figure 4.

**Figure 4. Temporal Permanence of a Unit Shock in the Context of the Cochrane and Campbell Test (Regime 1)**



As can be seen, after 5 days of the existence of a unit shock in the PTE/DM exchange rate, its effects still persist, with a value of 0.82. After 30 days its impact increases to 87% of the initial value, clearly bearing out the permanence of the

effects of the shock on the exchange rate, so the variable does not exhibit mean reverting behaviour.

The variance-ratio stationarity tests proposed by Wright (2000) admit as null hypothesis the existence of a martingale difference sequence.

The aim of our study is to see if, despite the non-existence of exchange rate mean reversion within the band, the foreign exchange market may nonetheless operate efficiently over time, thus achieving a stabilising process in the exchange rate in spite of the absence of mean reverting behaviour.

According to those tests, for this to be possible there should be a martingale difference sequence in the exchange rate series:

$$E[s(t) | I(t-1)] - E[s(t-1) | I(t-2)] = 0, \quad (5)$$

i.e., the expected value of the exchange rate in period  $t$ , given the information on period  $t-1$ , minus the expected value of the exchange rate at  $t-1$ , given the information for period  $t-2$ , should be equal to zero. This means that there is no information gain in the foreign exchange market to be exploited by the agents. Thus, over time (5, 10 and 30 days), any economic agent is able to predict positive (depreciations) or negative (appreciations) differences in the exchange rate. The variable thus exhibits the behaviour of an efficient foreign exchange market. When we cannot accept the hypothesis that there is a martingale difference sequence in the exchange rate, it can be said that economic agents anticipate positive (negative) differences in the dynamics of the exchange rate, so the foreign exchange market does not operate efficiently.

We used five types of tests. The first two ( $M_1$  and  $M_2$  tests) are conventional variance-ratio tests in line with the work of Lo and Mackinlay (1988). The  $M_1$  test is a variance-ratio test without correction for conditional heteroscedasticity, while the  $M_2$  test is based on the variance-ratio but with correction for conditional heteroscedasticity. The remaining tests ( $R_1$ ,  $R_2$  and  $S_1$ ) are based on the corrections introduced by Wright. The  $R_1$  and  $R_2$  tests take into account the order of the time series to test the null hypothesis of existence of a martingale difference sequence in the series. These are non-parametric tests. The  $R_1$  test is based on a linear transformation of the order to obtain a new series with zero mean and variance equal to 1. The  $R_2$  test is based on the inverse of the Normal distribution and has zero mean and variance of approximately equal to 1. Finally, the  $S_1$  variance-ratio test is based on the signal of the series, assuming that the series has the normal characteristics of I.I.D., with zero mean and variance equal to 1, which according

to Wright (2000) should make the test more exact, even in the presence of conditional heteroscedasticity.

Table 7 summarizes the essential results of the application of variance-ratio tests in accordance with the proposals of Jonathan Wright.

**Table 7. Variance-Ratio Stationarity Tests in Accordance with the Corrections Proposed by Wright**

Regime	K	M <sub>1</sub> Test	M <sub>2</sub> Test	R <sub>1</sub> Test	R <sub>2</sub> Test	S <sub>1</sub> Test
1	5	-2.70***	-0.89	1.03	0.09	1.23
	10	-1.74*	-0.65	1.87*	0.92	1.77*
	30	-0.10	-0.05	3.18***	2.15**	3.23***
2	5	0.30	0.04	0.58	0.56	0.57
	10	0.79	0.13	1.67*	1.50	1.47
	30	0.49	0.10	1.42	1.08	2.37**
3	5	-1.32	-0.10	-0.67	-0.97	-0.67
	10	-1.40	-0.12	-0.92	-1.17	-0.86
	30	-1.18	-0.13	-0.97	-1.10	-0.80
4	5	-1.91*	-0.63	-0.34	-0.79	1.10
	10	-1.21	-0.46	-0.16	-0.32	1.33
	30	-0.17	-0.08	1.09	0.88	2.20**
5	5	-0.07	-0.004	0.95	0.48	0.74
	10	-0.18	-0.01	1.60	0.85	0.93
	30	-0.17	-0.01	2.33**	1.22	1.95*
6	5	-1.54	-0.55	-0.34	-0.70	0.06
	10	-1.47	-0.60	0.07	-0.39	0.39
	30	-1.47	-0.73	-0.16	-0.56	0.84
7	5	-2.83***	-0.36	1.11	-0.03	1.25
	10	-2.53**	-0.37	1.70*	0.43	1.64
	30	-1.47	-0.26	2.94***	1.67*	2.81***
8	5	-1.32	-0.28	0.05	-0.34	0.33
	10	-0.63	-0.15	1.20	0.71	1.19
	30	-0.37	-0.11	1.08	0.62	2.10**
9	5	-2.30**	-0.64	1.09	0.14	1.17
	10	-1.75*	-0.56	1.41	0.34	1.41
	30	-0.13	-0.05	2.81***	1.79*	2.70***
10	5	-0.48	-0.05	-0.78	-0.80	-1.16
	10	-0.53	-0.06	-0.68	-0.79	-0.66
	30	0.16	0.02	0.28	0.15	-0.02
11	5	0.22	0.05	0.69	0.65	1.29
	10	0.17	0.04	1.55	1.28	1.91*
	30	-0.80	-0.24	0.44	0.11	1.03

**Note 1:** As usual, the notation (\*), (\*\*) and (\*\*\*) represents the rejection of the null hypothesis at a significance level of 10%, 5% and 1%, respectively. H<sub>0</sub>= Null Hypothesis of existence of a martingale difference sequence.

**Note 2:** K is the number of observations after the date of analysis.

As we can see, in most of the exchange rate regimes the five variance-ratio tests show the existence of a martingale difference sequence in the PTE/DM exchange rate series. The results are not so clear for the whole TZ period (regime 1), with some tests leading to the exclusion of the null hypothesis of existence of a martingale difference sequence, and others allowing its acceptance, but it is nonetheless possible to find periods of clear operational efficiency in the foreign exchange market. One such period is the period between the first and the second realignment of the Portuguese escudo against the Deutschmark (regime 3).

Particularly interesting are the results for the period prior to the participation of Portugal in the EMU (regime 5), a fact that can be explained by the expected adoption of the single currency. According to the conventional variance-ratio tests, the exchange rate always exhibits the behaviour associated with an efficient foreign exchange market. The  $R_1$  and  $S_1$  tests point in the same direction, although they exclude the hypothesis of existence of a martingale difference sequence after 30 days. On the other hand, the  $R_2$  test detects that throughout the whole period considered (5, 10 and 30 days) no economic agent had the capacity to foresee positive (negative) differences in the exchange rate. This clearly supports the hypothesis that a stabilising process in the exchange rate within the band was achieved. This situation could not have occurred without the liberalisation of capital movements and the modernisation of the financial system, both of which were fundamental to the creation of the macroeconomic stability conditions necessary to the transition from an exchange rate target zone regime to a single currency system.

#### **4. CONCLUSION**

Portugal joined the ERM on 6 April 1992, adopting a floating band for the Portuguese escudo of  $\pm 6\%$ . Joining the ERM changed the framework for both monetary and exchange rate policy. Even though the pegging of the Portuguese escudo to the Deutschmark was already a reality largely incorporated by the markets, the fact that there was a formal commitment to maintain the Portuguese currency within a band increased the credibility of the disinflation policy, thus facilitating the achievement of the main objective of price stability. Without such a decision it would have been very difficult to fulfil the necessary conditions for Portugal's inclusion in the euro area.

This study tried to analyse one of the main predictions of the literature on TZ, according to which the existence of a credible floating band should lead to an exchange rate mean reverting behaviour within the band.

The study of the stationarity of the exchange rate showed that although the majority of the traditional unit root and stationarity tests point to the non-existence of mean reverting behaviour of the exchange rate for most of the regimes considered, it was nonetheless possible to detect the presence of a martingale difference sequence using a set of variance-ratio tests. This situation indicates that the Portuguese foreign exchange market has operated efficiently, allowing the exchange rate to stabilise within the band. The adoption of an exchange rate TZ regime thus contributed decisively to the creation of the macroeconomic stability conditions necessary for the participation of Portugal in the euro area.

The integration process of the Portuguese economy should therefore be used as an example by other small open economies on the periphery of the European Union, since they may benefit from participating in one of the dominant monetary areas. Otherwise they will be more exposed to speculative attacks, leading, especially, to the real appreciation of their currencies.

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## **APPENDIX I – VARIABLES USED IN THE EMPIRICAL ANALYSIS**

PTE/DM = PTE\_DM: Nominal exchange rate of the Portuguese escudo (PTE) against the Deutschmark (DM)

C\_PTE\_DM: Official central parity of the PTE against the DM

LI\_PTE\_DM: Official lower edge for the PTE/DM

LS\_PTE\_DM: Official upper edge for the PTE/DM

No\_C\_PTE\_DM: Unofficial central parity of the PTE against the DM

No\_LI\_PTE\_DM\_6: Unofficial lower edge for the PTE/DM and an unofficial exchange rate band of  $\pm 6\%$

No\_LS\_PTE\_DM\_6: Unofficial upper edge for the PTE/DM and an unofficial exchange rate band of  $\pm 6\%$

DC\_PTE/DM: PTE/DM exchange rate deviation against the central parity between the two currencies (in logs)

## APPENDIX II – THE DATA

We used daily time series data in an attempt to cover the period from January 2, 1987 to December 31, 1998. In addition to the period when a TZ was officially functioning, between April 6 1992 and December 31 1998, we extended the analysis to the period when Portugal adopted a crawling peg and a managed floating system, with the Portuguese escudo pegged to the Deutschmark.

The exchange rate data was taken from the Banco de Portugal (Long Series: Monetary and Financial Statistics). We used nominal exchange rates of the Portuguese escudo against the Deutschmark (PTE/DM). All the series have been transformed into natural logarithms. The missing values were computed using an extrapolation method based on an AR1 process with trend. The empirical analysis was applied to eleven exchange rate regimes:

**Table 8. Exchange Rate Regimes Description**

Regime	Dates (Sub-periods)	Description
1	06:04:1992-31:12:1998	Whole Period in the ERM of the EMS
2	06:04:1992-22:11:1992	Membership of the ERM - 1 <sup>st</sup>
3	23:11:1992-12:05:1993	1 <sup>st</sup> Realignment - 2 <sup>nd</sup> Realignment
4	13:05:1993-05:03:1995	2 <sup>nd</sup> Realignment - 3 <sup>rd</sup> Realignment
5	06:03:1995-31:12:1998	3 <sup>rd</sup> Realignment- EMU membership
6	06:04:1992-01:08:1993	Narrow band Period
7	02:08:1993-31:12:1998	Wide band Period
8	06:04:1992-15:12:1992	Restrictions on Capital Mobility
9	16:12:1992-31:12:1998	Free Capital Mobility
10	02:01:1987-30:09:1990	<i>Portuguese Escudo Crawling Peg</i>
11	01:10:1990-05:04:1992	<i>Pegging of the PTE to the DM</i>

Most results were obtained using RATS 6.2, PcGive 10, and Jmulti 4.1<sup>8</sup>.

<sup>8</sup> See [www.estima.com](http://www.estima.com), for RATS 6.2, Hendry and Doornik (2001), for PcGive 10, and Lutkepohl and Kratzig (2004), for Jmulti 4.1 ([www.jmulti.de](http://www.jmulti.de)).

# FOREIGN EXCHANGE RATE AS A FACTOR TO IMPROVE THE BUSINESS ENVIRONMENT – THE CASE OF SERBIA<sup>1</sup>

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## **Abstract**

*Foreign exchange rate represents an important determinant of the economic policy of each country. The exchange rate affects inflation and balance of payments, economic profitability and social status of the population. Foreign exchange rate is an instrument by which a country can affect the export competitiveness, while by stability of the national currency it may create a favorable macroeconomic environment and thus encourage the inflow of foreign capital. For countries facing inflation, a fixed exchange rate is potentially a more appropriate solution. On the other hand, for countries facing impaired trade balance and slow economic growth, perhaps the best suited decision is the implementation of a more flexible foreign currency-exchange arrangement, while intermediate regimes may provide significant benefits – since they encompass positive aspects of both extremes at the same time avoiding many of the costs. However, the survey results show that the proportion of countries adopting intermediate regimes was reduced either in favor of greater flexibility, or in favor of greater rigidity. Hence, this paper analyzes the basic characteristics of the current exchange rate regimes, and the implications of a managed floating exchange rate application on the success of the Serbian economy.*

**Key words:** *(foreign) exchange rate, exchange rate regimes, de jure classification, RSD, managed floating exchange rate*

## **INTRODUCTION**

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<sup>1</sup> This paper is a part of research projects numbers 47009 (*European integrations and social and economic changes in Serbian economy on the way to the EU*) and 179015 (*Challenges and prospects of structural changes in Serbia: Strategic directions for economic development and harmonization with EU requirements*), financed by the Ministry of Science and Technological Development of The Republic of Serbia.

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The problem of classification of countries according to the implementation of specific exchange rate regimes is not so simple, due to contradictoriness, or practically – substantive differences, between what the particular country claims to apply, and what is really applied in practice. The fear of floating is typical for a large number of countries that observe *de jure* floating exchange arrangements, thereto frequently intervene in the foreign exchange market. On the other side, the fear of fixing is characteristic for countries that practice *de jure* fixed foreign-exchange rate regimes with frequent equalization or adjustment of parity (peg). Between the two poles, inuendo, the two extremes, there are a number of different foreign-exchange arrangements which implies the existence of a situation in the theory known as the continuum of flexibility (Becker, 2006).

### **CLASSIFICATION OF EXCHANGE RATE REGIMES**

Numerous authors use different indicators to correct the *de jure* exchange rate regimes while trying to present those *de facto* applied. The level of foreign exchange reserves and exchange rate variability are indicators that are commonly used for this purpose.

Regarding the problem of choice of the exchange rate regime, the literature finds different classifications. Authors: Hausmann, Panizza, and Stein (Hausmann, Panizza, Stein, 2000) observe that countries that *de jure* apply fluctuating arrangements, in fact demonstrate great differences in the management of the exchange rate fluctuations. These countries hold different level of foreign exchange reserves, thus allowing for different degrees of exchange rate flexibility in relation to the variability of foreign exchange reserves and interest rates. Greater variability of foreign exchange reserves and interest rates reflects the intervention of the monetary authorities in the foreign exchange market, or reconciliation within the economy in order to achieve the defined path of the exchange rate, which is the characteristic of more rigid currency arrangements.

In the following we turn to the most common classification of exchange rate regimes, and then tackle to the analysis of specific regimes. By Frankel (Frankel, 1999) the exchange rate regimes, ranging from the more rigid towards those arrangements with a greater degree of flexibility, are classified as follows:

- Fixed currency-exchange rate arrangements - monetary union, dollarization, a currency board;
- The intermediate foreign-exchange rate arrangements - conventional fixed mode, adjustable pegs, crawling pegs and target zones;
- Flexible foreign-exchange rate arrangements - managed- and free fluctuations.

Haggart (Haggart, 1999) uses similar classification of exchange rate regimes:

- Fixed regimes - monetary union, dollarization, a currency board;
- Intermediate regimes - adjustable pegs, crawling pegs, basket peg and target zone;
- Flexible regimes - managed- and free fluctuations.

Following classification of foreign exchange rates is presented by the authors Levy-Yeyati and Sturzenegger (Levy-Yeyati, Sturzenegger, 2003). The authors classify exchange rate regimes into groups based on the following three variables:

- The instability of exchange rates. This variable is measured by the average percentage change in the exchange rate on a monthly basis during the year.
- The instability of exchange rate changes. The specified variable is the standard deviation of monthly percentage changes in exchange rates, i.e. the average deviation of the nominal exchange rate from its mean value during one year.
- The instability of reserves. As measured by the average absolute monthly change in national saving, relative to the monetary base in the previous month.

Based on aforesaid variables authors Levy-Yeyati and Sturzenegger, classified the foreign-exchange arrangements as fixed, flexible, and mixed. In mixed regimes, which present the combination of the two, the authors include crawling peg and dirty float models.

The traditional classification of exchange rate regimes is associated with the report of the IMF (Annual Report on Exchange Rate Arrangements and Exchange Restrictions), which until recently was based on declarative plea member states with regards to the implementation of one of four foreign-exchange rate arrangements (Beker, 2006). Starting from 1999, the following, much more complex classification, designed according to a growing degree of flexibility, is being used:

- Foreign exchange arrangements associated with the exclusion of national monetary sovereignty;
- The currency board;
- Other conventional arrangements of fixed/pegged parity;
- Exchange rate parity set in the framework of horizontal band;
- Floating (fluctuating) parity;
- Floating (fluctuating) band;
- Managed floating exchange rate;
- Independent fluctuations.

## **FEATURES AND CATEGORIES OF FIXED EXCHANGE RATE REGIME**

Strong presence of the monetary authorities in the foreign exchange market, which in an authoritarian manner control the inflow and outflow of foreign currency, is a common characteristic of all rigid models of the exchange rate system. Within the fixed regimes, the monetary authorities are left to the discretion to impose and publish the exchange rates by their own decisions.

In the literature, a fixed exchange rate is attributed to formation of a more stable macroeconomic environment, the realization of faster economic growth and the reduction of inflation (Frankel, 1999). In addition, the stability of the nominal exchange rate creates the illusion of a stable economic situation, which, consequently, has a positive impact on the inflow of foreign capital. As other advantages of these arrangements, the literature highlights the decrease of transaction costs and, logically, the reduction of exchange rate risk. Thus, it is clear that fixed exchange rates prevent competitive appreciation and depreciation, which countries could implement in order to influence their exporting competitiveness. Inability of fine adjustment to external shocks, which occurs as a result of inability to use monetary policy instruments for such purpose, is said to be a fundamental lack of rigid exchange rate regime.

### **Currency Board**

The main characteristic of the currency board, as one of the fixed foreign-exchange arrangement is complete coverage of the monetary base with foreign currency. Furthermore, the obligation of the conversion of domestic into foreign currency for a fixed amount is declared by law, due to which, in the literature, this arrangement is often compared with the Gold standard (Tsang, 2000). The monetary discipline (and the consequent reduction of inflationary trends) is said to be the basic criterion for a country's commitment to the implementation of the currency board, given that the confidentiality of the monetary authorities is limited by the regulation on the inability of expansion of monetary base over the level of foreign exchange reserves. Naturally, the monetary discipline is followed by the fiscal discipline. This means that countries that apply this kind of exchange rate regime do not allow deficit financing of budget spending. Accordingly, the currency board presents the regime, which is a signal of high credibility to market players, making it less vulnerable to speculative attacks.

The disadvantages of this arrangement, at the same time immanent to all rigid regimes, are the inability to fine-tune monetary policy according to the needs of the business cycle, and the renunciation of monetary sovereignty. Applying the

currency board, the state practically imports the monetary policy of the state of the reserve currency, which is not necessarily compatible with the phase of the economic cycle in which the particular economy is. According to the author Tsang, there is a different firmness in obligation to maintain the currency board. By the analysis of a large number of countries that apply this model of foreign-exchange rate arrangements, it was noted that institutional commitment to conversion is the strongest in Bosnia and Herzegovina, and the weakest in Hong Kong (Beker, 2006).

### **Dollarization**

In the rigid fixed foreign-exchange arrangements we also include dollarization regime. Within this regime, a specific country is completely substituting its own currency with foreign reserve currency. In other words, it implies the use of foreign currency as legal tender in all transactions carried out in the country. Typical for developing countries, as well as those who are going through the transition process, is the application of non-formal and informal forms of dollarization.

Unlike the currency board whose application does not eliminate the problem of currency differences, by the commitment to a dollarization regime a particular country annihilates the problem of currency composition in the structure of assets and liabilities. In addition, by the application of dollarization, the economic policy of the country of the reserve currency is being imported. This shall create a stable, non-inflationary macroeconomic environment, but also prevent vulnerability to speculative attacks. In addition, the application of the above regime leads to the reduction in the risk premium which reduces the price of borrowing of the country in the international market. However, the desired goal of macroeconomic stability cannot be achieved without a sacrifice, which underlies all forms of fixed parity. It is the already mentioned loss in running of sovereign monetary, fiscal and exchange rate policies. In addition to the above, dollarization has another disadvantage, which is only her inherent - loss of seigniorage that occurs as a result of the elimination of the national currency and the loss of the central bank as a lender of last resort. Therefore, the implementation of dollarization makes sense only for very small and open economies that do not really have a real autonomy in terms of keeping the exchange rate policy, and where the significant problem of high rates of inflation is expressed.



## Monetary Union

The next in a series of rigid exchange rate regimes is a monetary union. Monetary Union is a currency zone within which member countries share the same currency and administer a common monetary, and exchange rate policies. These are the fixed exchange rates between member countries of particular currency zone. For the country is good to therefore choose this arrangement if it cherishes strong economic ties with future partners in the currency zone, if those countries are characterized by similar economic structure, and in the event that the fiscal federalism is presented within the countries. Taking these circumstances into account, the implementation of a given regime minimizes the losses of joining the monetary union, while maximizing the benefits.

If we consider the benefits that countries achieve by joining the currency union, we should first highlight monetary efficiency and the use of the exchange rate, which in this mode is used as an anchor when running monetary policy. The monetary efficiency refers to the benefits deriving from improvements in international trade and inflows of foreign capital, and occurs as a consequence of the stability of exchange rates and therefore the reduction of foreign exchange risk.

The biggest disadvantage of acceptance of monetary union as a regime, is the loss of economic sovereignty. This means that, for a particular country, it is not possible to independently implement measures of monetary and foreign exchange policies in order to stabilize the decline in employment and output. However, the high level of trade integration, a strong correlation of economic structure, the existence of fiscal federalism and the mobility of capital and labor, reduces the need to conduct an independent monetary policy, and consequently diminishes the necessary sacrifice for joining the monetary union (Beker, 2006).

From what has been mentioned, clearly follows the conclusion that the choice of a fixed exchange rate (either as a currency board, dollarization, or monetary union) is an adequate solution in the situation when there is significant trade between particular state and its reserve currency state, if the the member states are going through similar economic cycles within the same time intervals, if the countries are prepared to take the sacrifice manifested through the loss of monetary sovereignty, if they are faced with high rates of inflation, but also if the particular country has significant foreign currency reserves (in order to be capable to hold a fixed exchange rate in any moment).

## **FEATURES AND CATEGORIES OF INTERMEDIATE EXCHANGE RATE REGIMES**

The emergence of intermediate exchange rate regime occurs as a result of combining the advantages of rigid and flexible foreign-exchange arrangements. The advantage of rigid regimes, enshrined in the pegged regimes is the existence of pre-defined parity and the use of the same as the anchor of monetary policy. Due to the fact that they present a combination of fixed and flexible regimes, the pegged regimes are referred to as the hybrid regimes.

Fixing of national currency can be conducted by its pegging against the value of another single, particular currency, a basket (combination) of other currencies or to another measure of value, such as gold. Generally speaking, in soft fixation, the monetary authorities adopt a certain level of the exchange rate as a target, and then use monetary policy measures to ensure that the course is not too much away from the defined value. Intermediate exchange rate regimes differ from each other according to defined criteria for monetary authorities' intervention. The intermediate form of exchange rate regimes, according to a growing degree of flexibility, includes adjustable pegs, crawling pegs (crawling peg or moderate fixed exchange rate), as well as corridor regimes (target zones, floating and monitoring bands).

### **Adjustable Peg**

Typical for adjustable peg is that the monetary authorities define a fixed ratio between domestic and selected foreign currency, at the same time pledging to defend the pre-defined target by monetary policy measures. Under this regime, the deviation from the central parity is allowed in very narrow limits (not more than  $\pm 2.25\%$ ). Regime is called adjustable because the country has the opportunity to change (adjust) the defined fixed parity in accordance with the new macroeconomic conditions.

Besides the ability to bind to a particular currency, the country can bind its currency value against the value of a basket of currencies, which represents the average (weighted) value of particular currencies. By binding to a basket of currencies, fluctuations in individual currencies within the basket are being "averaged", thus avoiding the effect of destabilizing movements of a specific reserve currency to domestic currency. Interventions in this type of regime are rare, and they are conducted in large amounts, in order to maintain the desired value of the exchange rate. In addition, the regime is often supported with control of capital movements. The reason is that in present conditions, concerning the global capital

market, the adjustable peg is often a target for speculative attacks. In other words, due to the freedom of capital movements, maintaining a fixed parity may often be more expensive option than giving up and devaluing of the national currency. In addition, in the phase of the economic downturn and the rise in the unemployment rate, the state can hardly defend defined parity. In circumstances where there is no institutional obligation of maintaining the parity, the decision is likely that it will be abandoned, which will be followed by a devaluation of the national currency. The ideal solution would certainly be to abandon this regime before the onset of a crisis.

More intensive integration of capital market with the smooth movement of this resource makes countries more vulnerable to speculative attacks. For this reason, some authors believe that the regime of adjustable peg does not offer an adequate response in modern conditions due to the fact that it is neither irrevocably fixed (to turn away or completely eliminate speculative attacks), nor flexible enough (to provide monetary policy principals with freedom in responding to external shocks).

### **Crawling Peg Regime**

Mobile parity, or crawling peg regime, derives from conventional-fixed regime. In addition, it is at the higher level of flexibility than the previously discussed modes. Within this regime, changes in exchange rates do not depend on the decisions of the monetary authorities, but on the criteria that are set in advance as a basis for moving of nominal exchange rate. Thus, the main characteristic of crawling peg regime is reflected in the relatively frequent parity movement, namely in the implication of mini-devaluation/revaluation series in accordance with the selected indicator and defined time intervals. Selected indicator is determined mainly by inflation differential (differential of current inflation in relation to the anchor currency), viz. in accordance with the change in purchasing power parity between the two countries.

The institutional capacity for correction of nominal exchange rates in frequent intervals occurs with the objective of maintaining price competitiveness, as well as equalization of differences in inflation levels, as well as in situations where it is estimated that there are no conditions for the transition to a flexible exchange rate regime. The best results regarding to application of this model are achieved in economies that are export-oriented and which significantly depend on the inflow of foreign direct investment. Based on the business indicators in countries that apply this regime, foreign investors can project the real value of their investment, due to the fact that the use of a given arrangement creates a predictable and stable currency environment. The existence of a stable currency environment positively affects the inflow of foreign capital and a reduction in inflationary pressures, which

further implies an increase in the attractiveness of the national currency in the international market.

### **Corridor-Type Regime (Target Zone)**

Corridor (band or zone) is a hybrid foreign-exchange rate arrangement. This mode is characterized by a wider margin of fluctuation of the both sides of the parity (between 10% and 15%). Within this regime, the monetary policy makers are required to maintain the exchange rate within a certain broad band around the defined central parity. The extent to which the monetary authorities of the respective state allow the exchange rate to deviate from announced parity, determines the type of corridor. In this regard, if the parity is periodically adjusted in small increments in order to comply with changes in the main macroeconomic variables, it is a regime of mobile corridor or „*crawling band*“. On the other hand, if the monetary authorities do not have to defend the band limits at all costs, but act according to their own discretion, for such a regime we say that functions as a monitoring corridor or „*monitoring band*“.

Monitoring band, comparing to crawling band, presents a more relaxed foreign exchange rate arrangement. Within this regime, the band limits within which the exchange rate can fluctuate are set broadly (often over +/-15% as compared to the published value). In addition, monetary authorities retain the discretion not to intervene if the exchange rate overpasses the defined band. However, the fact that the intervention can occur in the event that the exchange rate exceeds the defined level, affects the market in such a manner that the exchange rate is maintained within predefined limits. If, however, market participants attempt to position the exchange rate outside the published zone, the monetary authorities will react and neutralize such an endeavor, which is why such moves are discouraged at the outset.

Despite wide set limits around the central parity, the corridor-type regime is not flexible enough to isolate the country from macroeconomic shocks. Specifically, in the event of a large internal or external shock of exogenous nature or caused by economic policy measures, even margin of fluctuation ranging from +/- 15% is not enough for the country to adapt and isolate from the resulting shock. In this case, the margins will expand increasingly searching for the realistic exchange rate, until they are completely discarded and the transition to a system of fluctuating regime is carried out.

Pursuant to the above, we can clearly conclude that the intermediate regimes arise as a necessity to provide greater freedom and discretion to the monetary authorities with an attempt to keep the nominal anchor as a tool to discipline the monetary

policy. However, with the increase flexibility and frequent changes of parity, the nominal anchor is lost, which makes the intermediate regimes very vulnerable to speculative attacks and, in severe cases, to currency crisis.

### **FEATURES AND CATEGORIES OF FLEXIBLE EXCHANGE RATE REGIMES**

Although often mentioned in theory, the option of independent or “pure” floating is not applied in practice. A country that is closest to the regime of free-floating is the United States because the Federal Reserve intervention in the foreign exchange market rarely occurs. However, the exchange rate is too important variable in economic policy, to be left absolutely susceptible of market forces actions. Hence, most economists prefer managed instead of independent floating regime.

The essential characteristic of managed flexible exchange rate arrangement is contained in its name. Namely fluctuation is managed in terms of interventions in the foreign exchange market that are made by monetary authority, although the exchange rate is basically determined by the market. In other words, the monetary authority does not react in order to defend the preset parity. Within this regime, as a rule, interventions are uncommon, and are implemented with the aim of limiting the excessive destabilizing oscillations of the exchange rate. Given that there is no predefined parity, there is no need for the monetary authorities to accumulate foreign exchange reserves in order to intervene in the FX market. Consequently, due to the lack of targets for speculative attacks, there is less possibility of currency crises.

The key argument in favor of flexible exchange rate regime choice is the possibility to conduct an independent monetary policy. In the event of an external shock, the burden of adjustment does not have to be borne by the internal economic objectives, which would be the case if some of the fixed arrangements were used. In case of a negative external shock, the currency will automatically depreciate and, consequently, make the economy more competitive, or fix exacerbated external position (which manifests in the form of balance of payments deficit). The alternative to such an automatic adjustment mechanism (which emerged due to implementation of some of fixed regimes) is certainly keeping a restrictive monetary policy. Implementation of restrictive monetary policy would improve the competitiveness of the country concerned through decline of the price level (and the levels of employment and production). In addition, by managed fluctuation the problem of currency disparity is eliminated, because flexible exchange rate explicitly pinpoints the existence of the risk. Daily exchange rate fluctuations that are immanent to free-float, necessarily involve the foreign exchange risk.

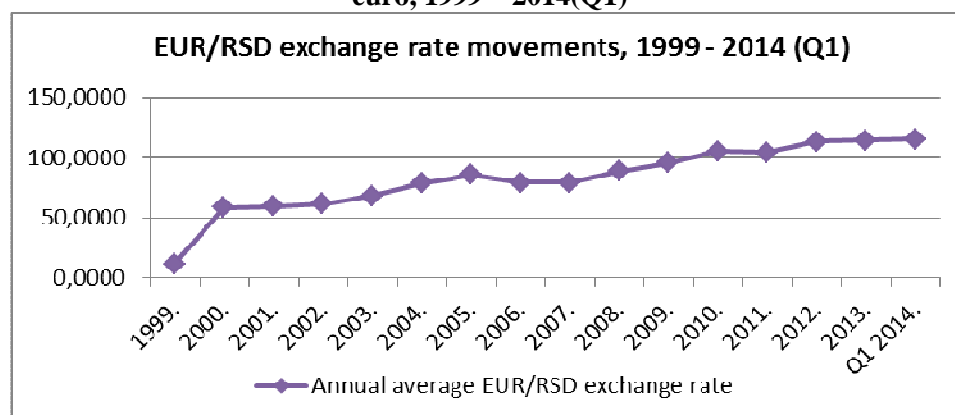
Within the managed float regime, monetary policy is autonomous and independent of the exchange rate policy. A popular combination of this exchange rate regime and monetary policy is „*managed floating plus*” regime. It is a combination of managed float as a foreign-exchange rate regime and inflation targeting as a monetary policy regime.

## THE EXCHANGE RATE REGIME APPLIED IN SERBIA

The issue of choosing the most appropriate regime of the national currency is one of the most relevant and always current questions when it comes to domestic economic theory and practice. Counting precisely on its stability, for many years our country persisted on the application of a fixed exchange rate of the dinar. However, this foreign-exchange rate arrangement gave results only in short terms, leaving the structural mismatch behind. In December 2000 Serbia introduced a hybrid exchange rate regime – *managed floating*, recognized by academic and professional practice as a regime of managed floating of the domestic currency.

Since the introduction of the euro to the present, the local currency is characterized by a constant depreciation against the euro. Looking at a series of data relating to the movement of the exchange rate of the dinar against the euro (and with the exception of 2006 in which the dinar appreciated) we see that in the period from 2000s to the present, the average annual depreciation of the dinar was around 7.35%, while the total depreciation of the domestic currency in the same reporting period, cumulatively amounted approximately 56%.

**Table 1. Data schedule of exchange rate movements of the dinar against the euro, 1999 – 2014(Q1)**



Source: Independent work of the author made on the basis of data published on the website of the National Bank of Serbia

Analysis of the causes that have affected the values of national currency against the euro, we note that the biggest problem is that the stabilization of the exchange rate in certain periods (especially in 2006) was not a result of an increase in the competitiveness of domestic exports and rising domestic production, but the inflow of foreign currency on the basis of FDI. In addition, an incentive to foreign investors did not provide a stable and predictable currency environment. Instead, the largest percentage of foreign investment comes from privatization or takeovers of private property, and to a lesser extent from Greenfield investments, whose inflow would have a positive impact on local economic development in the future.

With it, in 2006, in addition to the inflow of foreign direct investments, significant indebtedness of the Republic of Serbia as per three following reasons occurred (Fabris, 2010):

- borrowing from international institutions for various development projects,
- indebtedness of the economy, at partners abroad and,
- indebtedness of the banks, borrowing from parent banks abroad.

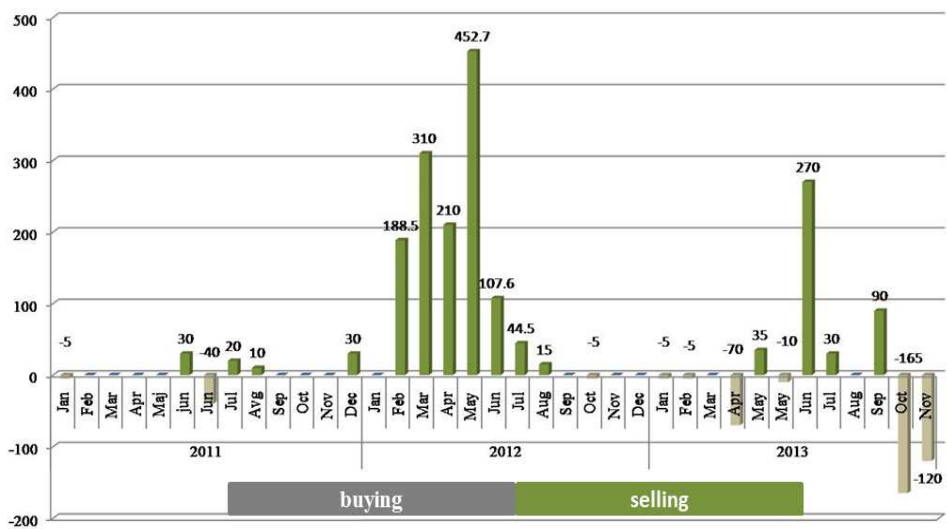
In the period between 2002 and 2008, economic growth and increase in the level of living standard in Serbia are based on borrowing, and not on a strong and competitive economy. Domestic consumption was approximately equal to the GDP or slightly higher, while investments were financed through borrowing. In addition, the structure of the growth was very unfavorable: sectors that produce material goods recorded the growth of gross value significantly below average - agriculture 0.3% and the industry 1.6% per year on average. On the basis of these data, we can unambiguously conclude that the domestic production was substituted by the imports offerings, which was manifested in the form of increased share of deficit in goods and services to meet the total domestic demand. According to many economists, this model of growth could have been upheld only while there was an inflow of foreign capital.

The global financial crisis has also confirmed the fact that the described model of growth was not economically viable. Namely, due to the collapse of the American and then of the global financial market, the inflow of foreign capital in Serbia was significantly reduced. Reduced capital inflow also meant a reduced offer of foreign currency in the domestic foreign exchange market, which caused the dinar to significantly lose value against the euro since 2008. The global economic crisis has affected the macroeconomic environment in the country, and in the next period, the GDP recorded a negative growth rate, there is an increase in unemployment, decrease of investment with simultaneous increase in illiquidity of the economy. In addition, depreciating pressures on the dinar in the preceding period were continuously carried out by extremely high trade and budget deficit. In addition to these factors, consistently higher rate of inflation in Serbia compared to that in the

euro zone, was also putting pressure on nominal alignment of values of the two currencies.

By analyzing the movement of the exchange rate of the dinar against the euro, we note that the national currency, by the end of 2009, generally weakens against the euro. Depreciation pressures on the domestic currency are accompanied by frequent interventions of the National Bank with considerable amounts, in order to maintain the psychological level of the exchange rate. However, despite the interventions on the interbank foreign exchange market (as much as 100 million euros daily) the National Bank was unable to maintain the target level of the exchange rate. In the first half of 2012, the National Bank sold a total of 1,288.8 million euros in the interbank foreign exchange market. Continuation of the trend of significant interventions of the National Bank in order to maintain stability of the dinar endangers the level of foreign exchange reserves and threatens their significant reduction. In the first quarter of 2013, the domestic currency was appreciated (until 7<sup>th</sup> of May the National Bank intervened in the foreign currency purchases with 90 million euro). After that, the direction of intervening is changing and, by the end of the third quarter of 2013, the National Bank generally occurred as a seller in the interbank foreign exchange market, in order to prevent a further decline in the value of the domestic currency. In October and November 2013, there has been a change in the direction of intervening again. The monthly interventions of the National Bank in the interbank foreign exchange market in the period 2011 – 2013 are presented in the Graph 1.

**Graph 1. Monthly interventions of the National Bank of Serbia, 2011 – 2013**

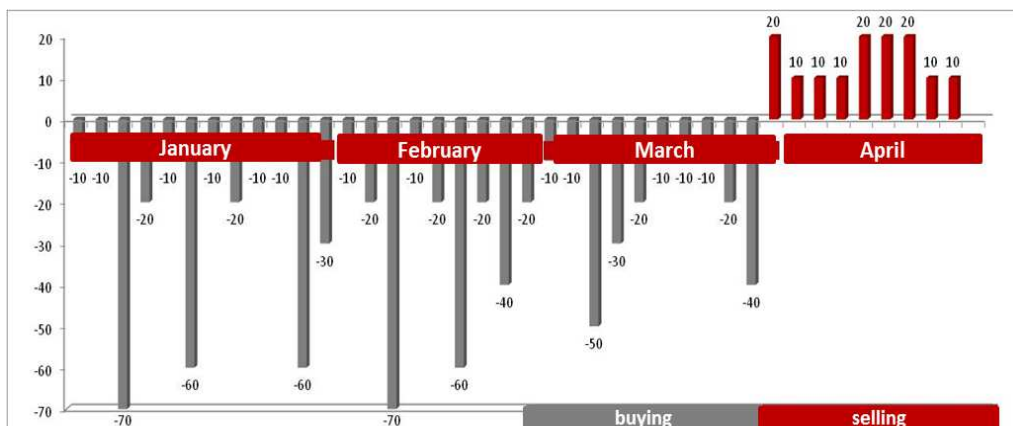


Source: The National Bank of Serbia, 2014.



Since the beginning of 2014, the dinar was quite unstable. After a long period of permanent pressure on the domestic currency to break the informal limit of 116 dinars for one euro, in first four months of 2014 the National Bank of Serbia by interventions in favor of sales of foreign exchange in the amount of about 820 million euros, ensured that the aforementioned psychological border is not exceeded. It is interesting that the appreciation pressures on the exchange rate of the dinar against the euro dominated during the second quarter of 2014. In addition to the decline in country risk premium, this was contributed by increased foreign investments in government bonds. On the other hand, the strengthening of geopolitical tensions, as well as the occurrence of adverse news regarding the intensity and pace of fiscal consolidation in the coming period, influenced the fact that dinar depreciated in July. In late August and early September, the exchange rate against the euro recorded its lowest value in 2014. During July and August, in addition to the above factors, the increased demand for foreign currency, which is of seasonal character, influenced the dinar to depreciate in the specified period.

**Graph 2. Interventions of the National Bank of Serbia on the interbank foreign exchange market by day, January 2014 – April 2014**



Source: The National Bank of Serbia, 2014

## CONCLUSION

The decision on the choice of exchange rate regime is a specific problem that every country is facing. In addition, the choice of the regime depends on the condition and trends of macroeconomic indicators in the country, but also of the events in its external business environment. Thus, the volatility of variables in the internal and external environment influences a selected foreign-exchange rate arrangement not to be the final and optimal choice. Accordingly, the paper discussed the categories

and features of foreign-exchange arrangements which are now represented in economic theory and practice. Macro-economic conditions in the world have changed over time, thus creating the need for finding new foreign-exchange arrangements that would adequately solve the problems the national economies were facing over time. Today, in addition to the two extremes-classical (conservative) models of fixed and flexible foreign-exchange rate arrangements, there are also hybrid models that are derived from the primary. The emergence of the intermediate regimes occurs as a result of combining the advantages of rigid and flexible foreign-exchange arrangements.

Since December 2000, a managed flexible exchange rate regime is applied in Serbia. This means that the National Bank of Serbia intervenes in the interbank foreign exchange market to prevent excessive daily fluctuations in the exchange rate of the dinar. The exchange rate of the dinar against the euro expresses instability since the introduction to the present. Depreciation pressures on the domestic currency are accompanied by frequent interventions in the interbank foreign exchange market. Macroeconomic environment in Serbia is still unfavorable; the unemployment rate is extremely high; while the rate of inflation is much higher than in the euro zone. In addition, depreciation pressures on the local currency are continuously happening due to high foreign trade and budget deficit.

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**PART IV.**

**DEBT CRISIS AND FINANCIAL  
STABILITY**

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# FINANCIAL STABILITY AND MACRO PRUDENTIAL POLICY IN SERBIA -EXPERIENCE AND CHALLENGES-

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## **Abstract**

*This paper analysis the macro prudential policies and measures used in Serbia last ten years aimed at reducing vulnerabilities in financial system potentially caused by increased private indebtedness (banking-induced crisis) as well as to identify ongoing threats and challenges on financial stability that could be added and came this time from exceeded indebtedness of government (sovereign-induced crisis) through large and growing fiscal and external imbalances. Studying experience and looking forward in ongoing threats and challenges, therefore, we try to respond on the following questions. What have been the main threats for NBS motivated it before ten years to use macro prudential policies and measures to reduce systemic risks threaten? What has been the set of key macro prudential measures and instruments used by NBS to reduce potential systemic risks? Which results have been reached and what about effectiveness of different macro prudential measures? How we see ongoing threats and challenges for macro prudential policy, and financial stability, considering particularly potential vulnerabilities induced by public sector fuelling banking crisis and vice versa?*

*Studying a number of resources we find that National bank of Serbia macro prudential policies and measures aimed at high credit growth and private borrowers have been quite effective in (indirectly) reducing potential Serbian banking system vulnerabilities. Considering Serbian experience we conclude, that macro prudential policies can be important elements of the policy toolkit aimed at overall systemic risk mitigation, especially for small open economy exposed to volatile capital inflows and international shocks. Considering ongoing threats and*

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*challenges for financial stability in Serbia we therefore argue that to provide their full benefits, macro prudential policy need to be properly chosen and carefully calibrated depending on country economic and financial system characteristics and this time addressed primarily to growing public indebtedness and fiscal imbalance as well as huge nonperforming loans and de-leveraging.*

**Key words:** *macro prudential policy, systemic risk, financial stability, banks, financial system, stress test*

## **THE SERBIAN FINANCIAL SECTOR**

During the last ten years Serbia has made significant steps towards their main target to develop its financial system and harmonized it with European financial system and markets. The banking sector in Serbia has undergone profound changes during the past 15 years towards the liberalization and internalization. On this pace Serbia has progressed bearing in mind considerable difficulties and setbacks. The process included the privatization of state-owned banks, most of which were acquired by foreign banks, and the *de novo* entry of foreign banks (foreign ownership is high and ranges about 75%) The credit system is still in the intermediate stages of development with respect to the depth and scope consistent with their respective stage of economic development. However, financial intermediation is converging fast. Over the last ten years significant efforts have been made to bring the regulatory framework in line with EU directives and the Basel II Core Principles. Before the crisis, the banking sector was characterized by sufficient capitalization and benign levels of credit risk.

### **1.1. Regulatory framework**

Serbia has well-defined regulatory framework in line with the best EU banking and financial standards. National bank of Serbia regulates and supervises banks, insurance companies, financial leasing companies and pension funds as well as payment and settlement systems. There is another sector specific regulator – Securities Exchange Commission – for the capital market participants and infrastructure.

Permanently the NBS insists on preventive measures whose goal is to prevent the development of systemic risks. It therefore continuously enhances the regulatory framework and indicates possible lines of action for mitigating systemic risks. Considering macro prudential policy the NBS is conducting two types of activities: 1. Adoption of regulatory measures; and 2. Issue of regulatory and other recommendations.

## **1.2. Institutions**

The financial landscape in Serbia is diversified and interconnected specially with financial institutions from countries which have been traditionally main foreign trade partners. The sector has grown rapidly, especially over the last ten years with overall assets amounting to nearly 78.7% of the country's GDP. The system is bank dominated with commercial banks constituting 92.4% of the financial system's total assets at the end of 2013<sup>4</sup>. Within the commercial banking sector, foreign banks subsidiaries banks comprise the largest segment, accounting for 72% of the commercial banking sector's total assets. Complementing the banks as main deposit taking institutions in the country are non banking financial institutions like the insurance companies, financial leasing companies and pension funds.

## **1.3. Pursuit of financial stability**

Prior to the crisis, in Serbia no agency was explicitly granted a mandate for financial stability though the NBS has acted as the implicit systemic regulator responsible inter alia for financial stability. Under Amendments and Supplements to the Law on the NBS enacted in 2010 and in keeping with the latest international practice, the NBS is responsible for maintaining and strengthening the stability of the financial system. From 2010 the NBS formally added financial stability as an additional policy objective in view of the growing size and importance of the financial sector. Finally, institutional arrangements have been further strengthened with the setting up in 2013 the inter-institutional body the Financial Stability Committee which should contribute on maintaining and enhancing of financial system stability in Serbia<sup>5</sup>.

## **2. CONDUCT ON MACRO PRUDENTIAL POLICY: EXPERIENCE – MEASURES**

### **2.1. Developments that induced macro prudential policy in Serbia**

At the end of 20<sup>th</sup> century Serbia has faced with new challenges trying to catch up European integration processes and enhanced as soon as it is possible its macroeconomic performances as well as financial and economic system<sup>6</sup>. At the

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<sup>4</sup> Banking Sector in Serbia, Report for 4Q2013.

<sup>5</sup> About Financial Stability Committee and its responsibilities see FSR 2013.

<sup>6</sup> To be more familiar with situation in Serbian's banking system (and macroeconomic situation) during 1980s and 1990s see Barisitz, S. (2003), "On the Catching up Route –



beginning of new century (a break with the past – committed reforms), just like many other emerging markets economies all over the world, Serbia has followed similar pattern and the suggestions from main international institutions (IMF, WB, IBRD, and EBRD) encouraged by favorable global economic conditions<sup>7</sup>. Practically external environment (high global liquidity, low global interest rates and increased risk aversion encouraged the investors to start looking for higher return) is requested from Serbia to remove barriers to cross boarder transactions and capital flows. It has meant for Serbia that like a small open economy must conduct banking sector deregulation and remove capital controls. Projections and predictions have been based on hopes that the benefits of financial liberalization in the form of huge capital inflows, further financial system development and more efficient capital allocation could increase investments and contribute to higher long-term economic growth rates.

However, together with favorable global macroeconomic and financial conditions it has been expectable that strong capital inflow in combination with insufficiently developed real sector (with relatively high rate of unemployment) as well as regulatory and institutional framework and low indebtedness of private and public sector will be channeled to fund credit growth related to accumulation of internal and external imbalances. Especially in 2006-2007 the Serbian economy – boosted by large capital inflows and expansionary policies – continued to grow strongly, but external imbalances widened and vulnerabilities rose<sup>8</sup>.

The first concern for the NBS has been entry of foreign banks (inflow of capital with appreciation of domestic currency) and low saturation of private sector with bank loans which could create fertile ground for credit expansion and reflected serious systemic risk. The NBS has been conscious that credit growth if excessive has a negative impact on macroeconomic stability as it stimulates relatively higher aggregate demand growth relative to potential growth, causing different imbalances (regarding foreign exchange rate, balance of payments, prices of assets etc.) and spreading the crisis from financial intermediaries to the real sector and

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The Development of Banking in Serbia and Montenegro since 2000“, Focus on Transition, OENB, Vienna.

<sup>7</sup> See more about this similar pattern and its consequences for emerging market economies in 16. Dumičić M. (2014), “Macro prudential Policy in Central and Eastern European Countries – Is There something We Should Learn?”, 20<sup>th</sup> Dubrovnik Economic Conference, June 2014. and Claessens S., Ghosh S.R and Mihet R., (2013) “Macro Prudential Policies to Mitigate Financial Vulnerabilities in Emerging Markets”, A World Bank Study, Dealing with the Challenges of Macro Financial Linkages in Emerging Markets, IBRD /The World Bank.

<sup>8</sup> IMF, (2008), “Republic Serbia: Selected Issues”, IMF Country Report No.8/55, The group of authors, Approved by European Department.

vice versa. In addition to, the NBS in contrast to public has been conscious that such capital inflows (privatization, FDI, portfolio investments and other) cannot be forever stable and continuous and public must be prepared for eventually sudden stop.

## **2.2. Key macro prudential measures and instruments**

In Serbia, we have a relatively long history of experience with conduct of macro prudential policy. The NBS, over the ten years, attempted to address systemic risks in both its dimensions (the time dimension or pro-cyclicality, and the cross sectional dimension) within a macro prudential framework in consultations with IMF.

From early 2004 macro prudential policy tools have been designed and applied by NBS in a flexible and timely manner, in line with the macro prudential conditions and circumstances of Serbian economy, the types of systemic risk, and the extents of its accumulation. During the last ten years, especially in pre-crisis period (2004-2007) rapid credit growth was accompanied by a rapid increase in foreign debt liability (euroisation) as a result of the opening of the banking market at the beginning of the last decade when foreign bank groups arrived in Serbia together with foreign capital. Systemic risk rose from bank lending in foreign currency (around 75% of the banking sector's assets are made up in foreign currency or with indexed foreign currency clauses), particularly to unhedged borrowers and from weaker underwriting standards<sup>9</sup>.

The use of macro-prudential policy in Serbia has been extensive mainly directed to banks and borrowers addressing primarily excessive credit activity (credit booms) and asset price spirals; limiting currency risk; encompassing capital flows and systemic liquidity management; dealing with privatized and internationalized financial institutions (dominantly banks and insurance companies); and tackling interconnectedness in the banking and financial sector and between the financial and the real sector.

The sources of risk in the Serbian economy can be viewed and examined as those before and those since the global financial crisis. Before the crisis the pro-cyclicality of household and corporate lending predominated and drew big

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<sup>9</sup> IMF Working Paper, WP|11|238, Macroprudential Policy: What Instruments and How to Use Them?, Lessons from country experience, C.Lim, F.Columba, A.Costa, P.Kongsamut, A.Otani, M.Saiyid, T.Wezel, and X.Wu, IMF October 2011.

attention<sup>10</sup>. Since the crisis the volatility of capital inflows and outflows has increased greatly due to the new conditions on regional and global financial markets. To cope with these conditions, Serbia has developed and applied macroprudential policy tools such as the loan to value (LTV) and debt to income (DTI) regulations, the loan to deposit ratio regulation, and the foreign exchange (FX) related measures. In addition to support financial stability and mitigate fully certain capital outflow risk emanated through deleveraging of foreign banks subsidiaries (cross-border funds) to parent banks, the Serbia has joined to Vienna Initiative in March 2009 which is founded with the aim to maintain exposure in CE and SEE countries of foreign bank groups on existing agreed level.

The whole range of macro prudential instruments and measures which have been used all these years by NBS can be classified in four categories: 1.Credit growth based tools including asset price growth (LTV limits; LTI limits; limits on foreign currency loans; limits on growth of loans for specific sectors); 2.Liquidity based tools (limits on OCP; maturity mismatch; mandatory reserve requirements); 3. Leverage based tools (limits on growth of loans for specific sectors; general provisions); and 4. Capital flows based tools including volatility of domestic currency (countercyclical capital requirements; dynamic provisioning; restrictions on dividend payments)<sup>11</sup>. Those instruments and measures presented in details are:

### **Loan to Value ratio**

One of the Serbian's early experiments with macro prudential policy was aimed at limiting the excessive credit growth and increase of real estate prices by introducing LTV ratio (limit). In December 2004 a minimum 20 percent down payment has been prescribed. In July 2008 the compulsory down payment or deposit to be provided upon loan approval is raised from 20% to 30% (with the exception of housing loans, RSD loans that are not foreign currency linked and credit card loans). In February 2009 rule 30% deposit of the approved loan amount has been abolished. In May 2011 the LTV ratio has been lift up on 80% for housing loans indexed to Euro (indexing to other currencies abolished). Mandatory

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<sup>10</sup> Along with growth of the banking sector, household credit also surged. Virtually non-existent before 2002, it expanded almost tenfold, reaching 22% of bank assets and 12% of GDP as of October 2007. The bank assets more than quadrupled between 2002-2007 and their compositions has more diversified.

<sup>11</sup> Similar presentation of used macro prudential instruments and measures is able to see in IMF documents: WP|11|238, Macroprudential Policy: What Instruments and How to Use Them?, Lessons from country experience, C.Lim, F.Columba, A.Costa, P.Kongsamut, A.Otani, M.Saiyid, T.Wezel, and X.Wu, IMF (2011). and IMF, "The Macroprudential Framework: Policy Responsiveness and Institutional Arrangements", Lim C.H., Krznar I., Lipinsky F., Otani A., Wu X. Working Paper 13/166, authorized for distribution by Jan Brockmeijer. (2013).

30% down payment for all FX or FX-indexed loans has been prescribed. From December 2011 LTV ratio is 75%.

### **Debt Service-to-Income**

Also in December 2004 the NBS prescribed maximum 30 (mortgage loan not included) and 50 (mortgage loan included) percent monthly payment to net income ratio. In May 2010 this ratio has been lifted up: DTI set to 40% - 60% for mortgage loans if currency denomination of a loan and a salary is the same. In December 2011 this measure has been abolished.

### **Capital Requirements/Risk Weights**

In 2006 the Capital adequacy requirement is set at 12%. In July 2006 from banks are required to apply the 125% weight in the calculation of risk-weighted assets to foreign currency- or RSD-denominated receivables that are indexed to a foreign currency clause or otherwise, and that amount to at least RSD 10,000,000 in the RSD equivalent value, if the borrower did not protect such receivables against changes in the exchange rate of the RSD against a given foreign currency or against changes in the value of any other form of indexation. In June 2008 the capital rules have been relaxed by excluding household RSD loans that are not foreign currency-indexed and intended for investment in agricultural production and RSD loans that are not foreign currency-indexed and approved to entrepreneurs for investment in the production of goods or services within their line of business from gross household lending.

In July 2008 NBS has prepared amendments to regulations on risk weights applied to calculating risk weighted assets and off-balance sheet items. A 50% risk weight applies to RSD claims secured by a mortgage; 75% to mortgage-secured foreign currency and foreign currency-indexed claims on un-hedged borrowers; 125% to foreign currency and foreign currency-indexed claims on un-hedged borrowers. The RSD 10 million limits with regard to the 125% risk weight are abolished. In December 2012 the banks started to implement Basel II capital standards. The risk weights for FX un-hedged mortgage secured/unsecured loans (75%/125%, respectively) were reduced to 35%/75%. From December 2011 total loan-loss provisions are subtracted from both the regulatory capital and the RWA. Banks are obliged to calculate market risk capital requirement for net open currency position only if it is higher than 2% of regulatory capital of bank.

### **Provisioning Requirement**

In December 2009 banks are no longer required to allocate special reserves for estimated losses on receivables classified in category A.

### **Foreign Currency Lending**

Generally there were no any specific limits for foreign currency lending except from 2011 when NBS obligated banks to grant foreign exchange indexed loans only in Euro.

### **Credit Growth Limits**

In July 2006 obligation was introduced for banks to maintain the ratio of household lending to core capital at 200%. In 2007 the prescribed ratio of gross lending to households to share capital was lowered from 200% to 150%, cash loan repayment period was limited to 24 months (the requirement was abolished in 2011). In December 2008 loans for agriculture and investment into other activities are exempt from the gross household lending-to-banks' share capital ratio (150%). In February 2009 the ratio of gross household lending to share capital was raised from 150% to 200%; 15% asset growth cap abolished; 24 month rule abolished. In June 2009 the 200% ratio of gross household lending to banks' share capital is abolished.

### **Reserve Requirements**

The reserve requirement is surely the most frequently and the most effectively used monetary instrument in function of macro prudential policy. Just like many other central banks the NBS applied reserve requirement in a countercyclical way in order to reduce systemic risk<sup>12</sup>. In 2005 the NBS introduced a higher required reserve ratio (RRR) on FX base relative to the RSD base (RSD 20%, FX 26%). From January 2005 has broadened the mandatory reserve base to include commercial banks' foreign borrowing (the entire stock of banks' foreign borrowing was included in three steps during the period September 2005–November 2005). In September 2005/February 2006 the NBS took over the authority for regulating and supervising the leasing industry (September 2005) and subjected leasing companies to a 10 percent reserve requirement on foreign borrowing (February 2006). In April 2006 foreign currency base has extended. In May 2008 the 10% of calculated FX reserve is allocated in domestic currency (20% in October and 40% in December). In October 2008 the NBS freed banks from RR on foreign borrowing and subordinated loans, as well as domestic financial leasing companies from reserve requirements on foreign borrowing. In February 2009 foreign liabilities incurred from October 1, 2008, to December 31, 2009, are exempt from the calculation of reserve requirements until their maturity, the required reserve base can be reduced by the amount of loans to enterprises and households approved in line with the Government Program to Ease the Effects of the Global Crisis.

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<sup>12</sup> About multi effectiveness of reserve requirement set Tovar,C.E., Garcia-Escribano,M. and Martin, M.V. (2012), "Credit Growth and the Effectiveness of Reserve Requirements and other macro prudential instruments in Latin America", IMF Working Paper WP/12/142, June 2012.

In May 2009 the 35% of the RR for FX liabilities may be allocated in domestic currency. In June 2009 the banks do not have to allocate required reserves for Serbian RSD- and FX-denominated foreign liabilities in respect of deposits and loans in the period from October 1, 2008, to December 31, 2010, until the initial maturity of such liabilities. In July 2009 the 30% of the RR for FX liabilities may be allocated in Serbian RSD. In October/November 2009 the 25%/20% of the RR for FX liabilities may be allocated in Serbian RSD. In March 2010 the NBS has streamlined and reduced the RR on both Serbian RSD and FX liabilities. In January 2011 the differentiation of RR ratios on Serbian RSD and FX reserve bases depending on the maturity of liabilities and sources of funding. In April 2012 the FX RR were reduced by 1pp and 3pp, to 29% on FX liabilities with the agreed maturity of up to two years, and 22% on FX liabilities with the agreed maturity of over two years. The share of FX required reserve allocated in RSD increased by 5 percentage points to 20% for liabilities with maturity of up to two years and 15% for liabilities with maturity of over two years. In June 2012 the RR on FX-indexed liabilities increased to 50% for all maturities. The share of FX required reserve allocated in RSD increased to 27% for liabilities with maturity of up to two years and 19% for liabilities with the agreed maturity of over two years. In August 2012 the increase in the share of FX RR allocated in RSD for 5pp to 32% for liabilities with the agreed maturity of up to two years and 24% for liabilities with the agreed maturity of over two years.

#### **Limits on Maturity Mismatch**

In December 2012 the NBS introduces a narrow liquidity ratio that excludes maturing credit claims and should be at least 0.7 on a monthly basis; not lower than 0.6 in three consecutive days; and not lower than 0.5 on any day.

#### **Limits on Net Open Position**

In July 2008 the limit on the net open foreign exchange position is reduced from 30% to 20%. In January 2009 the limit is further reduced to 10%. In June 2009 each bank has to maintain its assets/liabilities ratio in such a way so as to ensure that its total net open foreign currency position, including the absolute value of the net open position in gold, does not exceed 20% of its capital at the end of each business day, notwithstanding provisions of the decision governing bank risk management.

#### **Restrictions on Profits**

In 2005 the NBS put ban on paying out dividends by undercapitalized banks. From 2007 banks that had inadequate loan loss provisions (this being equal to total regulatory provisions less accounting/IFRS provisions) could not pay out dividends or bonuses (abolished in 2011). From 2011 if banks CAR ratio falls below 14.5% they cannot pay out dividends.

### **Mandatory shortening of cash loans to maximum of 2 years duration**

In 2009 in order to slow down household lending, preempt large credit risks and prevent excessive leverage of the poorest households the NBS introduces this measure. In December 2011 this measure has been abolished.

### **Other measures**

In September 2009 the NBS introduces interest absorption scheme (which allowed some deferment of principal payments) and interest-only housing loans were disallowed. Also, the NBS caps banks' loan exposures to the property sector (excluding residential mortgages for owner occupation) at 35 % of total non-bank exposure.

## **2.3. General assessment of implemented policy and measures**

As we can see, during the expansionary period of 2004-2008 where we had tripling of both loan portfolio and assets, a number of countercyclical restrictive measures were taken: 1. Monetary (wider base and high required reserve ratio, high reference rate and etc.); 2. Supervisory (higher CAR of 12%, conservative loan classification and provisioning rules fully deductible from regulatory capital and linked to possibility to distribute profits, higher capital requirements, i.e. risk weight for exposures to unhedged borrowers, conservative monthly installment to income ratio for households and etc.); 3. Market discipline (intensive work on consumer protection and financial education enhancing transparency in banking operations and etc.) and even some 4. Administrative measures (limiting growth of household loans to Tier 1, ceiling on cash loans repayment term, obligatory down-payment for households loans and etc.).

The pre-crisis years of 2004-2008 were a period of high growth and robust capital inflows for the Serbian economy, with overall bank credit growing at over 50% per annum. Disaggregated trends, however, revealed that credit growth to certain sectors were much higher. The accelerated credit expansion was linked with increasing real estate prices and more and more significant indebtedness of companies and households. When the crisis started impacting the Serbian financial system and the macro economy, the NBS responded by relaxing some of the pre-crisis tightening measures in a counter cycling fashion easing both risk weights and standard asset provisioning norm – again largely following a sector approach.

By early 2009 confidence in banking system has been resumed and foreign exchange saving deposits continued to increase as well as credit growth began to recover. In addition to, all measures were very effective if we take in account key indicators: 1. High quality of capital (82% of regulatory capital before deductions refers to Tier 1 and the remaining 18 refers to Tier 2 – almost all long-term

subordinated debt; 83% of Tier 1 capital refers to equity and the remaining part to disclose reserves and retained profits; and 25% of total regulatory capital reduced for regulatory provisions, i.e. potential losses for both balance and off balance sheet exposures; 2. Strong capital buffers (Total regulatory provisions covering 20% of gross balance and off balance sheet exposures, while IFRS provisions cover only 8.5%; Total regulatory provisions to gross NPLs of 160%; and CAR of 21.5% - regulatory capital after all deductions to total RWA, including capital requirements for market risks); 3. Strong liquidity buffers - Liquidity ratio of around 1.9 and share of liquid assets in total assets of 32%; and 4. Reputable owners - 74% of banking sector assets owned by foreign banks, while 72% by banks headquartered in EMU.

Thanks to its high shock-absorbing capacities, the Serbian banking sector proved fairly resilient to the global crisis. In fact, given tight regulatory requirements during the pre-crisis boom (e.g. quantitative limits on household lending relative to bank capital), the banking sector entered the crisis with a strong capital position, despite a sharp drop in capital adequacy in 2008, which can be largely explained by changes in regulatory requirements in mid-2008. Stress tests carried out by the NBS based on IMF methodology in October 2009 and updated in January 2010 within the sector's resilience to macroeconomic (output, exchange rate, interest rate) shocks<sup>13</sup>.

On balance, the Serbian banking sector's institutional framework has improved over these years. The IMF's May 2010 Financial Sector Assessment Program attests Serbia good progress with a view to upgrading its legal and supervisory framework, even though it states that in some areas challenged still remain (e.g. capacity building, international supervisory cooperation). In the same vein, the EBRD sees further room for catching-up in banking sector reform, while indicating that, in general Serbia has reached an intermediate degree of progress in this area so far – a level which is at par with that of most other Western Balkan countries<sup>14</sup>.

However, the experience has shown that macro prudential policy can not be alone in this mission and needs support by fiscal and other relevant policies.

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<sup>13</sup> Gardo S. (2011), "Preserving Macrofinancial Stability in Serbia: Past Legacies, Present Dilemmas and Future Challenges", Financial Stability Report 2010, OENB, Vienna.

<sup>14</sup> Gardo S. (2011), "Preserving Macrofinancial Stability in Serbia: Past Legacies, Present Dilemmas and Future Challenges", Financial Stability Report 2010, OENB, Vienna.

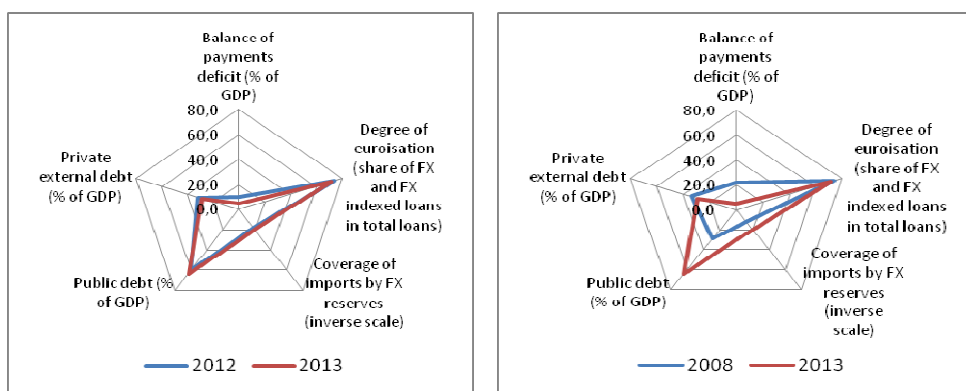


### 3. CONDUCT ON MACRO PRUDENTIAL POLICY: SOME DIMENSIONS AND OBJECTIVES

#### 3.1. Domestic macroeconomic environment

Given the expansion of the share of public debt in GDP and slightly increase of the level of euroisation which represents one of the key risks to financial stability (increased marginally) on the one hand, and on the other a notable narrowing of the current account deficit (from 10.7% of GDP in 2012 on 5.0% of GDP in 2013) accompanied by improved adequacy of foreign exchange reserves (in quality and quantity of 300 million Euro) and reducing of private external debt in GDP, we can conclude regarding 2012 and 2008 that vulnerability of financial system has been partially decreased.

#### Key macroeconomic risks



Source: NBS

Foreign exchange reserves serve as a safeguard against extreme shocks in conditions of high euroisation and large external imbalance. In a way, they represent the only defense against extreme shocks when structural reforms and fiscal policy fail to provide support.

#### 3.2. Financial sector

The banking sector accounted for 92.4% of total financial sector assets at end-2013. It was adequately capitalized throughout the year and resilient to challenges, even in a continuing crisis scenario. During 2013 CAR increased to 20.9%. In contrast to capital the RWA has significantly decreased regarding 2012 mainly due to shrinking credit activity, selling of loan portfolio and closing of two banks.

Banks' loan portfolio continued to make up the dominant part of banking sector assets (56.8%), followed by cash and cash equivalents (9.4%), securities (11.7%) and callable loans and deposits (14.3%). Constituting a major part of assets, loans represent the most significant determinant of the overall asset quality.

Credit risk is a major type of risk in domestic banking system particularly bearing in mind currency composition of loan portfolio which is mostly determined by exchange rate to Euro. Therefore credit risk capital requirement represents 86% of total capital requirements.

The share of NPLs in total loans has been increasing since 2008. At end-2013, gross NPLs accounted for 21.4% of total gross loans. The share of NPLs in the corporate sector was much higher than in the household sector (24.5% vs. 10.8%). The highest-profile risk in the domestic banking system is the credit risk that is largely determined by the movements of the exchange rate of the dinar. Namely, by indexing loans to foreign currency, banks transfer the FX risk onto borrowers, and then the risk ricochets back to the banking system in the form of a credit risk. Though substantial in the nominal amount, NPLs are no threat to the operation of systemically important banks and thus, to financial stability owing to the high level of loan loss reserves. At end-2013, these reserves covered 117.9% of gross NPLs. At the end-2013, the IFRS impairments covered 50.9% of gross NPLs<sup>15</sup>.

Profitability of the Serbian banking sector declined from the previous year, reflecting primarily the rise in NPLs, write offs and negative growth rate of loan portfolio. In addition to the banks rather place funds in less risky instruments (with lower yield) like as treasury bills. With a 1.15% ROA and a 5.42% ROE, banking sector profitability is close to the regional average. The structure of profits, however, indicates that the business model of domestic banks is still focused on traditional banking services.

The Serbian banking sector is exceptionally liquid, i.e. liquidity risk is the least pronounced in the system. By exempting subordinated debt from the reserve requirement base and by lowering the reserve requirement ratios on liabilities maturing in over two years relative to those of shorter maturity, the NBS encouraged banks to rely more on longer-term sources of funding. Liquidity ratio for banking system (2.4) was much higher at the end-2013 then it is prescribed by NBS (1.0). Narrow indicator of liquidity (1.8) was also higher then it is prescribed by NBS (0.7).

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<sup>15</sup> For more data see Banking Sector in Serbia, Report for 4Q2013.

At the same time, the share of funding from parent banks, i.e. cross-border borrowing stayed high (following Vienna Initiative). Any change in the behavioral pattern of banks with subsidiaries in the local market could have a negative effect on capital inflows and the level of credit exposure towards entities in Serbia. During the 2013 the deleveraging (outflow of cross boarder funds) has been successfully compensated with domestic funding resources (saving deposits primarily in RSD). It is therefore important to strengthen the domestic sources of funding so as to ensure further growth of lending activity.

Besides, there is a partial mismatch in the maturity and currency structure of the banking sector's balance sheet due to the growth in RSD lending on the one hand, and a shortage of long-term dinar sources of funding, on the other. The currency structure of deposits stayed more or less the same, i.e. FX (euro) deposits continued as the most important source of bank financing, while the share of newly extended corporate and household dinar loans increased as a result of the NBS and government efforts at dinarisation and increasing public awareness of the risks associated with borrowing in foreign currency.

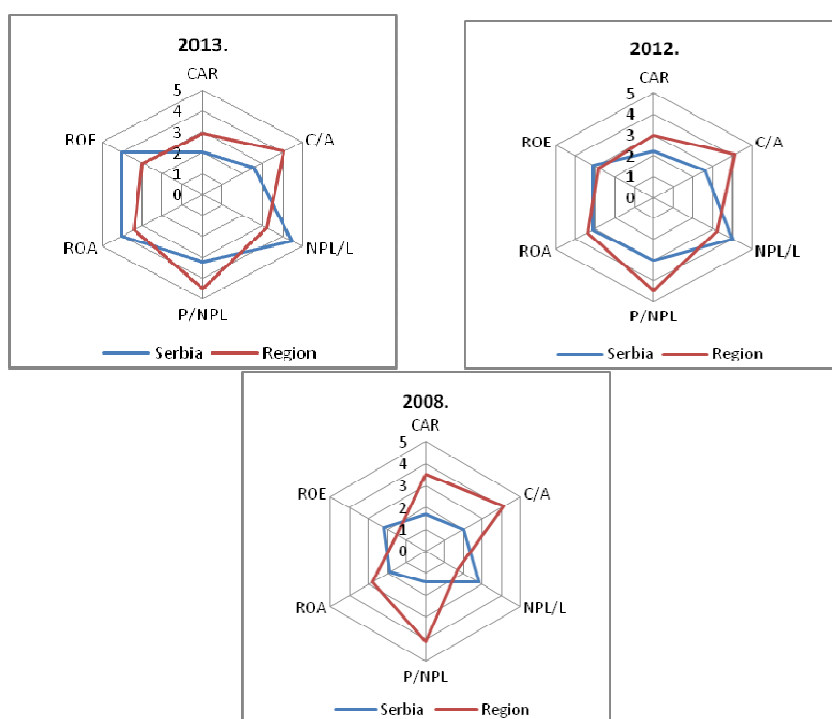
### **3.3 Financial stability assessment**

Assessing financial stability of a country is a rather complex matter. We have used several methods to that end: (a) comparison of selected financial soundness indicators - construction of an aggregate financial soundness indicator (AFSI) and (c) exposure of the financial system to large scale shocks in stress tests.

Financial stability assessment was made for the period 2008–2013.

Based on financial soundness indicators, the Serbian banking sector appears to be in a better shape than the regional average, despite two comparative weaknesses – lower profitability than last year and a high share of NPLs. In 2013 the profitability of Serbian banking sector was lower and NPL/Gross Loans was higher in comparison to average in region. On the other side, capitalization of banking sector of Serbia and the level of provisions for covering the potential losses are considerably above the average of region.

### Financial soundness compared to other countries in the region



*Notes:*

Greater distance from the net centre indicates greater risk.

The chart shows standardised values of the most common financial soundness indicators: CAR – capital adequacy ratio (regulatory capital to risk-weighted assets); C/A - capital to assets; NPL/L - gross NPLs to total gross loans; P/NPL - provisions to gross NPLs; ROA - return on assets; ROE - return on equity.

The region refers to CEE countries: Albania, Bosnia and Herzegovina, Bulgaria, Latvia, Lithuania, Hungary, Macedonia, Poland, Romania, Turkey, Croatia and Montenegro. Region FSIs are non-weighted averages of individual countries' FSIs.

*Sources: NBS and GFSR*

As indicated by the AFSI<sup>16</sup>, The stress tests conducted by the NBS suggest that the Serbian banking sector is highly resilient to any increase in losses on account of a rise in NPLs and materialization of the liquidity risk even in the case of severe

<sup>16</sup> AFSI is a composite indicator whose building blocks include indicators of capital adequacy, asset quality, profitability, liquidity and sensitivity to market risks. The AFSI is endogenous, i.e. it depends on the values of the financial soundness indicators of all of the 27 European countries observe.

shocks. The cross section analysis hence shows that the Serbian financial system is stable, and in some of its segments still more so than last year.

Given the worst macroeconomic scenario (assuming high depreciation of RSD and decrease of real wages) Serbian banking system stand adequately capitalized. Also, if we suppose extremely high outflow of deposits (two times higher than in 2008) domestic banking system will be liquid. In addition to the results of network modeling indicate that there is no systematically significant risk components in Serbian banking sector resulted from banking interconnectedness.

### **3.4 Macro prudential instruments**

Macro prudential instruments are used to preserve and strengthen financial stability, i.e. to contain systemic risks. Pursuant to the Law on the National Bank of Serbia, the NBS has the express right and obligation to apply macro prudential instruments and prepare different recommendations and detailed analyses about financial stability and potential risks (Annual Financial Stability Report).

The most important regulatory measures taken by the NBS in this area in 2013 relate to: resolving the issue of NPLs; confining risk of cross boarder deleveraging; decreasing the level of euroisation; conducting credible fiscal consolidation program; decreasing public debt; enhancing crisis risk management framework; and further enhancing of macro prudential framework.

The NBS continuously monitor external and internal risks which can have impact on financial stability.

Respecting external risks the NBS has recognized change in the behavioral patten of European banks towards reducing cross-border exposure (which could become an obstacle to domestic credit and economic growth in the medium term) and change in investor sentiment because of possible monetary policy tightening by the world' leading central banks; and insufficiently clear implications of new regulation in EU which will lead to consolidation of European banking system (de-banking). Regarding these and risks and threats the NBS promote active participation in international initiatives with the goal to cooperate with banking groups, home supervisors, working groups within the Vienna Initiative, European and other international financial institutions for the purposes of: resolving the issue of NPLs and ensuring support of IFIs and parent banks; development of the domestic capital market; monitoring the effects of application of Basel III standards; monitoring developments relating to the Banking Union; better use of resources from special EU funds; achieving agreement on approach to ECB swap

arrangements; *ex-ante* coordination of macro prudential measures; - publishing of stress-test results on a decentralized basis;

Respecting potential internal risks the NBS has recognized as the main threats lack of a robust fiscal adjustment which can increase the likelihood of a public debt crisis (significant exposure to state securities in banks balances); exposure of the financial system to credit-foreign exchange risk (increased pressures on the foreign exchange market); high share of NPLs which increase banks' risk aversion, jeopardizes the profitability of the banking sector and threatens to evolve into a systemic risk. Something softness risks are negative economic and credit growth; sluggish of capital inflow caused by investor risk aversion due to the lack of fiscal adjustment; underdeveloped domestic capital market as an alternative source of funding; poor corporate governance in some financial institutions, with special emphasis on those in state ownership; sluggish capital inflow into the banking sector due to European banks' deleveraging, lower profitability of the domestic market and bad market conditions for the sale of government shares in good banks; inadequate real estate valuation which puts at risk banks that rely on real estate as collateral in case of a need to activate such collateral.

In order to answer on potential risks the NBS has prepared and implemented mitigating measures which have brought certain results. Surely the most important is a call for consolidation of public finance and implementation of structural reforms which are urgently needed (public debt is 67% of GDP with August 2014) since this may have a negative short-term impact on growth. Further, the NBS insists on consistent implementation of the dinarisation strategy by all relevant stakeholders. One of the most important pillars and back up for financial stability (trying to ensure foreign market stability) is further cooperation with the IMF (to insure against external shocks; to anchor fiscal responsibility; to mitigate financial risks; to catalyze structural changes).

Considering very high ratio of NPL the NBS expects from banks to make plans for a reduction in the share of NPLs (mandatory direct write-off of NPLs; adopting regulatory framework for the bankruptcy of natural persons; stepping up activities relating to consensual financial restructuring; improving the process of out of-court mortgage enforcement).

Also the NBS expects from banks to develop ownership consolidation and enhance corporate governance by taking additional steps to boost capital adequacy. In addition to, the NBS provide incentives to banks to focus on the issue of long-term dinar debt (strengthening domestic institutional investors – insurance companies and voluntary pension funds) with a view to broadening the sources to finance and

support RSD loans to corporations primarily (and compensate cross border deleveraging, wholesale funding, and parent banks deposits).

## **4 ONGOING CHALLENGES FOR MACRO PRUDENTIAL POLICY MAKERS**

### **4.1. Developing an analytical framework for systemic risk assessment**

So far, the policy makers experience with macro prudential oversight has been largely based mainly on policy judgment. It is now clear that an effective and formal framework for macro prudential oversight requires both analytical sophistication and good judgment. The NBS needs to be able to assess the nature and extent of risk and be able to make informed judgment on when macro prudential polices should be activated and which tools should be used. Therefore, all these years, the NBS has been making efforts to develop an analytical framework for the assessment of systemic risks in recent years.

Last three years the NBS has launched a number of initiatives to improve the financial stability analytics. First, the stability indicators and maps have been defined in line with the world best practice. Stability indicators and maps represent coincident indicators of systemic stress in the financial system. They are constructed by aggregating information from different segments of the overall financial system and encapsulating the information in a single statistic which measures the current state of instability in the financial system.

Second, the NBS has prepared all presumptions to develop banking stability measures, a cross-sectional econometric framework, in try to capture the distress dependencies among banks using different data and attempt to estimate the contribution of individual bank to systemic risk. The NBS has developed financial stress index base on IMF methodology as a composite indicator of banking system health<sup>17</sup>. Also the aim is to develop useful banking stability index which captures the expected number of banks to become distressed given that at least one bank has become distressed.

Third, the techniques of network modeling have been used to develop a bespoke financial network analysis and contagion stress testing platform for the Serbian financial system<sup>18</sup>. The analysis primarily looks into the interconnections that exists between different institutions in the financial system and tries to identify the

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<sup>17</sup> For more information about methodology see Financial Stability Report 2012.

<sup>18</sup> See NBS Annual Financial Stability Report – 2012 and NBS Annual Financial Stability Report – 2013.

build-up of systemic risks. A contagion simulator helps in assessing the possible loss of capital to the financial system due to a random failure of one or more financial institutions. Both the solvency and liquidity effects of failure of a financial entity are assessed.

Fourth, the NBS uses stress tests to assess banks' individual resilience to potential risks. It also conducts macro economic stress tests of groups of banks and the banking sector at large. Stress tests are conducted once every three months and are subject to ongoing improvement. For the time being, stress tests used in the NBS enable the measurement of: 1. resilience of banking sector due to credit risk depending on macro economic variables, and of the impact of NPLs on banks' capital, risky assets and profits, and consequently, on CAR; 2. Liquidity risk due to the loss of depositors' confidence and adverse economic circumstances; 3. Effects of shock transmission in case an individual bank faces problems and no longer meets its obligations to other banks. The set of stress testing exercises is based on different approaches and through one or multi-dimensional analysis.

There are, however, clear challenges in developing a robust analytical framework for conduct of macro prudential policy. Putting in place an assessment infrastructure which is capable of raising "red flags", i.e. signaling trends that could make markets or countries vulnerable to unanticipated events is far from straightforward given that systemic risks *per se* are generally complex, very often opaque, and always multifaceted<sup>19</sup>. In fact, there is no universally accepted definition of systemic risk, adding to which there are major gaps in the availability of data at both the national and international level to ensure that the build-up of risks is recognized and addressed in a timely manner<sup>20</sup>. Just like in many other emerging economies regulatory judgments will thus continue to play a critical role for the NBS in informing decisions about macro prudential policy with associated risks.

## 4.2. Policy coordination

The importance of policy coordination is critical for the success of macro prudential policy. There are clearly challenges associated with ensuring some degree of coordination between micro and macro prudential policies, while

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<sup>19</sup> Chakrabarty K.C. (2014), "Framework for the conduct of macro prudential policy in India: experience and perspectives", Banque de France, Financial Stability Review, No18, April 2014.

<sup>20</sup> Chakrabarty K.C. (2014), "Framework for the conduct of macro prudential policy in India: experience and perspectives", Banque de France, Financial Stability Review, No18, April 2014.



ensuring the independence and credibility of monetary policy<sup>21</sup>. In addition to, there are challenges between macro prudential and fiscal policy especially in the context of countercyclical policy and measures. Again, it is difficult to make a binary distinction between micro prudential and macro prudential policies. Incorporating a systemic perspective in micro prudential policies could, for example, be easier in boom times when buffers are required to be built-up. During “bad” times, there could be tensions as the macro perspective could call for relaxations in policy (e.g. release of buffers), while the micro perspective may favor retaining the buffers<sup>22</sup>.

In the Serbian case, so far, these conflicts have been resolved as NBS is the monetary authority, regulator and supervisor of the banking system and also the implicit systemic regulator. Going forward, however, as the financial system becomes more complex and macro prudential considerations have to factor in various sectors of the economy, challenges may emerge and strong coordination between the regulators and with the government will be called for.

### **4.3. Monitoring indebtedness of public and private sector**

Especially in an environment of low interest rates and abundant global liquidity, corporate leverage has gone-up substantially even while the banking system leverage has been curtailed due to the regulatory reforms. Similarly, the lure of cheap foreign funds also enticed several companies to borrow large sums of monies from banks and abroad (cross boarder) without adequately hedging their exposures. While the banks’ proprietary exposure to the forex market operations is capped by regulations, the same is not true for the companies’ forex exposures.

In fact, the volatile capital flows in Serbia (like in many other emerging markets) have led to building-up of significant amount of stress on the companies’ balance sheet due to these unhedged currency exposures and potential depreciation of domestic currency. The burgeoning leverage and the unhedged currency exposures of the companies have created implications for the banking system in the form of increased credit risk and NPLs. To some extent, this is already evident in Serbia due to manifestation of these risks in few corporate entities and the consequential impact on the balance sheets of the banking sector considering increased NPLs and decreased profitability of banking sector.

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<sup>21</sup> The NBS Annual Financial Stability Report 2013.

<sup>22</sup> IMF (2013), Key aspects of macroprudential policy, Guidance of Jan Brockmeijer, by a team led by Erlend Nier and Jacek Osinski, approved by Jose Vinals.

Similarly, public debt has reached border of 67% of GDP at 2Q2014 (45% is threshold). However, despite the adoption of the Program for the Reduction of Debt (relative to GDP), the risk of public debt crisis was not eliminated. Public finances present possible systemic risk and current fiscal deficit rate does not provide firm grounds to expect that goals of the Program can be achieved even within such long period. It is certain that the level of public debt cannot be reduced without essential fiscal consolidation. It would therefore be useful to do the following: 1. Adopt a sustainable Program of fiscal consolidation and public debt reduction; 2. Dinarise public debt by issuing long-term dinar securities; 3. Setting the rule for the Government and local government bodies to borrow only by issuing RSD securities without a currency clause, allowing FX borrowing only in exceptional cases.

#### **4.4. Non-performing loans**

One of the biggest challenges for the Serbian financial system is resolving of accumulated non-performing loans. If the issue of NPLs is not resolved on time, it can exacerbate the gravity of the crisis and prolong it further. To resolve this issue efficiently, the NBS is publishing each year (in its Annual FSRs) the set of regulatory recommendations. For the purpose of efficient solve of this problem the NBS (together with IMF) has organized in March 2013 so called "Belgrade Initiative" meeting, by offering banks and international financial institutions to express their proposals considering enhancement of NPLs resolving process. Based on this meeting the NBS issued recommendations which are anchored on individually developed approaches (case by case). In addition to, under the roof of Serbian Banking Association there were a few initiatives among banks to accelerate process of resolving accumulated NPLs in banking balances. Having in mind all, resolving of accumulated NPLs is obviously primarily challenge and task for Serbian banking system considering potential impact of NPLs on economic activity down slowing or delaying.

#### **5. CONCLUDING REMARKS**

The article has outlined the experiences and perspectives of NBS in implementing macro prudential policy in Serbia. The experience so far has been enriching but the road ahead is very challenging. Macro prudential policy has its own limitations, especially in small open economies with managed float foreign exchange regime. There are risks of macro prudential policy being over applied – they are neither a panacea for all evils nor a sure shot recipe for financial stability. There are also risks of making macro prudential policy too narrow in focus. Having in mind this

the Serbia is not distinguished from other emerging economies especially from its peers in SEE region.

For the time being, the experience in Serbia suggests that macro prudential policy is best suited to improving the resilience of financial institutions to shocks (capital and liquidity buffers). The Serbian experience has shown that the use of macro prudential instruments needs to be embedded in a policy strategy based on four stages: The risk identification and assessment, where relevant indicators and indicative threshold are used to detect and assess vulnerabilities, and help guide policy; The instrument selection and calibration for targeting relevant systemic risks; The implementation stage, where instruments are activated, and The evaluation stage, where the effects of the policy measures and the need for further action are assessed. This practice in line with ESRB recommendations raise hopes that Serbian financial system is stable and its banks have adequate capital and liquidity buffers as a first defense line towards potential systemic risks.

Our study finds that NBSs implemented macro prudential policies and measures (pre-crisis and post-crisis) aimed at the credit growth and private borrowers indebtedness have been quite effective in (indirectly) reducing potential Serbian banking system vulnerabilities. Regarding back the macro prudential policy has very successfully counteracted the buildup of financial imbalances in the economy particularly containing the volatile capital inflows, an excessive increase of credit, asset prices (real estate especially) and leverage. Practically, the growth of loans, indebtedness of corporate and retail sector, asset prices and attitude to risk in the economy have been under control. Experience suggests that in the case of Serbia the macro prudential tools are best used as *ex ante* tools. Also, the NBSs monetary policy actions coordinated alongside macro prudential policy, just like mandatory reserve requirements on wholesale funding in foreign currency have been very effective in reducing vulnerabilities in boom times.

We conclude, by considering Serbian experience, that macro prudential policies can be important elements of the policy toolkit aimed at overall systemic risk mitigation, especially for small open economy exposed to volatile capital inflows and international shocks. Considering ongoing threats and challenges for financial stability in Serbia we therefore argue that to provide their full benefits, macro prudential policy need to be properly chosen and carefully calibrated depending on country economic and financial system characteristics and this time addressed to growing public indebtedness and fiscal and external imbalances.

Stronger structural policies and reforms including fiscal consolidation would help alleviate vulnerabilities by rising productivity of real sector. Developing domestic

capital markets would contribute to reducing rising euroisation-related vulnerabilities.

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# DOES TRADITIONAL BANKING INCREASE FINANCIAL STABILITY AND REPRESENTS A SAFETY NET FOR THE IMPACT OF FUTURE CRISES?

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## **Abstract**

*The theoretical empirical findings indicate mixed results if reliance on complex banking which generate non-interest income increases the net income in the bank. Recent trend in the banking industry is observing increasing reliance on the nontraditional business activities, i.e. activities that generate fee rather than interest, whereas traditional banking is moving toward complex banking. The paper examines the consequences of the latest financial crises from 2007 on the banking sector of developed economies characterized as complex one vis-à-vis banking sector in traditional economies such as Republic of Macedonia. The major question addressed in the paper is if we should map the banking institutions from developed economies, having in mind the consequences of complex banking on bank profitability ratios as well as effects of the crises. The paper shows that although increased bank complexity in developed economies enlarged bank stability and total bank income, yet such trend seldom occurs without risky implications, clearly demonstrated during the crises from the year 2007. The findings in the paper indicate that traditional banking such as one in the Republic of Macedonia secure minor influence of the financial crises with time lag of nearly 2 years. Nevertheless, the results of the empirical research by exploiting regression analysis in the paper specified if banking industry is shifting toward complex banking by extracting selected variables affecting Net bank income or staying in the track of traditional banking secure safety net against impact of future crises.*

**Key words:** *Financial Crisis, Banking, Financial Stability, Complex Banking, Traditional Banking*

**JEL classification:** G21

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## 1. INTRODUCTION

The banking industry in the last two decades is shifting from traditional toward complex and innovative. Empirical research regarding trend of the banking industry clearly indicated that banking industry is evolving from one that is engaged primarily in traditional activities to one that is comprised of large and complex risk-intermediaries (Klimentina Poposka, Mark Vaughan and Tim Yeager, 2004). Such stance has been confirmed by appearance of various innovating products and entities which compete on the financial market in order to produce and offer complex financial products. The banking industry seems likely to include both traditional and complex activities for some time to come.

According to the theory, increased diversification by combining traditional and complex activities imposes reduction of the risk. Theoretically, bank can benefit from diversification if parts of interest income (which result from the traditional activities) and fee based income (which results from complex activities) are negatively or slightly correlated. While this argument is clear from the traditional point of view, many authors has provided the opposite standing that fee income may increase volatility (De Young and Roland, 2001). The practice showed the latest financial crisis from 2007 clearly indicate that forcing complex bank activities could increase the riskiness of the bank and the volatility of the bank income, heading towards destabilizing the bank and the whole banking sector. In practice there is a weak consensus among bank researchers that the revenues from noninterest bank activities tend to be more volatile than revenues from interest banking business. Hence, the major question arises from such relationship asking whether complex banking based on fee-based banking activities played a significant role in distressing banking stability during the latest financial crises (De Young Robert, Torna Gokhan, 2013).

Unlike the banks in developed countries the banks in the transitional economies are based mostly on the traditional activities i.e. the interest income Companies in transitional economies are highly dependent on the bank credits and their high interest rates. Such influence increases by the deficiency of alternative sources of financing the businesses and dominant role of the bank credits in access to finance. The negligible influence of the financial crises of 2007 in the transitional economies raise the question if traditional banking and lack of complex instruments secured minor influence of the financial crises effects. Such standings are opposite to some empirical findings (Alessandra Bonfiglioli† and Caterina Mendicino, 2004) that suggests that the cost of crises is higher in countries with bad institutions, as well as in the closed ones, while they have less impact in liberalized economies and in countries with higher quality of institutions.



The paper will contribute in enriching the existing literature with the insights if negative effects of the financial crises from year 2007 are mostly focused toward economies with complex financial sector whereas economies with traditional financial sector are not so affected. The study itself seeks to enlighten the role of complexity of the banking sector in spilling over the effects of financial crises. The obtained results tends to enlighten if transitional economies should map the financial institutions from developed economies, having in mind the negative effects from financial crises of 2007 and later with inevitably utilization of complex bank instrument which generate noninterest income. Or else the finding should confirm the hypothesis that mapping the banking institutions from developed economies is not essential, having in mind the minor negative financial effects in transitional economies during the crises with lag of nearly 2 years?

The paper is organized in the following manner: Section two represent literature review regarding previous studies related to the topic, section three is focused on complexity of banking sector in developed economies and effects of the crises, whereas section four identifies complexity or traditional stance of banking sectors in transitional economies including the empirical analysis of the variables influencing bank profitability in banking in Republic of Macedonia, section five provides the main conclusions and policy recommendations.

## **2. LITERATURE REVIEW**

The dilemma regarding the banking performances has been treated by several studies, whereas some of them included the aspect of financial crises. Moreover the finding regarding the influence of the bank complexity on its stability, profitability and particularly the connections of complexity and bank profitability in the period of crises are mixed.

As a sign of bank complexity, bank Non-interest income is becoming increasingly important because decreasing trend of net interest income in the last years and its pricing pressure (MacDonald and Koch, 2006:64). Some authors specify that benefits by creating complex and diversifies banking sector are offset by the cost of increased exposure to the non-interest income, specifically by the trading income volatility (Saoussen Ben Gamra, Dominique Plihon, 2011). On contrary, many researchers indicate that banks are more stable if they have a diversified income structure with combining income extracted by interest and non-interest income (Köhler Matthias, 2013). Furthermore, same research clearly demonstrate that decomposition of non-interest income into fee, commission and trading income shows that bank stability depends heavily on fee and commission income. Trading income although more volatile component, has no influence on the bank stability

(Köhler Matthias, 2013). Such stance has been also proved by De Young Robert, Torna Gokhan, 2013 who find that noninterest income such as investment banking, insurance underwriting and venture capital increased the probability of bank failure, whereas Fee-for-Service income from nontraditional activities such as insurance sales, loan servicing and securities brokerage actually reduced the probability that banks failed during the crisis. Such features arise by risk characteristics of these two sets of activities. Bentum (2012) searching the profitability of commercial banks in Ghana, found out that ratio of noninterest income to gross income have had adverse effect on profitability as it increased in both pre and post financial crisis periods.

The highest earning banks will be those that generate the increased share of non-interest income in the operating revenue (MacDonald and Koch, 2006:120). Alper & Anbar, 2011 in their research in Turkey inevitably proved that the non-interest income/assets has a positive and significant effect on ROA i.e. greater bank activity diversification positively influence returns.

Opposite of this findings, Demircuc-Kunt and Huizinga (1999) indicate that banks with a relatively high share of non-interest earning assets are less profitable. Hence, Stiroh. J. Kevn, (2006: 1351) demonstrate that the banks that are more reliant on activities that generate Non-interest income do not earn higher average equity returns, but are much more risky as measured by return volatility and market betas. In the case of Islamic banks in Malaysia, the Non-interest activities did not play an important role to generate the bank return. Therefore, it is expected to affect the profitability negatively (Nur Azura Sanusi and Abd. Ghafar b. Ismail, 2005).

In some research noninterest income do not show significant relevance to the net interest income. Hence research for Indonesian banks demonstrate non-interest income to total assets have no effect on bank profitability (Syafri, 2012). Such mixture of finding imposes essential need of further research of this significant bank activity which increase its relevance in the last two decades, particularly after the financial crisis.

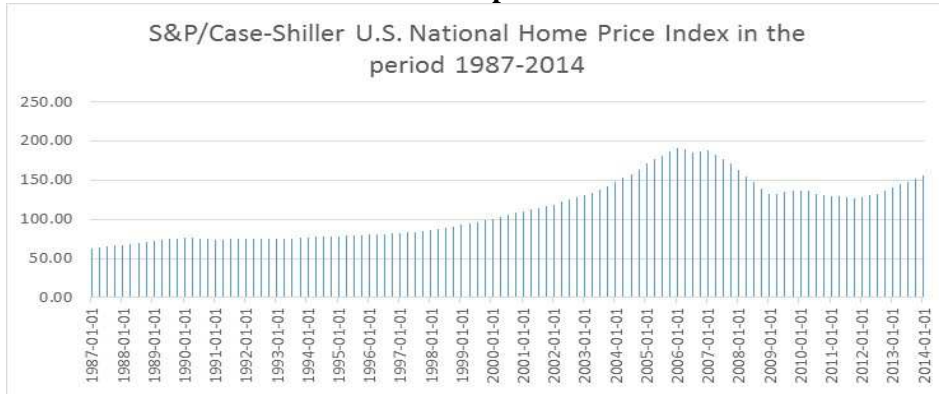
### **3. COMPLEX BANKING SYSTEMS AND FINANCIAL CRISIS (2007)**

The general trend of the banking industry in developed country is evolution from core traditional banking activities toward the complex activities. By one side, the arguments indicate that traditional banking (deposit taking and loan making activities of the banks) is losing its influence, yet the industry as a whole is not decreasing its participation in the GDP. This evidence arise by the permanent

process of reshaping the banking industry toward complex bank activities such as derivatives, hedging the risk and other complex trading strategies to hedge the risk.

The latest financial crises, originated in the housing market in USA in summer 2007 was mainly caused by new financial products. The Home Price index in the USA in the period 1987 -2014 is presented on the Graph 1.

**Graph 1.**



Source: Upon data from <https://research.stlouisfed.org/fred2/series/USCSCOMHPISA/downloaddata> (accessed 17.07.2014)

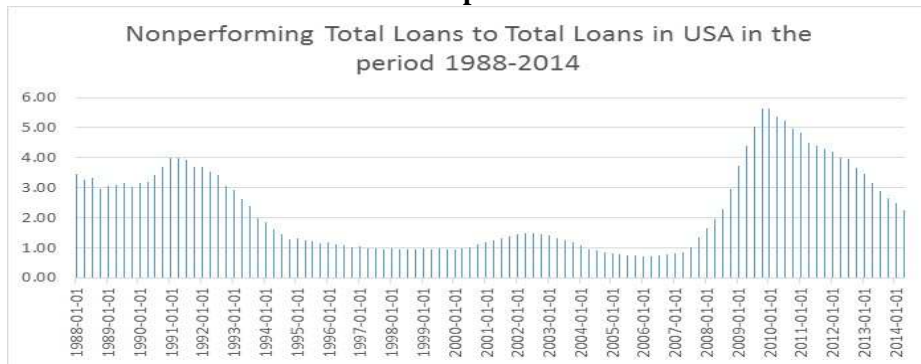
The Graph 1 clearly indicate the rapid rise in Home price index from period 2000-2007, whereas in the following years the Home Price index is demonstrating speedy decline as result of the crises. Surprisingly, according to some authors there is not prove that residential mortgage-backed securities played a significant role in determining banks failure. In estimating CAMELS approach for revising bank soundness, they prove its utilization, however they doubt the current system of regulatory risk weights and concentration limits on commercial real estate loans (Cole Rebel, White Lawrence, 2012).

The practice showed that regular methods of injecting liquidity by the Federal Reserve Bank in USA and European Central Bank, i.e. decreasing the referent rates, did not give expected results. Financial crises in USA caused by utilization of the new financial products such as collateralized debt obligations (CDO) and securitization (Carmen M. Reinhart and Kenneth S. Rogoff, 2008), imposes the need for identifying new tools and policy to cope with it. Hence the major question which arises is does the utilization of new innovative products (CDO and securitization) in financial system aggravate a new type of financial crises, in which “old methods” cannot give meaningful result? Does new financial products and problems arising from their practical utilization require development of new

instruments and regulation by financial authorities, which are different than those identified by the findings for previous financial crises? Hence if we want to map the financial institutions and transfer its experience in transitional economies, one should be aware about the consequences and instruments for coping with all risks and challenges arising from its utilization. Modern innovative products (CDO and securitization) are far more utilized in the developed countries then in transitional economies. Such stance provide different base and impact of these new innovative instruments on the financial crises.

The results of financial crises was expressed by the rapid increase of the nonperforming loans as share of total loans in USA as given in the Graph 2.

**Graph 2.**



Source: Calculated upon

<https://research.stlouisfed.org/fred2/series/NPTLTL/downloaddata> (accessed on 01.08.2014)

As in the case of Home Price Index which showed rapid rise after 2007, the rate of nonperforming loans in USA also sharply increased from 2007. Stabilization effects and decrease in the Nonperforming loans was clear after year 2009, and such trend is continuing until today as indicated in the Graph 2. As previous showed, the crises directly imposes negative effect on the quality of the bank portfolio without any time lags.

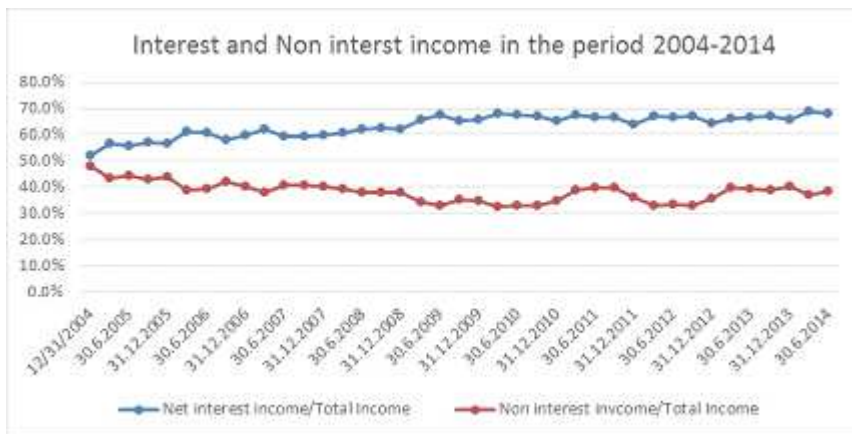
#### **4. TRADITIONAL BANKING AND INFLUENCE OF FINANCIAL CRISES OF 2007: CASE OF THE REPUBLIC OF MACEDONIA**

##### **4.1 Current situation of the banking sector in the Republic of Macedonia: trends and analysis**

Banking in transitional economies influenced by variety of changes has recently experienced a decline in its traditional activities, and potential urge to increase complex bank operation, leading banks to diversify their operation. At least four forces are responsible for bank shift into non-traditional activities such as domestic deregulation, technology innovations and changes in corporate behavior and banking crises (Saoussen Ben Gamra, Dominique Plihon, 2011). This is a quite huge shift having in mind that it is reasonable to assume that banks in the countries in transition are primarily traditional oriented. There are not any expectations that the banks with higher Interest income/lower Non-interest income (traditional oriented) are more profitable then the banks with less interest income/higher non-interest income (complex banks).<sup>2</sup>

Banking sector in Republic of Macedonia holds the attribute of traditional banking industry with dominance of the credit activities, hence the major input in the Net income of the banks is represented by Interest income. Although the bank are steady trying to increase their efficiency and reduce the Net interest income, it still holds the dominant share in the total bank income. The trend of interest and noninterest income as a share of total income in the period 2004-2014 can be seen on the Graph 3.

**Graph 3.**



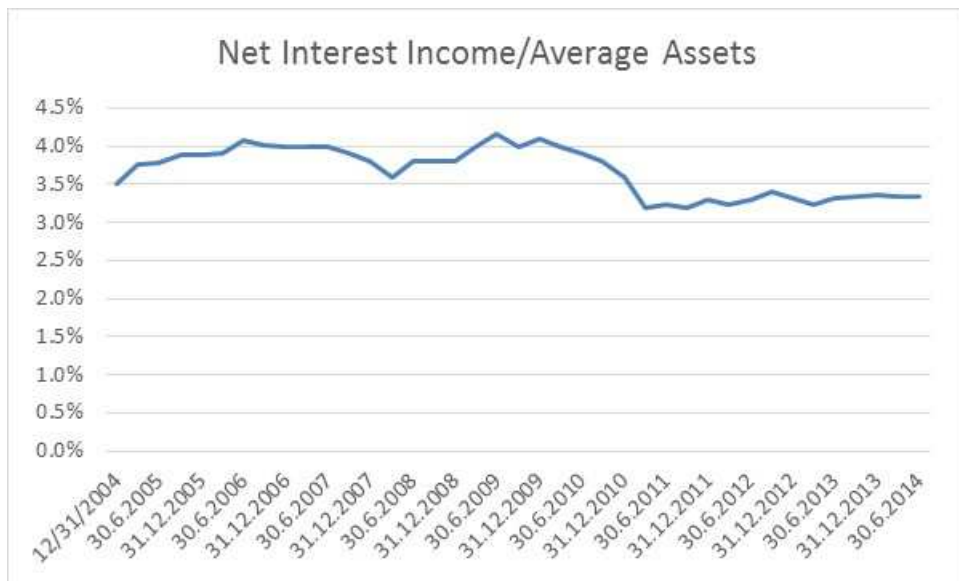
Source: Calculated upon Annual Report on Banking System in the Republic Macedonia. NBRM. 2004-2014.

Hence if banks in Republic of Macedonia are mapping the operation of developing banks, they would likely need to transfer its operation from traditional toward

<sup>2</sup>For possible classification of the traditional/complex banks consider Poposka K. et al. (2004: 10-11).

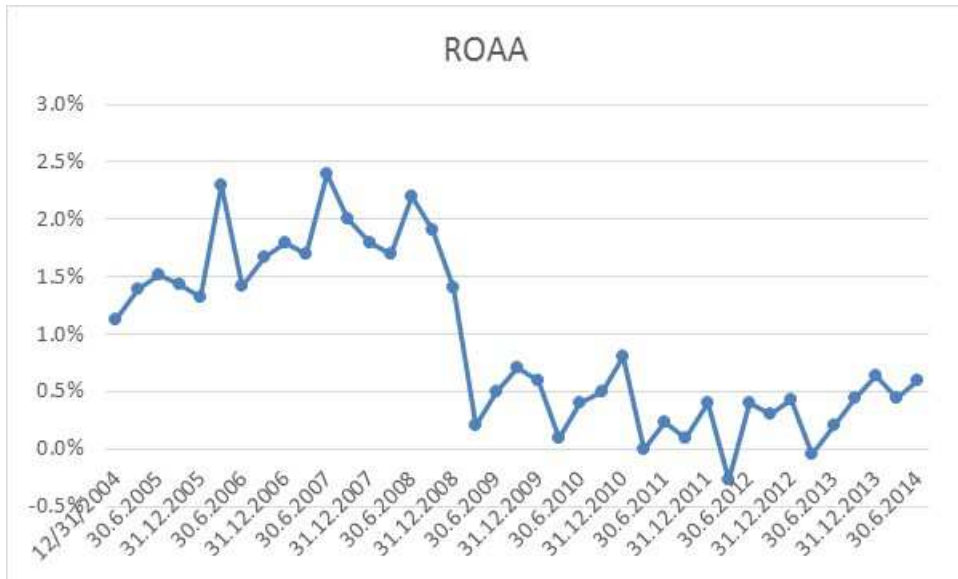
complex banking, having in mind the influence of complex banking on profitability, diversification and stability. In order to analyze the influence of the financial crises of 2007 on the net interest income, we consider its influence on the net interest income/average assets (Graph 4).

**Graph 4.**



Source: Calculated upon Annual Report on Banking System in the Republic of Macedonia. NBRM, 2004-2014.

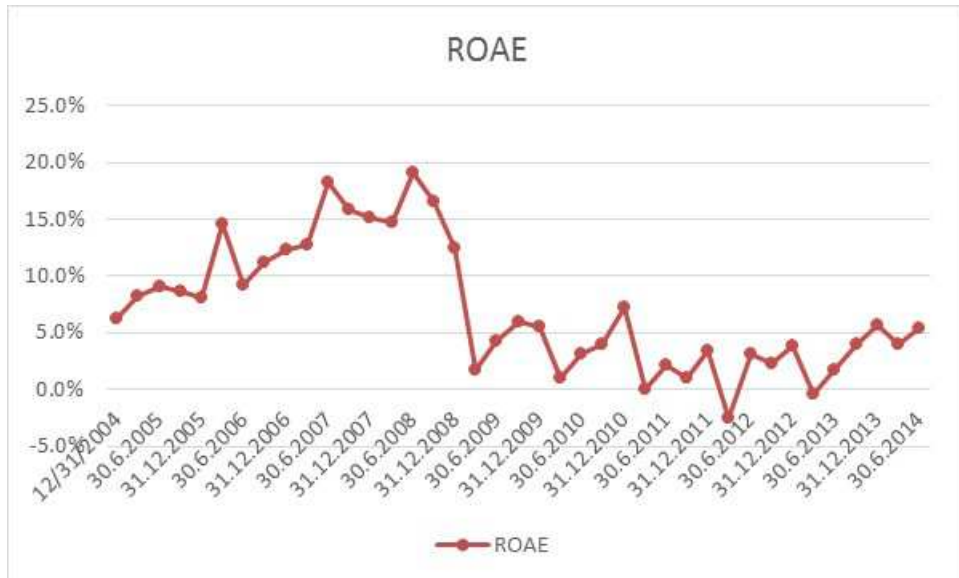
Graph 4 demonstrate that during the crises in the period 2007-2009 banking sector in the Republic of Macedonia increased the reliance on net interest income as a safe income and parameter that secure banking stability. Hence, the main focus on bank operation is profit generating and banking policy should focus toward activities which are profit generating such as interest income activities which are quite profitable, having in mind high interest rate margin. In order to perceive the bank profitability prior and after the financial crises in the Graph 5 and 6, we present the trend of ROAA and ROAE, respectively for the period of one decade.

**Graph 5. ROAA in Banking Sector of Macedonia in the period 2004-2014**

Source: Annual Report on Banking System in the Republic of Macedonia in 2004-2014. <http://nbrm.mk/default.asp?ItemID=3F87CA7F266B5949A9457D3EB384C218> (accessed 01.09.2014).

As indicated in the Graph 5, decreased trend of ROAA starts from mid-2008 and reaching its lowest level in mid-2009. The same conclusion can be observed by analyzing Return on Average Equity (ROAE) in the same period as indicated in the Graph 6.

**Graph 6. ROAE in Banking Sector of Republic of Macedonia in the period 2004-2014**



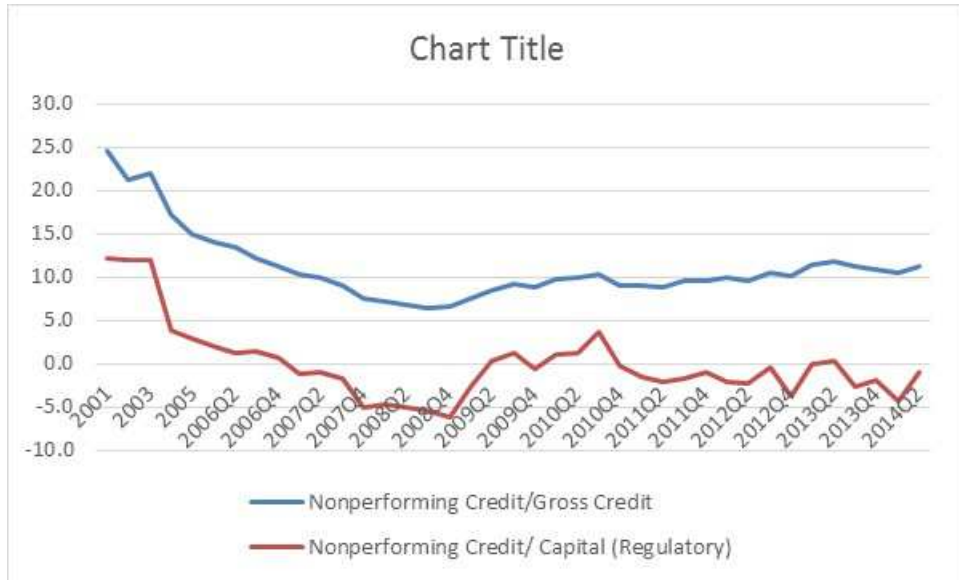
Source: Annual Report on Banking System in the Republic of Macedonia in 2004-2014  
<http://nbrm.mk/default.asp?ItemID=3F87CA7F266B5949A9457D3EB384C218>

As previous determined, ROAE is also indicating the decrease from mid-2008 and reaching its lowest point in the 2009, which confirms the previous statement that effects of the financial crises in Banking Sector of Republic of Macedonia were observed with time lag.

The same conclusion can be observed in the Graph 7 by observing the trend of nonperforming credits/gross credits and nonperforming credits/capital as indicator of quality of bank assets and the trend prior and after the latest financial crisis.



**Graph 7. Trend of Nonperforming credit/gross credits banking sector of RM in the period 2001-2014.**



Source: Annual Report on Banking System in the Republic of Macedonia in 2004-2014. <http://nbrm.mk/default.asp?ItemID=3F87CA7F266B5949A9457D3EB384C218>

Graph 7 indicate that nonperforming credit increase its share in gross credits from mid 2008 and since then we cannot make a firm conclusion that the trend shows steady decrease.

## 4.2 Data and methodology

In order to identify should the banking sector in developed economies be mapped in the banking sector of Republic of Macedonia we urge to identify if profitability of the banking sector clearly depends only of interest income gathered by credit activities or other noninterest income. Although the external variables are important, in the models we gave the main focus on the internal parameters as controllable variables that can be managed with the bank strategy and policy. As depended variable are take ROA and ROE, whereas independent variable are tested as follows:

- Capital adequacy ratio—Presents percentage of banks risk weighted exposures (Tier 1 Capital + Tier 2 Capital / Risk Weighted Assets). It is ambiguous if an increase in the capital adequacy ratio should lead to higher rate of ROA and ROE;

- Capital and reserves/total assets– The ratio of bank capital to total assets. It's expected that an increase in the ratio of capital and reserves in total assets should lead to higher rate of ROA and ROE;
- Highly liquid assets / total assets – Highly liquid assets include cash and balances with central banks, treasury bills and correspondent accounts with foreign banks. The total assets were decrease for the assets in domestic banks. An increase in this variable should lead to an increase in the rate of ROA and ROE;
- Non-performing loans/gross loans – the rate of share of non-performing loans in the amount of gross loans. It's expected that an increase in the share rate of non-performing loans in gross loans amount will lead to decrease of ROA and ROE;
- Noninterest costs/gross income -the rate of share of non-interest costs in the amount of gross income and it is expected that its increase decrease ROA and ROE;
- Net interest income/gross income - participation rate of net interest income in the total amount of income of the banks. Net interest income represents interest income decreased for interest expenses.
- Personnel costs/non-interest expenses – this variable presents the rate of share of employee costs in the total amount of non-interest expenses in the banking sector. It is uncertain how the trend of this variable would effect on ROA and ROE;

The expectations about the individual impact of the identified independent variables on ROA and ROE of the Macedonian banking sector would be confirmed through the application of regression analysis. Subject of the observations are data for the banking sector in RM for the period Q1/2006 – Q2/2014. The model for both dependent variables (ROA and ROE) would be tested by applying the least square method and it could be presented with the following equation:

$$y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + u$$

$b_0 - b_7$  - denote the coefficients of the variables used in the regression model,

$x_1$  = Capital adequacy ratio (CAR);

$x_2$  = Capital and reserves/Total assets (CR/TA);

$x_3$  = Highly liquid assets/Total assets (HLA/TA) ;

$x_4$  = Non-performing loans/Gross loans (NPL/GL);

$x_5$  = Noninterest costs/gross income (NIC/GI)

$x_6$  = Net interest income/gross income (NII/GI);

$x_7$  = Personnel costs/Non-interest costs (PC/NIC);

$u$  =CTOCHASTIC ERROR – random error.

### 4.3. Results and comments

The multiple regression result about the impact of identified independent variables on Macedonian banks ROAA and ROAE are presented in the Table 1 and 2. According to the parameters the following equations should be devised:

$$ROAA = 6.848439 x_0 - 0.475998 x_1 + 0.712730 x_2 + 0.1156669 x_3 - 0.164435 x_4 - 0.024422 x_5 - 0.158380 x_6 + 0.109293 x_7 + u$$

$$ROAE = 73.82264 x_0 - 4.574329 x_1 + 5.764627 x_2 + 0.946853 x_3 - 1.319510 x_4 - 0.229195 x_5 - 1.280898 x_6 + 0.762912 x_7 + u$$

The coefficients  $b_1 - b_7$  represent the impact of independent variables on the dependent variables “ROAA” and “ROAE”.

**Table 1.**

ROAA for Banking Sector in Republic of Macedonia in the period 2006-2014 and regression analysis of the independent variables

Dependent Variable: ROAA

Sample: 2006Q1 2014Q2

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Capital adequacy ratio	-0.475998	0.194733	-2.444357	0.0216
Capital and reserves/total assets	0.712730	0.264039	2.699338	0.0120
Highly liquid assets / total assets	0.115669	0.054211	2.133694	0.0425
Non-performing loans/gross loans	-0.164435	0.094891	-1.732879	0.0950
Noninterest costs/total income	-0.024422	0.019236	-1.269618	0.2155
Net interest income/gross income	-0.158380	0.034429	-4.600210	0.0001
Personnel costs/non-interest expenses	0.109293	0.065879	1.658986	0.1091
C	6.848439	5.310319	1.289647	0.2085
R-squared	0.892835	Mean dependent var	0.860346	
Adjusted R-squared	0.863983	S.D. dependent var	0.768381	
S.E. of regression	0.283382	Akaike info criterion	0.518286	
Sum squared resid	2.087946	Schwarz criterion	0.877429	
Log likelihood	-0.810856	Hannan-Quinn criter.	0.640764	
F-statistic	30.94526	Durbin-Watson stat	1.968003	
Prob(F-statistic)	0.000000			

As given in the Table 1, variables identified as significant for the bank profitability are Capital adequacy ratio, Capital and reserves/total assets, Highly liquid assets/total assets, Non-performing loans/gross loans and Net interest income/gross income. Through the values of coefficients of determination  $R^2$  presented in Table 1 it can be concluded that the dependent variable is 89% determined by the presented independent variables. Since the focus of our topic is traditional or complex banking, we focus on the influence of net interest income/gross income which demonstrate a negative statistical significance on ROAA. This means that the banks with higher provisions and other charges income, i.e. banks that practice more complex than traditional banking are seems to be more profitable. Such result imply that banking sector in RM is moving toward complex banking seeking for higher profitability in line with the previous indicated trend of slowly steady increase of noninterest banking activities in the latest years.

**Table 2.**

ROAE for Banking Sector in Republic of Macedonia in the period 2006-2014 and regression analysis of the independent variables

Dependent Variable: ROAE

Sample: 2006Q1 2014Q2

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Capital adequacy ratio	-4.574329	1.603585	-2.852565	0.0084
Capital and reserves/total assets	5.764627	2.174299	2.651258	0.0135
Highly liquid assets / total assets	0.946853	0.446413	2.121024	0.0436
Non-performing loans/gross loans	-1.319510	0.781408	-1.688632	0.1033
Noninterest costs/total income	-0.229195	0.158403	-1.446908	0.1599
Net interest income/gross income	-1.280898	0.283514	-4.517940	0.0001
Personnel costs/non-interest expenses	0.762912	0.542499	1.406291	0.1715
C	73.82264	43.72923	1.688176	0.1033
R-squared	0.879469	Mean dependent var	6.900757	
Adjusted R-squared	0.847019	S.D. dependent var	5.966304	
S.E. of regression	2.333588	Akaike info criterion	4.735016	
Sum squared resid	141.5865	Schwarz criterion	5.094159	
Log likelihood	-72.49526	Hannan-Quinn criter.	4.857494	
F-statistic	27.10185	Durbin-Watson stat	1.999094	
Prob(F-statistic)	0.000000			

As given in the Table 2, variables identified as significant for ROAE are Capital adequacy ratio, Capital and reserves/total assets, Highly liquid assets\total assets, and Net interest income/gross income. Through the values of coefficients of determination  $R^2$  presented in Table 2 it can be concluded that the dependent variable is nearly in the 88% determined by the presented independent variables. The negative significance of the net interest income/gross income confirm the previous assumption that complexity may secure higher profitability. Such result imposes reassessing the current bank policies and strategies toward higher input of noninterest income in total income, considering the implication of such structure on bank stability and diversification.

## 5. CONCLUSION

The banking industry in developed economies is moving further away from stylized version of intermediation between depositors and borrowing and shifting toward complex banking in the last few decades. The paper indicate that developed countries have rapidly shifted toward complex and innovative instrument, albeit such trend has been diminished with the last financial crises from 2007.

The evidence in the papers support the findings that banking sector in Republic of Macedonia is still focusing on traditional activities as research shows that majority of income in the banking sector originate from traditional credit activities. Such position of the banking sector contribute to the minor influence of the latest financial crises from 2007 on the banking performances and time lag of nearly 2 years. However the finding of empirical analyses of the banking sector of Macedonia indicated that net Interest income has negative significance on ROAA and ROAE. Such results might means that saturation of the net interest income in total bank income, might force banks to seek increment of its profit by increasing its reliance on the non-interest banking activities.

Although the focus of traditional banking secured the safety net in direct effects of the latest financial crises, by time lag and providing added time banks to adjust and prepare safety measures in securing safe banking, yet the trend on increasing the complexity in the banking sector, as proven in the developed countries, most likely is inevitable and will continue. Though the paper demonstrate that traditional banking imposes sort of safety net for bank crises, at least with minor direct influence, yet the research showed that the process of complexity in banking is inevitable and indispensable. The forthcoming research should focus on the structural analyses of each type of Non-interest activity in order to identify the key elements with major impact on bank profitability. Further diversification of banking sector toward complex activities would be guide for the bank managers for change in their policy and focus on operation.

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# EXCHANGE RATE REGIMES AND MACROECONOMIC PERFORMANCES IN EMERGING EUROPEAN ECONOMIES

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## *Abstract*

*In this work we contribute to the ongoing debate on impact of choice of exchange rate regime on macroeconomic performances. We discuss impact of exchange rate regime on three indicators of macroeconomic performance - real growth, current account and inflation - with particular focus on stylized facts in selected Emerging European Economies (EEE). Results firmly confirmed our expectation on size and direction of impact, with respect to change of economic circumstances after outbreak of the global crisis in 2008.*

**Key words:** *exchange rate regime, inflation, current deficit, real growth, Emerging European Economies*

## 1. INTRODUCTION

After the collapse of Bretton Woods system of fixed exchange rates in which currencies were pegged to the dollar, rising uncertainty about impact of adopted exchange rate regime on macroeconomic performances has occupied a lot of attention in economic research. Most of concerns in empirical research revolve around two questions: how exchange rate regimes should be classified to capture *de facto* behavior of monetary authorities (opposite to *de jure* announced regime) and whether systematic relationship between exchange rate regimes and macroeconomic performances exist?

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Various empirical studies offered different answers on these questions, regarding the countries or period encompassed by sample, methodology applied and chosen classification of exchange rate regimes. On the other side, change of economic circumstances often confronted theoretical beliefs on optimal choice of exchange rate regime, so the attitude on desirable exchange range system was changing during times. One of the notable examples of these controversies is illustrated by belief in optimality of so-called “two-corner” solution, which states that only extreme cases of regimes, like hard peg or free float, leads to stability of exchange rate regime; accordingly, countries will tend to adopt some of these regimes over time. Nevertheless, two empirical studies, provided by the same institutions in time span of only two years, announce quite opposite results; Bubula and Otker-Robe (2002) find evidences that number of adoption of intermediate regimes is shrinking, while Rogoff et al. (2004) finds that intermediate regimes show persistence in durability. In reality, prior to Asian Crisis in late nineties, fixed corner solution was popular among emerging economies due to expectations of higher investments and trade. However, liberalization of capital controls triggered a few currency crises and since 1998, the IMF has recommended to emerging market economies to move toward free-float corner and to combine free float and inflation targeting in order to decrease the probability of a currency crisis (Ito, 2007).

Similar to illustration of bipolar view, empirical evidences on relationship between exchange rate regime and macroeconomic performances are controversial and ambiguous, and impact of chosen regime on other important economic variables remains to be a subject of long-lasting debates and controversies among economists. In this work we contribute to the debate by discussing impact of exchange rate regime choice on three indicators of macroeconomic performance - real growth, current account and inflation - with particular focus on stylized facts in selected Emerging European Economies (EEE). Structure of the work is given as follows. First we discussed proposed classification schemes trying to capture de facto exchange rate regimes across countries. Next three sections provide brief literature overview of existing work analyzing effects of exchange rate regime on real growth, current account and inflation, respectively. Eventually, last section presents results of our own empirical analysis.

## **2. CLASSIFICATIONS OF EXCHANGE RATE REGIMES**

In the most general sense, FX rate regimes could be classified to fixed, intermediate and floating. Severe cases of fixed regime, like currency union, or free floating FX regime are often seen as the “corner” solutions, while exchange rate targeting with crawling band is considered as intermediate solution. Before seventies, fixed regimes were globally prevailing form of exchange rate regimes,

like Specie Gold Standard (1880-1914) or Gold exchange standard (1919-1945)<sup>4</sup>. After Bretton Woods agreement in 1946, system of fixed (but adjustable) exchange rates in which currencies were fixed to the dollar was dominating form of exchange rate regime. After dismantling of Bretton Woods in seventies, exchange rates have supposedly become flexible (McDonald, 2006). The traditional classification of FX regimes in post-Bretton Woods period is linked to the IMF classification, using eight categories of FX regimes, ranging from currency union at one corner to free floating at second corner: pegged regimes (hard pegs, conventional pegs, horizontal bands), intermediate regimes (crawling pegs, crawling bands, target zones), and floating arrangements (free floats, managed floats). Until 1999, IMF was reporting exchange rate regimes based on *de jure* classification, i.e. official announcement of declared exchange rate regime by the IMF member countries.

Since late 90's, some of the studies like Gosh et al. (1997), Frenkel (1999) and Calvo and Reinhart (2002) have criticized classification of countries according to officially declared exchange rate, as they empirically observed that in reality interventions on exchange rate markets could create considerable differences between *de jure* and *de facto* exchange rate regimes. Typical example of such kind of behavior was restoring of international price competitiveness, when regimes officially declared as fixed underwent through frequent devaluations. These findings emphasized needs for establishing more realistic system of exchange regimes classification and lead to numerous studies on regimes *de facto* coding. Tavlas et al. (2008) systematized all of the *de facto* classifications in two sub-groups: mixed *de jure-de facto* approach and pure *de facto* codings. First group of classifications attempts to determine actual exchange rate regime by adjustment of *de jure* classification with observed anomalies on exchange rate markets, while second group looks for regime independently from official regime declaration.

Notable example of pure *de facto* coding is based on work of Levy-Yeyati and Struzengger (2005), who define 4-regime scheme using cluster analysis, according to the behavior of three classification variables: changes in the nominal exchange rate, the volatility of these changes, and the volatility of international reserves. Among numerous *de jure-de facto* approaches, the most frequently referred are Gosh et al. (2002), Ballieu et al. (2003) and Reinhart and Rogoff (2004) classifications. Gosh et al. (2002) and Ballieu et al. (2003) created *de facto* classifications based on measures of exchange rate volatility: Gosh et al. (2002) uses so-called "z-score", defined as the square root of the sum of the square of changes in the exchange rate and the variance of those changes, while Ballieu et al. (2003) uses exchange rate flexibility index for each country, defined as its degree of exchange rate volatility relative to the group average for each year of our sample

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<sup>4</sup> See, for example, Mooslechner (2008)

period. Reinhart and Rogoff (2004) in their influential paper criticized de facto classifications that relies solely on exchange rate volatility as determinant of regime. They propose new classification scheme (henceforth RR classification) that beside exchange rate volatility considers other parameters of de facto regime, like inflation rate or existence of multiple rates at black market. RR classification consists of six coarse categories: peg, limited flexibility, managed flexibility, freely floating, freely falling and hyperfloating, further separated into 15 fine categories.

### **3. IMPACT ON GROWTH**

Economic theory suggests that nominal variable should not directly affects real variable in the long run. Possible channels throughout which exchange rate regimes can affect growth indirectly are investments and international trade; supporters of this view argue that fixed FX rates enhance investments by reducing policy uncertainty and real interest rates, but on the other side increase protectionism and distort price signaling (Ghosh et al., 1997). Empirical analysis conducted before 2000 relied mainly on descriptive analysis. Baxter and Stockman (1989) concluded, based on a sample of 49 countries, in period 1946-1984, that there is no systematic relationship between real aggregates and FX regime, while Ghosh et al. (1995) showed that there is a slightly higher growth in countries with floating FX regime, based on analysis of 145 countries, in period 1960-1990, and found inconclusive results. Moreno (2000) however found a positive impact of FX regime on economic growth and that countries with pegged exchange rate had higher growth comparing with those with fixed rate. These results are based on the analysis of 98 developing East-Asia countries, in period 1974-1999. The main criticism of all these results was related to the fact that the analysis was unconditional, meaning that other relevant variables, like monetary target control, were not included in the analysis. Additionally, the model used by Eichengreen (2008) is estimated on a sample of 28 industries for 40 emerging market countries using annual data covering the period 1985–2003. The most basic regression shows that the real exchange rate terms are positive, indicating that a real depreciation fosters the growth of industry employment.

The advanced methodology on this subject started to apply with the work of Levy-Yeyati and Sturzenegger (2002) and Edwards and Levy-Yeyati (2003). They used pooled regression on a sample of 183 countries over the post-Bretton Woods period (1974-2000) and found robust evidences that in developing countries less flexible exchange rate regimes are associated with slower growth and greater output volatility, while no significant evidences on impact of regimes on growth in industrial countries has been found in first study, but opposite results in second study. Bleaney and Francisco (2007) found negative correlation between flexible

FX regime and growth, using the sample of 91 developing countries, in period 1984-2001.

Opposite conclusion can be found in the work of Bailliu *et al* (2003). They had a sample of 60 countries, in the period 1973-1998 and by using generalized methods of moments (GMM) conclude that the more flexible FX rates are associate with faster growth. De Grauwe and Schnabl (2004) found the same results, with the same method using the sample of 10 CEE countries, like Eichengreen and Leblang (2003) who used dynamic panel regression analysis on 21 countries, in period 1880-1997. Dubas *et al* (2005) confirm this conclusion and on sample of 180 countries, in period 1960-2002 and found that the countries with fixed FX regimes have, on average, higher growth (apx. 1%) compared with the countries with floating regimes, but these conclusion is significant only for non-industrialized countries.

Third group of studies came up with no effect or inconclusive results. Husain *et al* (2005) used sample of 158 countries, in period 1970-1999, and based on pooled regression found that flexible FX regime do not provide economy growth. No relationship between regime and growth for developed economies can be found in the empirical work of Huang and Malhorta (2004). They used a relatively small sample of 12 developing and 18 developed counties, in period 1976-2001. These results were confirmed by Domac *et al*. (2001), on relatively small sample of 22 transition countries in period of 10 years (they used different period, after 1990, for each county). It is also important to mention the work of Miles (2008) who employs the difference-in-differences method to a set of emerging markets that switched to more flexible currency policies. He use data from countries that had substantial currency intervention and then switched to more flexible rates in period 1998-2000, countries with fixed exchange rates in period 1994-2000 and countries with regimes classified as “fixed” by L-S for the same period as previous. The results indicate that exchange rates themselves exert no significant impact on growth, inflation or output.

The systematic analysis, review of the theoretical and empirical literature offered Petreski (2009) and he concludes that the empirical research offers divergent results. Generally, the issue of endogeneity is not treated at all or inappropriate instruments are repeatedly used. Very few studies pay attention to the capital controls, an issue closely related to the exchange rate regime and only one study puts the issue in the context of monetary regimes.

#### **4. IMPACT ON CURRENT ACCOUNT**

An important aspect of the exchange rate regime is the way of its effect on the balance of payments. Proponents of flexible exchange rates claim that these regimes are more efficient than fixed exchange rates in correcting balance of payments disequilibria. They also underscore that by allowing country to achieve external balance easily and automatically, flexible exchange rate facilitate the achievement of internal balance and other economic objectives of the country. On the other hand, advocates of fixed exchange rate regimes contend that by introducing a degree of uncertainty not present under the fixed rates, flexible exchange rates decrease the volume of international trade and investments and more likely to lead destabilizing speculation and they are inflationary (Domac, Peters and Yuzefovich, 2001).

Descriptive analysis by Domac, Peters and Yuzefovich (2001) implies that countries with fixed exchange rates appear to have higher current account deficits compared to those adopting intermediate and flexible regimes. Contrary to this, in case of transition economies countries with floating regime experience, on average, have higher current account deficits.

Gosh, Terrones and Zettelmeyer (2009) come to the conclusion that large current account reversals very rarely occur under flexible exchange rate regimes and when they happen they involve much lower initial imbalances. Allowing for threshold effects, they conclude that exchange rate regimes seems to be highly relevant for current account dynamics.

Hermann (2009) examine the relationship between the exchange rate regime and the pace of current account adjustment. The panel data set includes 11 catching up countries from central, eastern and south-eastern Europe between 1994 and 2007. The exchange rate regime is measured by a continuous z-score measure of exchange rate volatility. Based on a basic autoregression estimation, the results indicate that a more flexible exchange rate regime significantly enhances the rate of current account adjustment.

Edwards (2004) using panel data set for 157 countries in period 1970-2011 investigated the mechanics of sudden stops of capital inflows and current account reversals. The empirical analysis suggest that countries with more flexible exchange rate are able to accommodate better shocks stemming from a reversal than countries with more rigid exchange rate regimes.

D'Adamo and Rovelli (2014) research analyze the influence of exchange rate regime on country competitiveness, which was represented as export market share

(EMS), or country's total export as a share of world exports. Results shows that the fixed exchange rate is associated with an EMS about 8% lower, and even more rigid regimes (that are not fixed) are associated with lower EMS.

Ghosh et al. (2013), argued Chinn and Wei (2008) findings because they are based on existing regime classification, which do not adequately capture exchange rate flexibility that is relevant to current account adjustment. They used a measure of regimes based on trade-weighted bilateral exchange rate volatilities and establish that more flexible exchange rate regimes are associated with economically and statistically significant faster current account adjustment.

Tippkötter (2010), investigated the impact of the exchange rate regimes on the current account adjustment process. The dataset includes 171 countries for the 1970 to 2008 period. He found monotonic relationship between exchange rate flexibility and the rate of current account reversion, indicating faster current account convergence for more flexible regimes.

Gnimassoun and Coulibaly (2014), analyzed sustainability of current accounts in Sub-Saharan Africa and determining whether this sustainability depends on the exchange rate regime. They rely on formal theoretical framework and recent panel cointegration techniques. Their findings show that sustainability of current account has been lower for countries operating a fixed exchange rate regimes or belonging to a monetary union.

Arratibel et al.(2011) confirms that hard pegs tended to experience relatively larger external imbalances than floaters, by using panel estimations for the period of 1995 to 2008 on the Central and Eastern European EU Member States.

Contrary, there are few research which concluded that there is no relationship between exchange rate regime and current account imbalances. The most important is consider one by Chinn and Wei (2008). In analysis which covers over 170 countries, over the 1971-2005 period authors examined whether the rate of current account reversion depends upon de facto degree of exchange rate fixity measured by two popular indices. They found that there is no strong, robust or monotonic relationship between exchange rate regime and the rate of current account reversion.

## **5. IMPACT ON INFLATION**

The relationship between the exchange rate regime and the inflation rate has long been debated and has been one of the most controversial topics in international

macroeconomics (Yamada, 2013). Predominant view on the relationship between the exchange regime and inflation is that pegged exchange rates contribute to lower and more stable inflation (De Grauwe and Schnabel, 2004). Advocates of the fixed exchange rate regimes usually emphasized that fixed exchange rate regime in countries with capital mobility unrestricted usually helps in achieving greater price stability in several ways: by providing monetary discipline, anchoring inflationary expectations and reducing possibilities of expansionary monetary policy and debt monetizing. For example, Ghosh et al. (1997) argued that fixed regime provides a high commitment to prudent monetary and fiscal policy to avoid political costs of abandoning the peg, while impeding demand for the domestic currency, which reduces the inflationary consequences of expansionary monetary policy. Impact of exchange rate regime in inflation is especially important issue for emerging economies, where nominal exchange rate was typically used to slow down inflation, and one of the main arguments favoring fixed regimes was so-called "fear of floating" (Edwards, 2006). "Fear of floating", first described by Calvo and Reinhart (2002), is characteristic for a large number of countries with *de jure* floating regimes but with frequent interventions at the FX markets.

Many authors have analyzed impact of exchange rate regimes on growth and inflation. While evidence on regime and growth relationship are vague, empirical research seems to support positive impact of fixed regime on stability of prices. Gosh et al. (1997) work was one the first studies which finds that inflation is lower and more stable under fixed regimes on comprehensive dataset of 140 countries. However, it should be emphasized that this findings mostly holds for developing (emerging) economies or countries with lower income. Levy-Yeyati and Sturzenegger (2001) analyze impact of regime on inflation for both advanced and developing countries and work find positive effects of fixed regimes on price stability only in developing countries. Similar results are obtained by Husain et al. (2005) and Coudert and Dubert (2005). Ghosh et al. (2002) and Rogoff et al. (2004) works support the findings that fixed regimes are associated with the low inflation only in lower and lower-middle income countries, while floating regimes are associated with low inflation in upper-income countries.

Furthermore, Tavlas et al. (2008) points out that literature reveals differences in impact of sub-categories of fixed regimes on inflation: first, regimes that underwent "frequent" adjustments in central parity and, for basket pegs, in the composition and/or the weights of the basket, generated higher inflation than did "infrequent" adjusters; second, single-currency pegs, which tend to be easier to verify than other pegs, had lower inflation rates than other-pegged arrangements and third, the harder the peg, the lower the inflation rate.



Although adoption of fixed regime may seem as a better solution at least for developing countries, Gosh et al. (1997) work claims that country with fixed regimes experienced higher volatility of real GDP growth, while Edwards (2006) warns that fixed regimes could end up with currency crisis if real exchange rate is overvaluated.

## 6. EXCHANGE RATE REGIMES, MACROECONOMIC PERFORMANCE AND GLOBAL CRISIS IN SELECTED EEE: STYLIZED FACTS

We focus our empirical analysis on stylized facts regarding macroeconomic performance of selected emerging European countries with fixed and floating regimes, for the periods 2003-2012. Sample of countries encompasses Western Balkan Countries (WBC) and New Member States (NMS), sixteen countries in total. Observed period is subdivided in two periods, pre-Lehman period of economic boom 2003-2008, and post-Lehman period of global recession 2008-2012. Main objective of the analysis is two-fold: to compare whether the difference in macroeconomic performances exists with respect two exchange rate regime, and second, to provide explanation of possible mechanisms that create a difference.

Important issue that arises at the beginning of the analysis is classification of EEE exchange rate regimes. Table 1 presents classification of EEE exchange rate regimes according to two classification schemes: RR for the period 2003-2010 and IMF for the period 2011-2012 (RR classification data are not available for these two years). Table below points out a few interesting facts. First, that classification of RR seems to mostly coincide to the classification of IMF, with one interesting exemption – while IMF scheme placed Poland and Czech Republic as countries with free floating regimes, according to RR no single country achieved free floating regime. Second, that fixed exchange rate regimes dominated in EEE during analyzed period. Third, most of EE countries haven't change exchange rate policy after global crisis outbreak in 2008.

**Table 1 Classification of EE exchange rate regimes**

	2003	2004	2005	2006	2007	2008	2009	2010	2011/12 (IMF)	Bipolar
ALB	10	10	10	10	10	10	10	10	Floating (IT)	Float
BIH	2	2	2	2	2	2	2	2	Currency board (peg to Euro)	Fix
HRV	8	8	8	8	8	8	8	8	Crawl-like arrangement	Fix
MKD	8	8	8	8	8	12	12	12	Stabilized arrangement (Euro)	Fix
MNE	1	1	1	1	1	1	1	1	No separate legal tender	Fix

	2003	2004	2005	2006	2007	2008	2009	2010	2011/12 (IMF)	Bipolar
SRB	12	12	12	12	12	12	12	12	Floating (IT)	Float
BGR	2	2	2	2	2	2	2	2	Currency board (peg to Euro)	Fix
CZE	10	10	10	10	10	10	10	10	Free Floating (IT)	Float
HUN	8	8	10	10	10	10	10	10	Floating (IT)	Float
POL	12	12	12	12	12	12	12	12	Free floating (IT)	Float
ROM	12	12	12	12	12	12	12	12	Floating (IT)	Float
SVK	8	8	8	8	8	8	1	1	EMU	Fix
SVN	8	8	8	4	1	1	1	1	EMU	Fix
EST	2	2	2	2	2	2	2	2	EMU (01/11)	Fix
LVA	8	8	8	11	11	11	11	2	Conventional peg (to Euro)	Fix
LTU	2	10	8	8	2	2	8	8	Currency board (peg to Euro)	Fix

Source: RR database, IMF (2012a), IMF (2013)

Note: Coding of fine RR classification: 1) No separate legal tender; 2) Pre announced peg or currency board arrangement; 3) Pre announced horizontal band that is narrower than or equal to +/-2% 4); 4) De facto peg; 5) Pre announced crawling peg; 6) Pre announced crawling band that is narrower than or equal to +/-2%; 7) De factor crawling peg; 8) De facto crawling band that is narrower than or equal to +/-2%; 9) Pre announced crawling band that is wider than or equal to +/-2%; 10) De facto crawling band that is narrower than or equal to +/-5%; 11) Moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time); 12) Managed floating; 13) Freely floating; 14) Freely falling; 15) Dual market in which parallel market data is missing.

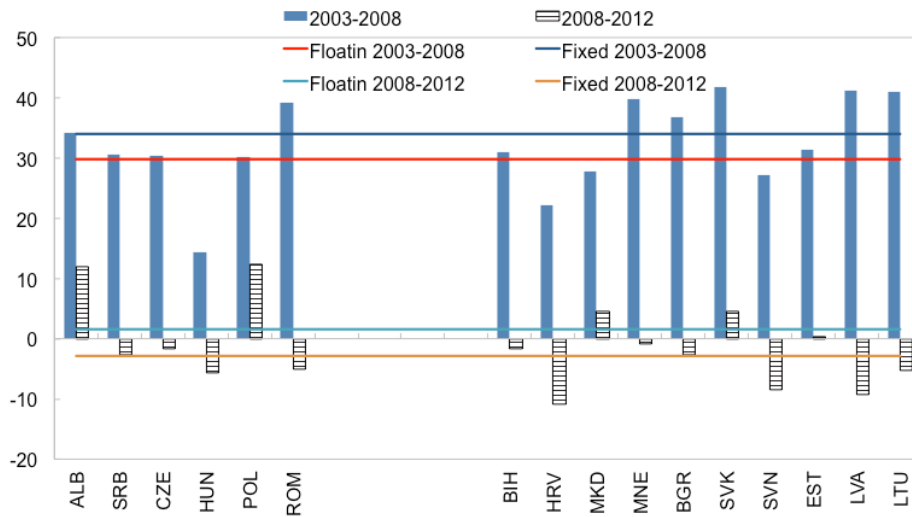
We continue further analysis by bipolar grouping of countries to corner exchange rate regimes, i.e. fixed and floating, according to IMF (2012b). Group of countries with fixed exchange rate regimes encompasses Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Bulgaria, Slovakia, Slovenia, Estonia, Latvia and Lithuania, while group with floating regimes is smaller and encompasses Albania, Serbia, Czech Republic, Hungary, Poland and Romania. Analysis is focus on average performance in real growth, current account and inflation, with respect to the bipolar country grouping. Real growth and inflation are calculated as cumulative change of real GDP and GDP deflator, regarding sub-period of analysis. Based on literature review presented in previous sections, we formed several expectations about impact of exchange rate regime on macroeconomic performances:

- 1) Current account deficit in the eve of the crisis should be higher in countries with fixed exchange regimes due to the larger capital inflows in period of economic boom;

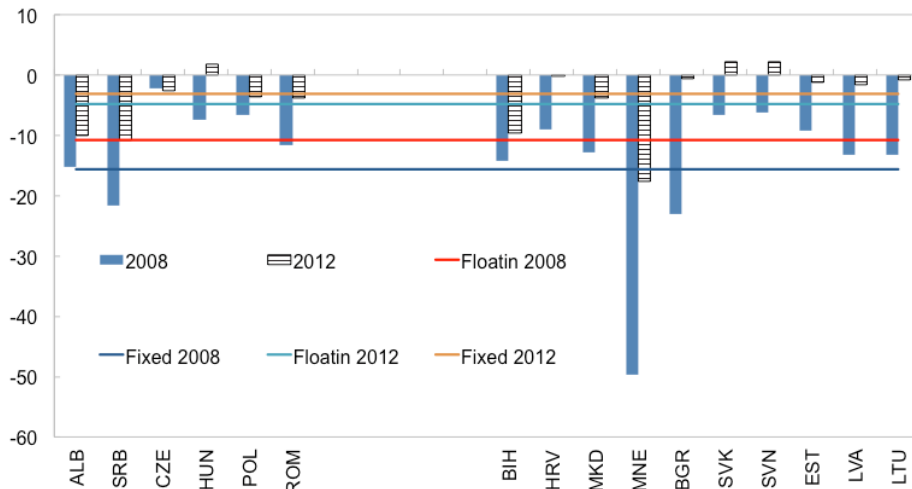
- 2) There should be no systematic relationship between exchange rate regime and growth, which holds prior and after crisis outbreak. However, it is reasonable to expect that in pre-crisis period growth in countries with fixed regimes was higher if 1) is true, while in post-crisis period opposite holds, as possibility of depreciation gives the opportunity to countries with floating regimes to restore international competitiveness;
- 3) Volatility of current accounts with respect should be lower in countries with floating regime as it allows better accommodations and greater flexibility to change in capital flows;
- 4) Inflation rates should be lower in countries with fixed regimes both in pre- and post-crisis period.

Figures 1 and 2 represents the cumulative real economic growth and current account for 16 European emerging countries. Countries with floating regime are presented on the LHS of the figures, while countries with fixed regime are placed on the RHS. Horizontal lines in Figure 1 represent average cumulative real growth for both sub-periods, with respect to regime groups. Similarly, average current account in the eve and in the aftermath of the crisis is presented in Figure 2.

**Figure 1 Impact of exchange rate regime on cumulative real growth**



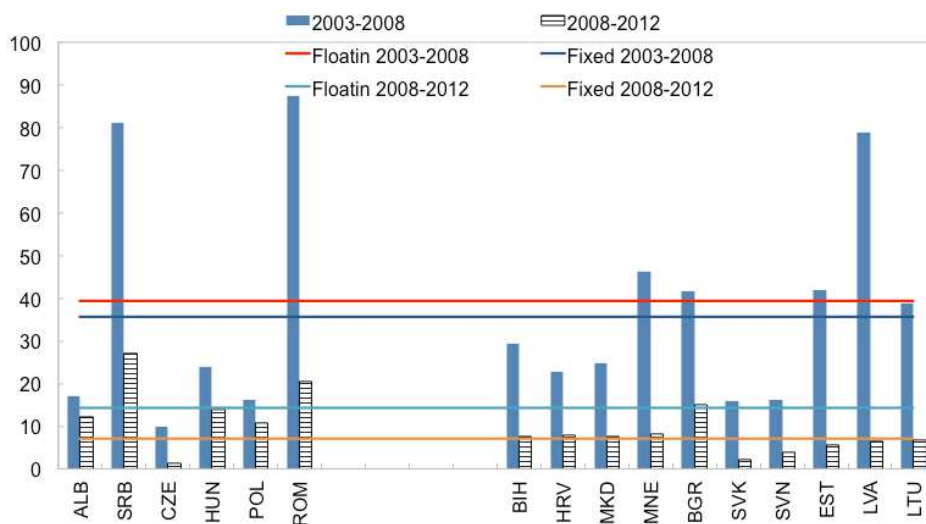
Source: IMF WEO, Author's calculation

**Figure 2 Impact of exchange rate regime on current account balance**

Source: IMF WEO, Author's calculation

Results confirmed our expectations about cumulative growth and current account. Countries with fixed regimes were generally more attractive for expansion of credit activities of foreign banks during the period of boom, for example IMF (2012b) finds that Baltics, Bulgaria, Montenegro, and Ukraine all had annual credit growth at about 10 percent of GDP or more, while many of the countries in the region with more flexible exchange rate regimes managed to avoid a credit boom. Consequently, larger capital inflows allow countries with fixed regimes to run larger current deficits. After a sudden stop of capital, countries with fixed regimes deficits had to correct their current balances to permanent possibilities of deficit financing, which create higher volatility in current balances relative to countries with floating regimes with initially lower deficit. On the other side, capital inflow boosted private demand and investments, which reflected in higher growth of countries with fixed regimes in pre-crisis period, but positive impact of fixed regime growth vanished once when capital inflows stop.

**Figure 3 presents average cumulative inflation for both sub-periods, with respect to regime groups.**



Source: IMF WEO, Author's calculation

Most of the countries with fixed regimes in our sample are either member of EMU or pegged their currencies to EUR, so they lost their monetary independency. Consequently, countries in EMU have low inflation rates determined by ECB, while countries with pegged currencies “import” inflation from EMU. In addition, nominal anchoring in exchange rates helps in keeping expectations on low inflation. While outbreak of the crisis is arguably expected to affect current account and growth, we didn't expect that it would influence impact of exchange rate regime on inflation. Indeed, Figure 3 shows that gap between average inflation in group of floating and fixed regime' countries even widened. This is also in line with the work of De Grauwe and Schnabel (2004) Zdravkovic and Vukovic (2010), who find evidences that stable exchange rates contributes significantly to low inflation in selected EEE.

## 7. CONCLUSIONS

Most of concerns in empirical research tackling impact of exchange rate regime on macroeconomic performances revolve around two questions: how exchange rate regimes should be classified to capture *de facto* behavior of monetary authorities (opposite to *de jure* announced regime) and whether systematic relationship

between exchange rate regimes and macroeconomic performances exist? Various empirical studies offered different answers on these questions, regarding the countries or period encompassed by sample, methodology applied and chosen classification of exchange rate regimes. Empirical evidences from literature review mostly supported view that fixed exchange rate regimes contribute to lower inflation and higher current accounts, while impact of regime on real growth is ambiguous.

In this work we contribute to the debate by discussing impact of exchange rate regime choice on three indicators of macroeconomic performance - real growth, current account and inflation - with particular focus on stylized facts in selected Emerging European Economies (EEE). Sample of countries encompasses Western Balkan Countries (WBC) and New Member States (NMS), for the period 2003-2012. Observed period is subdivided in two periods, pre-Lehman period of economic boom 2003-2008, and post-Lehman period of global recession 2008-2012. Analysis is based on bipolar grouping of countries to corner exchange rate regimes, i.e. fixed and floating, according to IMF (2012b).

Results confirmed our expectations that countries with fixed exchange rate regimes achieved higher growth in pre-crisis period, but also higher current deficits, with capital flows as a main transmission channel. Attractiveness of fixed regimes for expansion of credit activities boosted foreign capital inflows, private investments and demand during pre-crisis period. Yet, sudden stop of capital after global crisis outbreak forced countries with fixed regimes to correct their current deficits. It created higher volatility in current balances relative to countries with floating regimes, and vanishing of positive impact on growth. While outbreak of the crisis is arguably expected to affect current account and growth, we didn't expect that it would influence impact of exchange rate regime on inflation. This is confirmed by empirical analysis, as fixed regime group of countries achieved lower inflation, both prior and after crisis outbreak. This supports view that nominal anchoring of exchange rate or pegging to the currency of low-inflation economy helps in maintaining price stability.

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# IMPACT OF FINANCIAL CRISIS ON THE PERFORMANCE OF INVESTMENT FUNDS IN EUROZONE AND IN REPUBLIC OF MACEDONIA

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Diana BOSHKOVSKA<sup>1</sup>

## **Abstract**

*Investment funds through a professional way of management that involves selecting an appropriate investment strategy and portfolio of assets, invest free resources for citizens and companies with the purpose of achieving higher returns to lower risk level.*

*The paper analyzes the performance of investment funds in the euro area and in the country in order to see the development of investment funds in the past. The analysis is done in terms of change in the total value of the property and structure of the investment fund. The research provides an opportunity to make a comparative analysis of the performance of investment funds in the euro area and in the country, which gave basis to see the functioning of this type of institution in developed capital market and the capital market which is not enough developed, as example of the Republic of Macedonia. At the same time it gives an opportunity to see if the global financial crisis had an impact on the performance of investment funds, i.e. what changes occurred in the investment policy and strategy in these institutions in response to the financial crisis.*

*The research is based on secondary data obtained from publications of the relevant foreign (European Central Bank) and local institutions (National bank of Macedonia and Commission for Securities of the Republic of Macedonia).*

**Key words:** *financial crisis, investment funds, portfolio of investments, euro zone, Republic of Macedonia*

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## 1. INTRODUCTION

The main reason that each year in investment funds invest in hundreds of billions of dollars lies in the fact that through investment funds can achieve much higher profits than classic investment in banks or savings banks. The money invested in funds is not term funds and they are always available to investors. By investing in investment funds provides greater ability to separate (diversification) risk of the investments. The fund is managed by a team of professional experts who manage and lead portfolio fund, adhering to basic rules of profitability, safety and liquidity and enable achievement of lower costs in trading with securities compared with individual venture. Investment funds may invest in domestic and foreign capital markets, further enabling greater diversification of risk. They funds allow individual investors reduce risk by diversifying the portfolio, liquidity, responsible cash management and lower transaction costs.( Brown, F.K, Reily K.C.2002).

The subject of the research paper is the work of investment funds in the past in order to see the effects of the impact of the global financial crisis on investment funds. The analysis is taken from euro area investment funds and in the Republic of Macedonia, which at the same time provides an opportunity to make comparative observations on the effects of the financial crisis.

## 2. ADVANTAGES OF INVESTING IN INVESTMENTS FUNDS

Investment funds as a kind of financial institution differ from other types of financial institutions such as banks, savings and others, that come up to the financial assets through deposits from the corporate sector and the household sector and place in the form of loans as the main source of funding. In contrast to, investment funds to funds come through the issuance of stocks and shares, and place in a number of different assets (stocks, shares, bonds, deposits, etc.). The diversification of the means enabling the diversification of risk, but also creates an opportunity for increased return on investment.

The advantages of investing in investment funds are numerous, but as important would mention: (Bodi Z., Kejn A., Markus A.,2009)

- Pooling - Investment Fund collects funds from a number of individual investors in the market and then act as a major investor in making favorable conditions allows the investment of those who would have as an individual;
- Diversification - an investor is limited to the lower part of the stock or bond (unless it has a great amount of money). The investment fund owns many different securities. If some of them would have dropped the price, the remainder of the securities would reduce the decline in the value of the

investment fund or would completely annulled. With diversification reduces the risk of investment;

- Professional Management - the majority of investors has free funds, but lack the knowledge or time to monitor developments in the market. The investment fund has a team of professionals (portfolio managers) who constantly analyze and monitor the trading of securities on the capital market;
- Liquidity - investors to the money from the investment fund can come in a very short period of time.

### 3. PORTFOLIO STRUCTURE OF INVESTMENT FUNDS IN THE EURO ZONE

In order to see the development and operation of investment funds in the euro zone as a source of data used database of the European Central Bank. The analysis refers to the period 2006-2013 year, which at the same time provides an opportunity to see how is the impact of the global financial crisis on the performance of investment funds in the euro area. The analysis included only those member states of the European Union that have adopted the euro as the national currency.

**Table 1. Analysis of the assets of investment funds in the euro zone for the period 2006-2013 (in billions euros)**

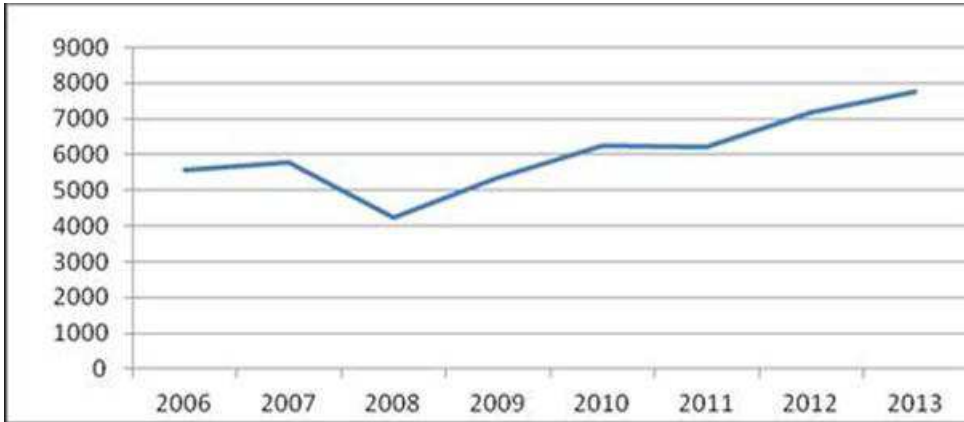
		Deposits*	Securities other than shares	Shares and other equity	Investment fund shares	Fixed assets	Other assets	Total
2006	value	321	2006	2022	671	188	344	5552
	%	5,8	36,1	36,4	12,1	3,4	6,2	100
2007	value	353	1994	2074	783	191	385	5780
	%	6,1	34,5	35,9	13,5	3,3	6,7	100
2008	value	350	1704	1134	566	196	293	4243
	%	8,2	40,2	26,7	13,3	4,6	6,9	100,0
2009	value	344	2077	1670	708	208	355	5362
	%	6,4	38,7	31,1	13,2	3,9	6,6	100,0
2010	value	363	2360	1982	862	238	438	6243
	%	5,8	37,8	31,7	13,8	3,8	7,0	100,0
2011	value	420	2507	1736	841	237	488	6230
	%	6,7	40,2	27,9	13,5	3,8	7,8	100,0
2012	value	476	2968	1986	963	247	540	7181
	%	6,6	41,3	27,7	13,4	3,4	7,5	100,0
2013	value	508	3099	2224	1065	251	621	7768
	%	6,5	39,9	28,6	13,7	3,2	8,0	100,0

\*Beginning by 2009 in that class of assets are including the loan claims

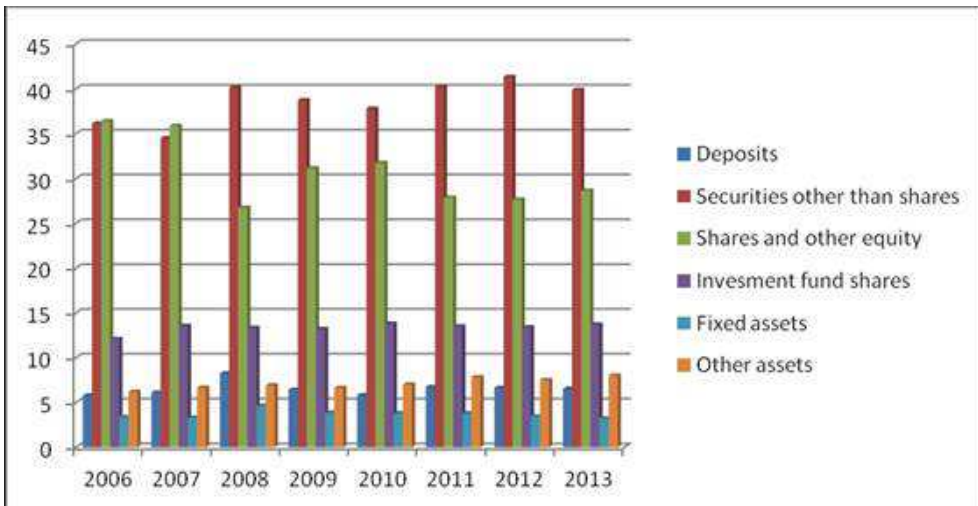
\*\*Data for 2013 are estimated together with data for Q3

Source: ECB Reports for 2007, 2008, 2009, 2010, 2011, 2012, 2013 year.

**Chart 1. Trend of total assets of investment funds in the euro area for the period 2006-2013**



**Chart 2. Structure of assets of investment funds from the euro zone for the period 2006-2013 ( in % )**



From the data in Table 1 can be seen that the total assets of investment funds in the euro area in the period 2006-2013 are in constant growth, so that in 2013 the funds were increased by 40 % compared with 2006. The only exception is 2008 where decreased and the lowest value of assets in the analyzed period. This is primarily due to the impact of the financial crisis and its negative impact on financial markets in the world, and therefore refrains from investing of the entities, and in that sense of the investment funds. Yet such restraint is a short one, with that already in 2009 have seen repeated trend of increasing assets of investment funds, but lower than 2006 and 2007.

In view of the structure of the assets the share of the Securities other than shares is the highest, excluding 2006 and 2007 when there is slightly greater share of Shares and other equity in respect of Securities other than shares. This is primarily due to the impact of the financial crisis and the change in the investment policy of investment funds to investing in less risky assets such as bonds. Also in 2008, leading the conservative policy of investment funds as a response to the global financial crisis contributed to a higher share of deposits and fixed assets to total assets in the this year compared to other years (8.2 % and 4.6 % speaking respectively). Leading conservative policy of investing by investments funds can also be seen and comparing data between 2006 and 2013, based on that analysis can be seen that in 2013 compared to 2006 Shares and other equity as riskiest assets increased only by 10 %, while the increase in deposits is 58 %, the Securities other than shares is 55 %, with 34 % fixed assets etc.

#### **4. PORTFOLIO STRUCTURE OF INVESTMENT FUNDS IN THE REPUBLIC OF MACEDONIA**

In Macedonia, the first investment fund set up by resident portfolio investors have noticed in 2007. The lack of investment funds in Macedonia for long period, despite the existence of adequate legislation since 2000 is due to several factors. But as key emerging there are two factors:

- Insufficient development of the Macedonian capital market;
- Certain limitations in the law on investment funds, which primarily relate to the amount of principal need for establishing an investment fund and lack of ability to open a closed-end investment funds.

Changes of the Low of Investment Funds (Low on investment funds, Official gazette of Republic of Macedonia) in 2007 reduced the required capital for the establishment of an investment fund. Originally it's required 2,000,000 German marks, but new changes provided capital requirement of 500.000 euros, and the ability to open investment private funds that require basic capital of 50.000 euros.

Also, the increase in turnover on the Macedonian Stock Exchange was an additional factor in the revival of investments funds in the country.

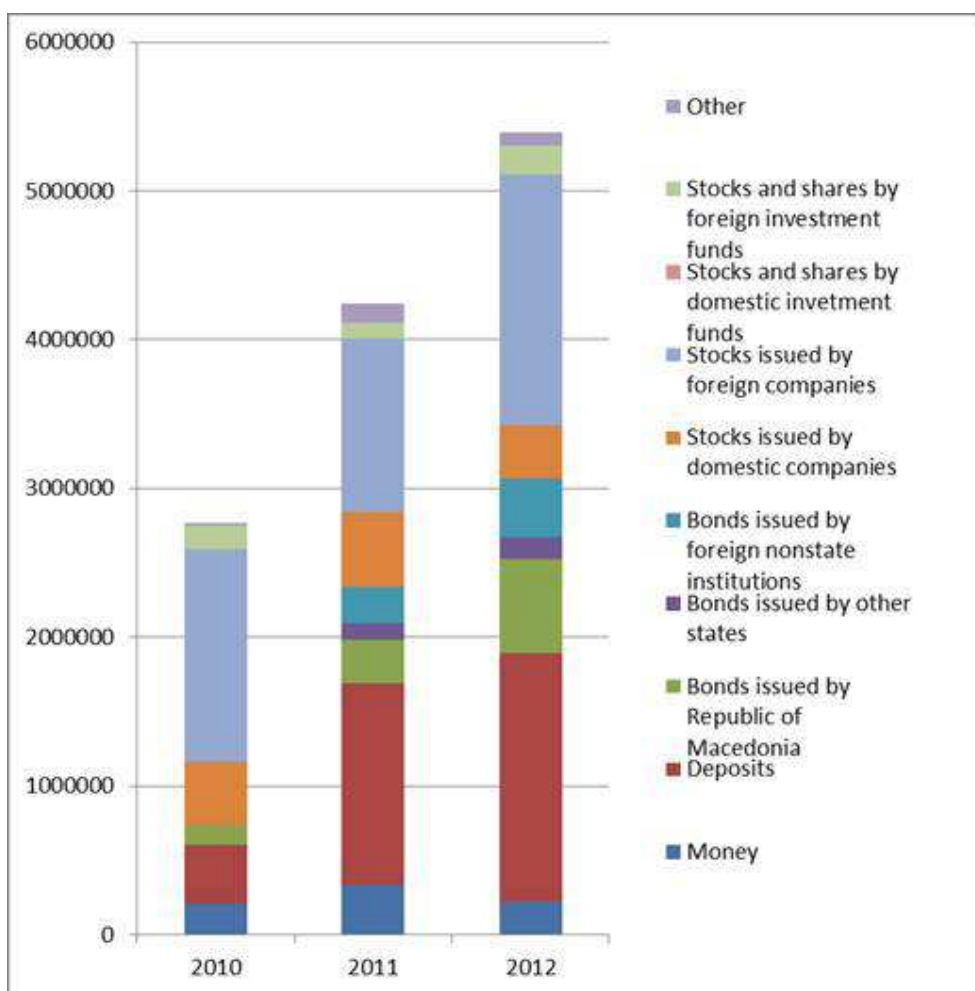
The short period of the existence of investment funds conditions slight participation, and thus negligible influence in the financial sector in Macedonia (see Table 2). Based on the data from Table 2 are perceived that all financial institutions in the country (banks, savings banks, insurance companies, leasing companies, etc.) participation of investment funds in the financial system is the lowest 1 %, but in some years such participation even a lower level.

**Table 2. Structure of the financial system in the country for the period 2006-2012 (in %)**

	2006	2007	2008	2009	2010	2011	2012
<b>Banks</b>	88,91	90,5	89,25	88,6	89	88,5	88,5
<b>Saving houses</b>	1,19	1,17	1,23	1,1	0,9	0,8	0,7
<b>Insurance companies</b>	7,46	4,48	4,24	4	3,7	3,5	3,3
<b>Leasing companies</b>	1,4	2,02	3,07	3	2,5	2,5	1,7
<b>Pension funds</b>	0,63	1,26	1,79	2,9	3,6	4,3	5,3
<b>Pension fund management companies</b>	0,1	0,08	0,09	0,1	0,1	0,1	0,1
<b>Brokerage house</b>	0,31	0,44	0,29	0,2	0,1	0,1	0,1
<b>Investment funds</b>	0	0,03	0,03	0,1	0	0,1	0,1
<b>Investment fund management companies</b>	0	0,01	0,01	0	0	0	0,003

*Source: Adapted from data from reports on financial stability in the country for the period 2006-2012, the National Bank of Macedonia*

In order to see the operation of investment funds in Macedonia because of its short period of existence and function, are analyzed only 3-year period (2010-2012), and the analysis is in terms of the structure of the portfolio of investment funds and assets value of the investment funds.

**Chart 3. Displaying the asset structure of open-end investment funds****Table 3. Asset structure of open-end investment funds (in euros)**

	2010	2011	2012
Money	208561	335807	224781
Deposits	397593	1351251	1667232
Bonds issued by Republic of Macedonia	122903	297720	635131
Bonds issued by other states	/	106576	142364
Bonds issued by foreign nonstate institutions	/	244602	394054
Stocks issued by domestic	433887	505277	359986



companies			
Stocks issued by foreign companies	1429679	1163271	1686860
Stocks and shares by domestic investment funds	/	/	/
Stocks and shares by foreign investment funds	159931	110541	196692
Other	12289	126516	88634
Total value of assets of investment funds	2764844	4241562	5395733
Total liabilities	70214	56274	39375
Total net value of assets of investment funds	2694630	4185288	5356358

*Source: Adapted from data from reports of the Commission for Securities of the Republic of Macedonia for 2010, 2011, 2012*

Based on the data from Table 3 and Figure 3 in the period 2010 - 2012 display that the total value of the assets of the investment fund, and the total net value of investment funds permanent increases, so that in 2012 the total value of the assets of open-end investment funds increased by 95 %, while the total net value in 2012 compared to 2010 increased by 98 %. Despite these increases in the value of assets of the investment fund for a period of three years, undisputed is the fact for the insufficient underdevelopment of this type of fund industry in the country.

In view of the structure of the investment fund displays a change in the structure for the three-year period. In 2010 the structure of the open-end investment funds dominated investment in equities of 67.5 % (while the share of stocks issued by foreign joint stock companies is 51.71 %). In 2011 and 2012, reducing the share of this type of investment in a portfolio at the expense of increased placements of funds in term deposits in domestic banks (31.86 % and 30.90 % , respectively speaking) and buying bonds where is the largest share of bonds issued by the Republic of Macedonia ). The reasons for such changes in the structure of the portfolio incurred due to the influence of the financial crisis in the country, which led to a change in portfolio strategy of the investment funds and introducing a more conservative way of investing funds in order to reduce the risk of the portfolio of investment funds. Compared with investment funds in the euro area in which a change in the policy of investment occurs in 2008 under the impact of the global financial crisis in Macedonia such changes occur only in 2011. The reason for this is primarily overdue reaction of the Macedonian capital market on the impact of the global financial crisis.

## **5. CONCLUSION**

This paper analyzes the investment funds in the euro area and in the Republic of Macedonia in order to see if the global financial crisis had an impact on the operation of investment funds in the past. By recognizing the changes in value of the investment fund are coming to the conclusion that the global financial crisis in investment funds from the euro zone had a negative one-time effect, i.e. only in 2008 decreased the value of the investment fund. Rapid adjustment of investment funds to the new situation by changing the strategy and investment policy (by increasing the share of bonds in the portfolio) allow already in 2009 observed re-growth value of the funds.

The analysis of investment funds in the Republic of Macedonia in accordance to the short period of the existence of this type of institutions, research only applies for 3 years (2010-2012). The total value, and the value of net assets of investment funds for the three-year period is increasing steadily, so that in 2012 compared to 2010 total value of open-end investment funds increased by 95 %, while the total net value in 2012 compared to 2010 increases 98 %. Despite this large increase in the value of the investment funds, their participation in the Macedonian financial system is on negligible low level, which causes the need for increasing the awareness of the population and the corporate sector for the benefits from investments in investment funds, which would contribute greater investments in such financial institutions, and thus to further their development and increase their position in the financial sector in the country.

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**PART V.**

**ENTERPRISES AND MANAGEMENT  
IN THE TIME OF THE CRISES,  
BUSINESS AND FINANCIAL  
RESTRUCTURING**

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# CHARACTERISTICS OF CORPORATE RESTRUCTURINGS: THE CASE OF SERBIA

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Ivan STOŠIĆ<sup>1</sup>  
Dejan ERIĆ<sup>2</sup>

## **Abstract**

*The main objective of this paper is to present contemporary trends in company restructurings with particular emphasis on the analysis of characteristic tendencies in this field in Serbia. The paper is based on mixed research methods: evaluation and systematic analysis of scientific and empirical literature and the results of special field research conducted on a sample of 134 firms in Serbia. The study shows that restructurings have intensified worldwide particularly with the onset of the global financial crisis. When it comes to Serbia, unfortunately, the implementation of this process has been burdened with a large number of resistance and problems, which has reflected on the characteristic tendencies and achievements. However, the results of the conducted field research suggests that the restructuring has been recently more pronounced, particularly in large and medium-sized firms, primarily those who were faced with poor performance in their business. The most common reasons for the implementation of the restructurings were negative impacts of the global financial crisis, poor financial condition of the companies and the demand to increase competitiveness. According to the results of the field survey, the most frequent methods of restructuring were downsizing the number of employees, organizational changes and changes in marketing activities. The implementation of restructuring activities in Serbian companies has been faced with a number of challenges among which the lack of funding has been the greatest. Regrettably, very few companies that have carried out major (strategic) changes have concluded that the process of restructuring met their initial expectations.*

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**Keywords:** *corporate restructuring, financial crisis, structural changes, field research*

## 1. INTRODUCTION

Restructuring is not a new phenomenon considering that in the past three or four decades numerous companies underwent different forms of significant changes in their structure and way of operating. However, in recent years, particularly after the beginning of the global economic crisis, restructuring processes have become more intense, have acquired new forms and encompass an ever-growing number of companies. In parallel with that, the general public and experts all over the world are sharing growing interest in the restructuring processes.

A relatively large number of authors have examined corporate restructuring. Many authors have studied different forms of restructuring (e.g. *Useem, 1992; Moris & Brandon, 1994; Vance, 2009; Slater & Lovett, 2004; Hill & Jones, 2008; Gaughan, 2004; Bowman & Singh, 1990; Rappaport, 1998*). Some authors are looking into causes (*Bradowski, 1991; Srivastava & Mushtaq, 2011; Giacosa & Mazzoleni, 2012*) and basic tendencies in the restructuring processes (e.g. *Chang, 2002; Restructuring in Europe 2008 - A review of EU action to anticipate and manage employment change*). Numerous authors presented their concepts of “best” way to perform restructuring (e.g. *Angehrn & Atherton, 1999; Burke, 1995; Dedee, J. and D. Vorhies, 1998*). A number of papers are based on the empirical research of different restructuring aspects (e.g. *Ang et al., 2000; Köksal & Özgül, 2007; ABeam Research Japan Corporate Restructuring - Shrink to Grow, 2004; Blatz, Kraus & Haghani, 2006*). Recently, a significant number of papers have discussed corporate restructuring driven by the negative influences of the global financial crisis (e.g. *Chakrabarti, Vidal & Mitchell, 2011; Wan & Yiu, 2009; Yawson, 2009*).

The fundamental objective of this paper is to examine and analyse the key characteristics of restructuring processes, particularly those in Serbia.

The main research questions that this paper is trying to answer are as follows:

- What are the similarities and differences between restructuring processes in Serbia and elsewhere?
- What causes these activities?
- What are the main directions taken in the sphere of corporate restructuring?
- Have restructuring programs been successful?
- What should be the role of the state in corporate restructuring?

- What do company owners and managers think about corporate restructuring?

The research methodology employed in this paper included a systematic overview and a comparative analysis of relevant scientific literature and specific empirical researches. Furthermore, the paper is founded on of the empirical (field) research conducted in the period September 2013 – March 2014 in certain number of Serbian firms that undergone major structural changes.

The purpose of this paper is to serve as a basis for discussion on contemporary tendencies in the field of corporate restructuring and their effects, particularly in Serbia.

The originality of this paper lies in its results obtained through the empirical research of the key characteristics of the restructuring process in Serbia. Namely, in Serbia, and according to the author's knowledge in Western Balkans, empirical research is almost non-existent in the field of corporate restructuring<sup>3</sup>.

The paper comprises an introduction, with a brief overlook of literature and the objective, purpose and relevance of the paper and the research methodology. The second part brings the problem description and a presentation of worldwide recent tendencies in the field of corporate restructuring and the third part presents an analysis of the restructuring process in Serbia. In the fourth part are presented the results obtained through the field researches of restructuring practice in Serbia. Finally, the paper ends with conclusions and recommendations for future research.

## **2. KEY CHARACTERISTICS OF CONTEMPORARY TENDENCIES IN CORPORATE RESTRUCTURINGS**

The restructuring processes have become constant and an integral part of doing business in numerous companies in the world. Every month 90-100 new

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<sup>3</sup> Some researches of this topic could be find in: Čučković, N. (2001), Post-Privatization Ownership Structure, Restructuring and Corporate Governance: The Case of Croatia, *Ten Years of Economic Transformation, Volume II- Markets, Companies and Foreign Business in Transition*, Lappeenranta University of Technology, pp. 22-47.; Begović, B. and M., Paunović (2009) Political Economy of Enterprise Restructuring and Election Results in Serbia, *CLDS Working Paper 109*, [https://www.cerge-ei.cz/pdf/gdn/rrc/RRCVII\\_13\\_paper\\_01.pdf](https://www.cerge-ei.cz/pdf/gdn/rrc/RRCVII_13_paper_01.pdf); Vehovec, M. and Domadenik, P. (2003) "Usporedni pregled defenzivnog restrukturiranja tvrtki u Hrvatskoj i Sloveniji". *Financijska teorija i praksa*, 27 (4), pp. 609-623.



restructuring<sup>4</sup> activities in large companies are recorded in the European Union (EU27) only. However, this is just the tip of the iceberg, because the restructuring of large companies is followed by a “silent“, restructuring of numerous small businesses which are not in the spotlight and hence pass by unrecorded (Restructuring in Europe, 2008, p. 6). The need for business transformation has never been greater in the modern organisation.

Experiences of the on-going corporate restructuring processes may be summarized as follows:

- Recessive macroeconomic tendencies caused by the global economic crisis strongly impact the initiation of restructuring in recent years, e.g. as many as 72% of companies in the States, according a study (*Looking Toward Recovery*, 2010, p. 2), underwent some form of restructuring after 2008.
- Corporate restructuring is mostly associated with large (and medium-sized) companies facing business problems, however, these processes are going on in smaller companies and successful ones wishing to improve their business performance.
- The restructuring process in the circumstances of the global economic crisis has been characterized by a predominant reliance on the defensive strategies. The most frequently ways in the restructuring processes were cost reduction, labour force downsizing, close down of insolvent production facilities, investment reduction as well as the debt reprogramming.

A significant portion of restructuring processes happens in mergers and acquisitions (M&A). Truth to be told, under the influence of the world economic crisis, the value of M&A decreased. However, as the world economy is recovering, their value in 2012 reached 2,288 billion USD or around 13,000 transactions, and in 2013 it reached 2,215 billion USD or around 14,000 transactions (which is about 38% below the record breaking result in 2007) (*Mergermarket M&A trend report 2013*, 2014).

The state is more than ever involved in the current restructurings. After the outset of the global economic crisis, the financial position and structure of many companies deteriorated. Since the companies which were suffering consequences

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<sup>4</sup> ERM (*European Restructuring Monitor*) follows only cases of mergers and acquisitions, bankruptcies and liquidations and offshoring activities which include winning or losing at least 100 jobs or more than 10% in the firms with that employs more than 250 persons (*European Restructuring Monitor 2012*, p. 27).

were often significant and large, governments became involved in restructuring much deeper than in any period before that and with the aim to bail out those large companies and banks and save jobs.

In their search for greater efficiencies, economies of scale or lower costs, many firms have embraced trends such as outsourcing, offshoring, and mergers and acquisitions. Unfortunately, these trends have severe negative effects on labor market. Partly due to European Parliament has adopted recommendations regards preparation and management of restructuring (*Motion for a European Parliament Resolution with recommendations to the Commission on Information and consultation of workers, anticipation and management of restructuring, 2012*) which particularly apply in cases when mass layoffs are anticipated (100 employees in a company or 500 employees in a group of affiliated companies operating in one or several member states in the period of three months).

These recommendations urge the companies to undertake restructuring with minimal adverse economic, social and regional effects. The recommendation is that the company management, staff representatives and representatives of other stakeholders take part in the preparation for restructuring in the spirit of cooperation based on timely and comprehensive information and consultations. It is suggested that restructuring activities should encompass laying off as the last resort and only after all other alternative options have been taken into account.

### **3. CHARACTERISTICS OF CORPORATE RESTRUCTURINGS IN SERBIA**

In Serbia, after 2000, as in many other transition countries, different activities were carried out as part of corporate reforms and restructuring. Unfortunately, the implementation of these processes has been followed by numerous unanswered questions, speculating and resistance, which is reflected in typical tendencies and achieved results.

Experiences with restructuring in Serbia may be summarized in the following manner:

- As opposed to the practice in most developed countries and even countries in transition, where intensive restructuring processes are under way, in Serbia they have been rather sluggish and subdued. This is one of the reasons why the EBRD, in its report for 2013 (*Transition Report 2013*, p. 112) assessed the progress in this sphere with a mere 2+ (on a scale from 1 to 4+). This particularly applies to public companies and a number companies in portfolio of Agency of privatization.

Some companies underwent organizational restructuring, mostly through the extraction of non-core activities. These organizational changes have encompassed the implementation of so-called programs for handling overstaffing (based on passive employment measures) and change of management (unfortunately frequently dictated by the political parties in power).

Some, although very modest, progress has been achieved in the field of financial consolidation of public companies, thanks to reprogramming and state bail outs, settling old debts, subsidies, etc. Despite that, a large number of public companies are still insolvent.

Very little has been done with restructuring of socially-owned and state-owned companies in portfolio of Agency of privatization that used to be large and/or important for the local community. The basic forms of restructuring that were applied to this group of companies were labour force and financial restructuring.

A significant number of this group of companies went through labour force restructuring – downsizing through the so-called programs for handling overstaffing (based mostly on passive employment measures where severance payment and financial compensation financed by the state was the main tool for addressing this problem). Unfortunately, severance payments were not used to boost new employment but primarily for the purpose of current spending while active employment measures were not sufficiently used.

Activities relating to financial restructuring have been rather limited. They were basically limited to the protection of companies from creditors and their intention to collect. Also, many of those companies have received different forms of incentives in order to make their production process more dynamic. However, such financial restructuring didn't imply any investments in fixed assets but only occasional funds for salaries, energy, etc. True restructuring was left to the new owners, for the period after privatization. However in most of the cases the potential buyers never appeared.

In time, the number of companies in the portfolio of Agency of privatization undergoing restructuring has increased. Ensuring the survival of these firms became the main reason why some companies in Serbia received the special status “undergoing restructuring”. Namely, many companies that used to be large and/or significant couldn't pay their liabilities regularly (current and from previous periods). In such circumstances the status, or the attribute of the “undergoing restructuring”, provided a company with a temporary protection from creditors, blockage of its account and quick liquidation.

This way, problems were not tackled but left aside and the bailout funds – subsidies for companies undergoing restructuring were growing year in-year out. As the position of Serbian public finances became exacerbated, decision makers were more and more preoccupied with these problems.

Restructuring processes are also being carried out in a large group of already privatized and private companies. Serbia with 23.3% of non-performing loans in the total debt stock (according to the gross principle) at the beginning of 2014 ([www.nbs.rs](http://www.nbs.rs)), belongs to the group of countries with a high NPL percentage. An additional problem is the fact that this percentage is growing every year (mostly due to the influence of negative effects of the global economic crisis), which points to the fact that there is the need for a wider application of the INSOL Principles – guidelines for efficient corporate financial restructuring.

Faced with difficulties in doing business (mostly financial difficulties relating to payment of liabilities) some companies were forced to undergo reorganization programs through previously prepared reorganization plans, amicable financial restructuring or “typical”, reorganization programs.

Although there is no detailed statistics for these programs it is estimated that in Serbia, in the last three years, 400-500 companies began restructuring their business through one of the listed types of programs (*Radulović, 2013*). Most of them opted for their previously prepared reorganization plans (PPRP); the second most common are companies which opted for “typical”, reorganization plans; while amicable financial restructuring is still at the beginning (as a form of extrajudicial restructuring) – about 20 cases.

The adoption of these programs requires relatively long procedures (e.g., the preparation of a previously prepared restructuring plan takes 5.5 months and a “typical” reorganization plan requires as many as 12.5 months), and this is mostly because of a large number of stakeholders’ complaints (around 50% for the PPRP and 25% for the “typical” reorganization programme) and they are frequently rejected by a court of law (about 25% of PPRP and 50% of “typical” reorganization programme) (*Radulović, 2013*).

By analysing the quality of these plans we can conclude that many of them look more like a wish list than a true action plan which can result in actual business performance improvement. However, the creditors (adopting these plans) are “forced” to accept the plans hoping that, in this way, problematic companies will be able to avoid liquidation and that they will return at least portion of their assets.

- Many countries of Central and Eastern Europe have large benefits of the offshoring and outsourcing processes in “old” EU countries. In that respect, Serbia has achieved certain results (the most obvious example is *Fiat*, Kragujevac). Unfortunately, the achieved results are far from satisfactory and desired ones.

Net inflow of foreign direct investments, according to the Ministry of Finance ([www.mfin.gov.rs/pages/article.php?id=7161](http://www.mfin.gov.rs/pages/article.php?id=7161)), in the past couple of years has been low<sup>5</sup>. It is obvious that Serbia hasn't succeeded in attracting a sufficient number of green-field and brown-field projects in the previous period, and especially since the outbreak of the crisis, despite more than generous incentives that have been provided to foreign investors (up to 10,000 EUR per job).

#### **4. RESULTS OF FIELD RESEARCHING IN SERBIA ON TENDENCIES, MOTIVATION, PROBLEMS AND OPINIONS ON CORPORATE RESTRUCTURING**

The results presented in this section is the small part of larger research conducted over few years. The main findings in this section are the outcome of the empirical (field) research conducted in the period September 2013 – March 2014 through anonymous on-line polling with the support of a questionnaires which have been sent to a number of firms to their e-mail addresses.

The polling has been carried out with significant difficulties (the research response rate was only 31%), mostly because of the lack of will of businessmen to participate in a study of this kind and a varied understanding of the restructuring activity.

Although the number of distributed questionnaires have been much larger (around 420), the authors of this paper have received and processed 134 questionnaires from companies which have agreed to participate in the survey. The structure of the received questionnaires is as follows:

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<sup>5</sup> In 2000 it was Euros 1,824 million, in 2009 Euros 1,372 million, in 2010 Euros 860 million, in 2011 Euros 1,826 million, while in 2012 it was only Euros 232 million, and in 2013 Euros 643 million.

**Table 1. The structure of all surveyed companies according to their business activity**

Business activity	Number	Share in %
Industrial production	80	59.7%
Trade	11	8.2%
Civil construction	14	10.4%
Services	29	21.6%
Total	134	100.0%

**Table 2. The structure of all surveyed companies according to the company size**

Company size	Number	Share in %
Small	55	41.0%
Medium	41	30.6%
Large	38	28.4%
Total	134	100.0%

**Table 3. The structure of all surveyed companies according to net revenues and net profit**

	Net revenue trends	Net profit trends
Very high growth rate	8.2%	6.7%
High growth rate	26.9%	20.1%
Stagnating	38.1%	42.5%
Large drop in growth rate	20.1%	21.6%
Very large drop in growth rate	6.7%	9.0%
Total	100.0%	100.0%

Although it is very hard to judge about whether the sample in this research is sufficiently representative<sup>6</sup> (in Serbia, as in most Western Balkans countries and even EU countries, there are no reliable statistical data on the number of companies which are undertaking strategic transformation changes), the results of this survey offers an interesting presentation of estimations about various aspects of restructurings.

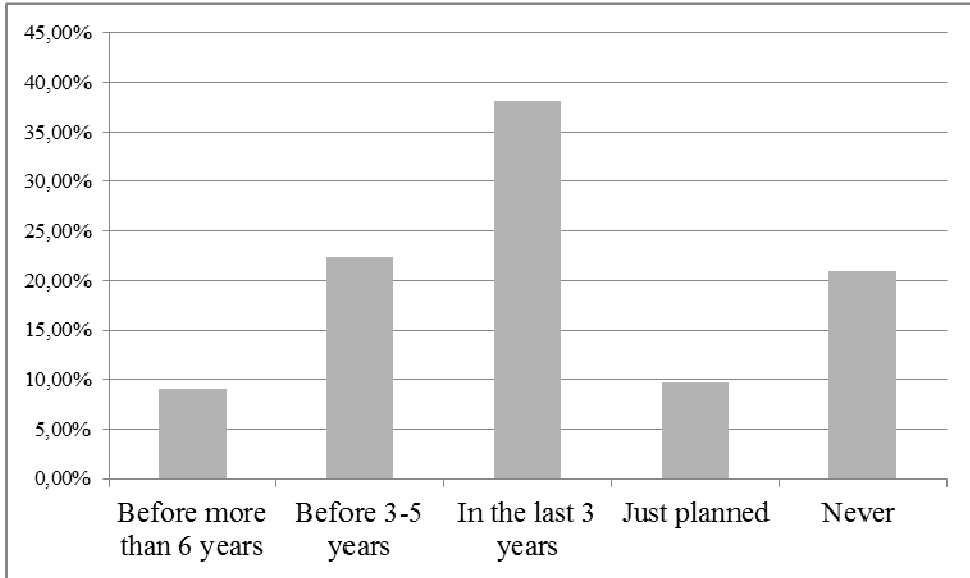
The most important results of this research may be summarized in the following manner:

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<sup>6</sup> According to authors estimations this sample represents about 1,5% of overall corporate assets of Serbian economy

We have been interested in finding out when the surveyed companies have carried out restructuring activities. In dynamic environment under strong influence of global crisis companies have to be flexible and change very often and quickly.

**Chart 1. Answers to the question: When did restructuring activities take place last in your company?**



Judging by the results, a significant number of surveyed companies (38.1%) had some restructuring activities in the past three years. This may lead to an conclusion that the activities in this sphere have intensified in the past three years under the negative effects of the global financial crisis.

- We were especially interested in contemporary trends in restructurings process in Serbia, so in details were analysed the companies which have carried out some restructuring activities in the past three years are the segment analysed in this section of the paper. The analysis has been conducted based on the survey of 51 companies. The basic characteristics of the subject sample were as follows:

**Table 4. The structure of the surveyed companies which have carried out some restructuring activities in the past three years according to business activity**

Business activity	Number	Share in %
Industrial production	40	78.4%
Trade	1	2.0%
Civil construction	4	7.8%
Services	6	11.8%
Total	51	100.0%

**Table 5. The structure of the surveyed companies which have carried out some restructuring activities in the past three years according to size**

Company size	Number	Share in %
Small	10	19.6%
Medium	17	33.3%
Large	24	47.1%
Total	51	100.0%

**Table 6. The structure of the surveyed companies which have carried out some restructuring activities in the past three years according to net revenues and net profit**

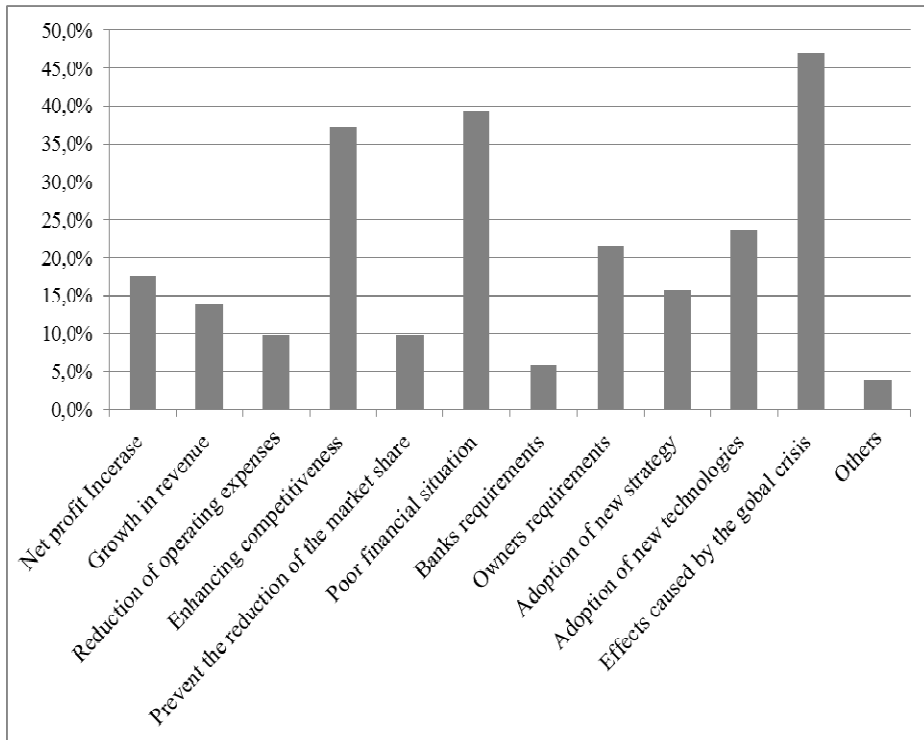
	Share in %	
	Revenue trends	Net profit trends
Very high growth rate	3.9%	2.0%
High growth rate	15.7%	13.7%
Stagnation	43.1%	45.1%
Large drop rate	27.5%	23.5%
Very large drop rate	9.8%	15.7%
Total	100.0%	100.0%

By comparing the sample of all surveyed companies and those which have carried out some restructuring activities in the past three years, it can be concluded that such activities were more striking in larger and medium-sized companies which were facing dissatisfactory trends of net revenues and net profit. Also, restructuring activities were more pronounced in the industrial production area than in other business activities.



- A portion of the questionnaire pertained to the motivation and reasons behind the decision to undertake restructuring. Here, the respondents could circle up to 3 answers out of 11 offered options.

**Chart 2. Answers to the question: Please state the basic reasons of these changes**



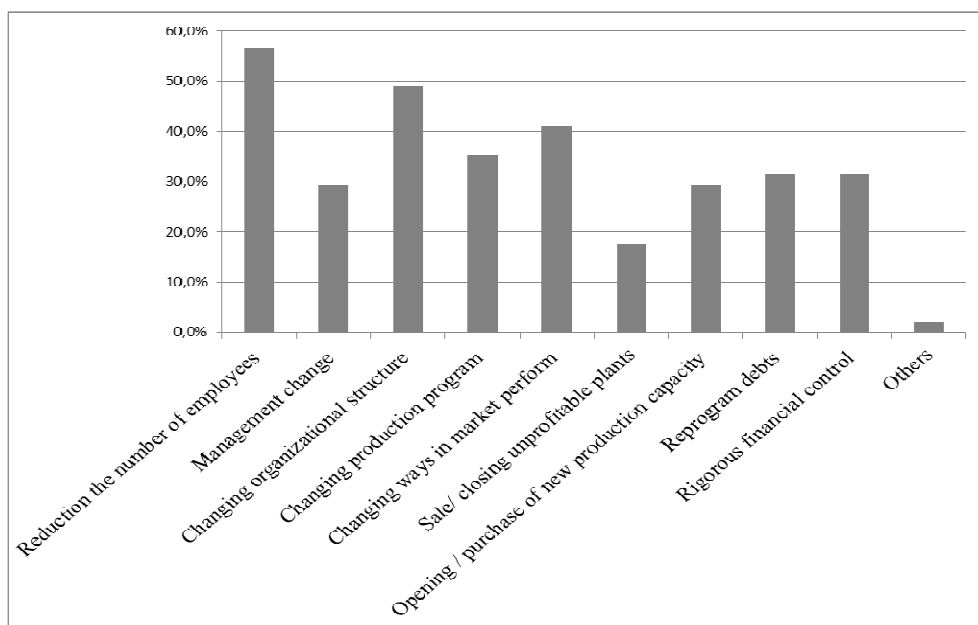
According to the results, the most important reason why companies have undergone restructuring were the adverse effects of the global financial crisis (47.1%), the poor financial situation of the company (39.2%), and aspiration to become more competitive (37.3%).

The surveyed companies were of the opinion that a somewhat higher percentage of changes has been forced (51%) then planned (49%) and aimed mostly to specific parts of the company (52.9%) than the whole company (47.1%).

**Table 7. Types of structural changes**

Type of the change	Share in %
Planned	49.0%
Forced	51.0%
Total	100.0%
Type of the change	Share in %
Comprehensive – affecting the whole company	47.1%
Affecting only specific parts of the company	52.9%
Total	100.0%

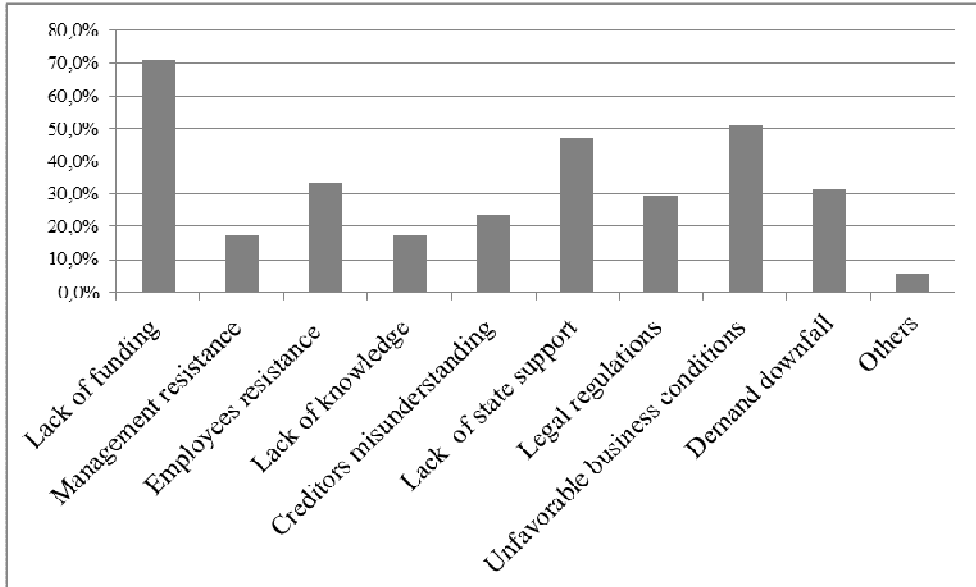
According to the research results, changes primarily concerned downsizing (49%) and the way of market appearance (41.2%).

**Chart 3. Answers to the question: Please state their basic forms of restructurings**

The companies carried out their restructurings faced numerous difficulties. The most serious problem, by far, was the lack of finances needed to cover restructuring activities. About 70.6% of the surveyed companies indicated that they had such difficulties in carrying out restructurings.

Also, a large number of companies (51%) pointed out that unfavourable conditions for doing business in Serbia, as well as the lack of support from the state (47.1%) are severe obstacles for carrying out restructurings.

**Chart 4. Answers to the question: What were the most serious problems in the implementation of large (strategic) changes in your company in the past three years?**



A very small number of the surveyed companies (5.9%) indicated that the implemented (strategic) changes have fulfilled their initially set objectives and expectations.

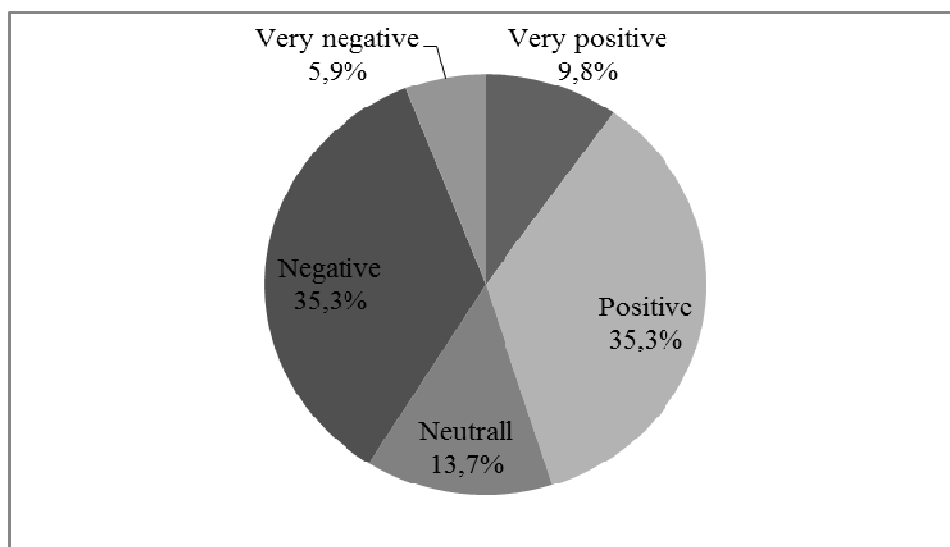
The largest number of companies (52.9%) considers that structural changes brought by restructuring have only partially fulfilled expectations and initially set objectives. And in a relatively large number of companies (25.5%), the implemented changes haven't yielded the anticipated results.

**Table 8. Answers to the question: Please state up to what extent the large (strategic) changes have fulfilled your expectations and set objectives**

Offered options	Share in %
Fully	5.9%
Partially	52.9%
Expected outcome hasn't been reached	25.5%
No answer	15.7%
Total	100.0%

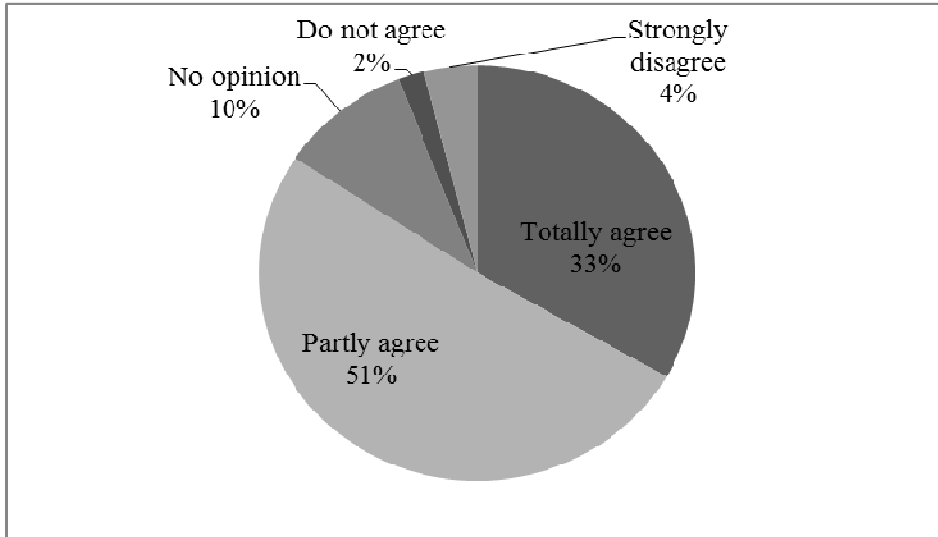
The opinions of the surveyed companies on restructurings vary greatly. This is understandable given that, on the one hand, the need for these types of changes is notable, but, on the other, restructuring faces numerous challenges. Moreover, the fact remains that many of the initially set objectives simply failed.

**Chart 5. Answers to the question: When you hear the word “restructuring“, it triggers the following reactions**



In addition to this, the surveyed companies expect the state to be more active in the restructuring processes. Some 33% of the surveyed companies totally agree and 51% of them partly agree that the state role in corporate restructurings has to be larger.

**Chart 6. Answers to the question: The Serbian Government should have a larger role in corporate restructuring?**



## 5. CONCLUSIONS

As opposed to current trends in the world, including some countries in transition in Central and Southeast Europe, which imply intensive restructuring processes and where significant results have been achieved, in Serbia such tendencies and outcomes haven't been recorded.

However, the results of conducted empirical research lead to the inference that restructuring processes have intensified in recent years. It is noticeable that these activities have been more expressed in larger and mid-sized companies, primarily those that faced unsatisfactory performance of their business. Also, the research indicates that restructuring activities have been more intensive in the industry than other economic activities.

The surveyed companies were of the opinion that most changes were forced and predominantly directed towards specific company units. The most practiced ways of restructuring were oriented towards the reduction of the number of employees, organizational changes and the way of appearance in the market place.

The most frequently motives for restructuring were of an external nature. The following reasons were particularly dominant: adverse effect caused by the global

crisis, poor financial condition caused by reduced business volume and demand, and aspiration to improve competitiveness.

Companies going through the restructuring activities faced numerous difficulties. The most serious, by far, was in the opinion of the surveyed, the lack of finances for restructuring. Also, they indicated that adverse conditions for doing business and lack of state support to restructuring represent serious problems. Judging by the research results most of the surveyed companies expect the state to take a more active role in the restructuring processes.

Few surveyed companies said that the strategic changes that have occurred met their expectations and their initially set objectives. The largest number of companies stated that the changes only partially fulfilled their expectations and their initially set objectives. On the other side, changes haven't resulted in the desired outcome in a relatively large number of surveyed companies (25.5%).

The paper offers a new and, we believe, interesting presentation of opinions and the current situation of restructuring in Serbia. According to our knowledge, this is one of the first empirical studies on the restructurings, not only in Serbia but in the region of Western Balkans. While aware of the sample's limitations when it comes to making clear inferences and recommendations we, nevertheless, think that this research can be a baseline study for further analyses of this phenomena, and not just in Serbia, but in the entire region. More substantial results could be obtained from further comprehensive research carried out on a larger sample and, perhaps, in other countries of the region.

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# EUROPEAN MERGERS AND ACQUISITIONS: AN EVENT STUDY TEST OF MARKET EFFICIENCY

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Saša POPOVIĆ<sup>1</sup>  
Bojana DELIĆ<sup>2</sup>

## **Abstract**

*The aim of this paper is to examine the capital market efficiency on merger and acquisition announcements from the acquiring company perspective. We explore semi-strong form of Efficient Market Hypothesis (EMH) using the Event Study approach focused on effects of 15 European Union mergers and acquisitions (M&A) announcements of the biggest deal size. Our sample encompasses daily data series of 15 companies over the period of nine years, from 1 January 2003 until 31 December 2011.*

*Mergers and acquisitions, as business method in contemporary economic practice, represent main methods for external growth of companies with the aim to improve their business performances by changing the business strategies and organizational structure. In order to answer how merger and acquisition announcements impact the values of companies, Event Study approach has been employed here.*

*Our empirical results show that the acquiring companies have achieved abnormal returns on their mergers and acquisitions announcements in three days event window (one day before the announcement of the event, on the event day itself and one day after the announcement), but those results are not statistically significant. Based on the empirical results we concluded that European equity markets from acquirer's perspective are semi-strong efficient relating to the announcement of mergers and acquisitions over the short-term event window.*

**Key words:** *Event study, market efficiency, mergers and acquisitions, European equity markets.*

**JEL Classification:** G14, G34

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## 1. INTRODUCTION

Mergers and acquisitions (M&A) are processes by which companies can foster economic growth by restructuring their businesses. Both processes are aspects of financial management, where the expansion of the business can be done within the existing economic activity (growth) or by expanding the company's activity outside the existing activities (diversification). The resolution of the issue on whether the growth of company within the existing economic activity should be based on internal or external growth potential assumes demanding managerial decision. The internal potential growth includes primarily a portion of net profit of the company, which is, according to the level of profit retention rate, available for investing. In this way, the company relies on its own financial sources, and its future growth is a function of growth in its net profit. External growth potential of companies carried by mergers, acquisitions, joint ventures and strategic alliances can be a faster way to reach growth or diversification of a company with less risk involved. However, these strategies are also followed by some potential risk factors: uncertainty, agency problem, lower comparative profit rates, market inefficiencies etc.

Market efficiency, as Popović and Đurović (2014) noted, is a theoretical explanation of the influence of information on the asset prices. This concept is of fundamental relevance for the financial markets because efficient market entails that all price sensitive information, whether public or private, are instantly and accurately contained in market prices. In the case of efficient market, investors cannot make any abnormal return because the information he or she wants to utilize are already reflected in current market prices. Dimson and Mussavian (2000) note that "sometimes, however, economists use words *market efficiency* to refer to operational efficiency, emphasizing the way resources are employed to facilitate the operation of the market." As financial markets became highly sophisticated due to technological progress, all market participants focus their attention on the informational efficiency of financial markets.

Semi-strong form of market efficiency deals with the notion that stock price react so fast to all past and public information that no investor can gain abnormal return when acting on information. Public announcements of mergers and acquisitions, stock splits, repurchases, dividend increases are examples of price sensitive public information.

In order to draw valid conclusions about market efficiency relating to the mergers and acquisitions announcements, researchers have usually employed event study tests and have found evidences of inconsistency with efficient market hypothesis (EMH). In this article, we examine the capital market efficiency based on the mergers and acquisitions announcements. Specifically, we explore semi-strong

form of efficient market hypothesis (EMH) using the event study approach focusing on effect of merger and acquisition announcements on values of fifteen companies from the EU equity markets.

The paper is organized as follows. Section 2 briefly reviews the literature on event study testing of market efficiency in the context of mergers and acquisitions announcement. Section 3 presents data description and their required adjustment so that they can be used as inputs for the tests employed and also discusses methodology used. In Section 4, we present empirical results of the research. Section 5 offers concluding remarks.

## **2. LITERATURE REVIEW**

Event study represents analysis of specific corporate events impact, such as mergers, acquisitions, stock splitting etc. on the share price of the company. According to the Krishnakumar and Sethi (2012), it is the most popular methodology adopted by researchers. The main objective of the study is generate an assessment of the level to which the movement of the share price is abnormal at the time of the event. The share price movement in the announcement period of corporate restructuring is an ex-ante assessment of expected ex-post transaction effects. Abnormal price performance is assessed through abnormal returns - excess return above or below the expected return. In this context, event study is used to test the capital market efficiency.

Event study as a method was for the first time used by Fama *et al.* (1969). The main objective of their study was to test the market efficiency, i.e. the speed of adjustment in stock prices to announcement of stock splitting. After their work, event study methodology has become a standard method of measuring the reaction of stock price on certain corporate events announcement. In practice, the event study is applied for two reasons: to test the hypothesis of market efficiency and to analyze the impact of corporate events on shareholders' wealth. Todorović (2010) notes that the basic assumption of the event study is the probability of the abnormal returns existence (event return) as a relevant measure of long-term effects of the event during event days, which are defined in the period before and after the announcement date, in a short time interval (event window).

The choice of event window determines whether it is a short or long-term study, with short term being usually three days surrounding the merger: the day before the merger (-1 day), the day of the merger (0 day) and the day after the merger (+1 day). A longer window assumes several days before merger and after merger completion in longer observation period. Zollo and Degenhard (2007) reviewed 87 research papers on acquisition performance from top Management and Finance

journals between 1970 and 2006, and found that 41% used the short-term event study method, while 16% used long-term event study method.

Spyrou and Siougle (2007) point out that most studies report positive combined (target and bidder) abnormal returns, although for target firm shareholders the findings consistently suggest significant and positive returns around merger announcements. For example, Goergen and Renneboog (2004) report high positive magnitude returns for 18 European markets. Campa and Hernando (2004) find similar results. These results are in agreement with the results of earlier studies (Dodd, 1980; Jensen and Ruback, 1983) where returns to target shareholders range between 20–30%.

However, there are also studies that report positive abnormal returns for acquirer firms around announcements, such as Maquieria *et al.* (1998) for US stock-for-stock mergers, or Kohers and Kohers (2000) for high-tech industry. In majority of these studies, even in the case of positive returns, the magnitude is usually much lower than the magnitude of the abnormal return for target firms and/or statistically insignificant (Amihud *et al.*, 1986).

Using 947 acquisitions from 1970-1989, Loughran and Vijh (1997) find a relationship between the post acquisition returns and the mode of acquisition and form of payment. During a five-year period following the acquisition, on average, firms that complete stock mergers earn significantly negative excess returns of -25.0 percent whereas firms that complete cash tender offers earn significantly positive excess returns of 61.7 percent. They conclude that acquirer returns are overall negative or, at most, insignificantly positive. Although our focus is on short-term event studies of market efficiency, we refer to the study of Gersdorff and Bacon (2008). In this study, we examine the effect of a company merger announcement on stock prices of twenty acquiring firms 180 days prior to the announcement and 30 days after. The findings show that there, definitely, is action in the stock price around day 0, but the analysis displays that the merger may not be significant in determining the reason for the particular action. The semi-strong efficiency theory begins to show signs in the 30 days after announcement.

Laabs and Schiereck (2010) offer valuable literature survey according to which recent literature describing the short-term announcement effect of M&A activity on acquiring firms has provided consistent evidence for a short-term value loss: using a sample of 4,256 merger events between 1973 and 1998. Andrade *et al.* (2001) find a negative but insignificant -0.7% return for acquiring companies within a 3-day event-window surrounding the announcement date. Bruner (2002) provides a comprehensive overview of 44 studies investigating abnormal returns to acquiring companies and summarizes that abnormal returns are essentially zero. Fee and

Thomas (2004) investigate the market reactions and report a positive return of 3.06 per cent over a three-day window for a sample of 554 horizontal deals over the period of 1980–1997.

Because our sample encompasses fifteen large M&A, we need to note the profitability characteristics of large M&A deals. Moeller *et al.* (2004) document that a focus on large takeovers may give an incomplete picture of the impact of acquisitions on shareholder wealth, as large acquisitions tend to be less profitable than the smaller ones.

### 3. DATA DESCRIPTION AND METHODOLOGY

This study analyzes the effect of merger and acquisition announcements on values of fifteen EU companies over the period of nine years: from 01.01.2003. until 31.12.2011. Table 1 shows the sample of EU mergers and acquisitions of the biggest size:

**Table 1. Description of the sample**

	Acquiring company	Ticker symbol	Target company	Announcement Date
1	Sanofi	SAN.PA	Aventis SA	26 Jan 2004
2	Rio Trinto PLC	RIO.L	Rio Trinto Alcan Inc	12 Jul 2007
3	Telefonica SA	TEF.MC	Telefonica Europe PLC	31 Oct 2005
4	Imperial Tobacco Group PLC	IMT.L	Altadis SA	15 Mar 2007
5	Bayer AG	BAYN.DE	Bayer Schering Pharma AG	23 Mar 2006
6	Telecom Italia Spa	TME.MI	TIM Spa	7 Dec 2004
7	Xstrata PLC	XTA.L	Xstrata Canada Corp.	17 May 2006
8	Vinci SA	DG.PA	Autoroutes du sud dela France SA	14 Dec 2005
9	HeidelbergCement AG	HEI.DE	Hauson Ltd	15 Jun 2007
10	Pernod-Ricard SA	RI.PA	Allied Domecq Ltd	21 Apr 2005
11	Linde AG	LIN.DE	BOC Group Ltd	6 Mar 2006
12	Arcelor Mittal	MT.AS	Mittal Steel Holdings AG	25 Oct 2007
13	Danone	BN.PA	Danone Baby & Medical Nutrition BV	09 Jul 2007
14	Alcatel-Lucente/France	ALU.PA	Alcatel-Lucente USA Inc	2 Apr 2006
15	AstraZeneca PLC	AZN.L	Medimmune LLC	23 Apr 2007

The historical data for the companies and the market are retrieved from the Bloomberg Financial Service.

In order to test the semi-strong Efficient Market Hypothesis (EMH) in relation to the announcement of the company mergers and acquisitions, we formulate following research hypotheses:

*The market value of the acquiring EU companies over the period of nine years (01.01.2003-31.12.2011) did not significantly change with the information on merging announcement.*

This hypothesis can be presented as follows:

$$H_0: AR_{jt} = 0$$

$$H_1: AR_{jt} \neq 0$$

where:

$AR_{jt}$  is abnormal return on a security  $j$  in time  $t$ .

Abnormal return is the difference between actual company return and expected return on the market. If the results of statistical tests show that the average abnormal return equal to zero, there will be no evidence that there has been a change in the values of companies after the announcement of information on mergers and acquisitions. In that case, we can conclude that EU equity markets are semi-strong efficient to M&A announcements. If the results show that the abnormal returns are significantly different from zero, than acquiring companies have gained or lost money on the basis of M&A announcements, which is proof of equity markets inefficiency.

The tests of the semi-strong market efficiency are based on the event study methodology which comprises five steps:

1. Calculate return of each company ( $R$ ) and the market ( $R_m$ ) during whole period. Returns are calculated by using the following formula:

$$R = \ln \left( \frac{\text{Previous day close price}}{\text{Current day close price}} \right) \quad (1)$$

$$R_m = \ln \left( \frac{\text{Previous day market close price}}{\text{Current day market close price}} \right) \quad (2)$$

A regression analysis was performed comparing the actual daily return of each company to the market daily return. The return on the company is the depended variable and the market return (BE500) is independent variable. (BE500:<http://www.bloomberg.com/quote/BE500:IND>). The Bloomberg European 500 Index is a free float capitalization-weighted index of the 500 most highly

capitalized European companies. The index was developed with a base value of 120.33 as of December 31, 1996.

Taking into account that in this research observation period length is nine years (1/1/2003-12/31/2011), the estimation period will be 11 months.

In this research, an event date ( $t=0$ ) is considered as of the date of announcement of corporate mergers and acquisitions.

Event window will be 3 days (one day before the event, an event day and one day after the event). In this way, we avoid the negative effects of large event window, such as: long-term returns are slightly skewed, existence of inter-sectoral or cross-sectoral correlation, biasness, autocorrelation, and low specification power of the model.

We employ Ordinary Least-Squares (OLS) regressions to assess the values of alpha and beta coefficients for each company individually over the estimated period. Table 2 shows the data.

**Table 2. Alpha and beta coefficient for each company in the sample**

	Acquiring company	Ticker symbol	Alpha	Beta
1	Sanofi	SAN.PA	-5.56E-05	1.224944
2	Rio Trinto PLC	RIO.L	-0.000365	1.690908
3	Telefonica SA	TEF.MC	-0.000716	1.108198
4	Imperial Tobacco Group PLC	IMT.L	0.000538	0.570171
5	Bayer AG	BAYN.DE	6.18E-05	1.302450
6	Telecom Italia Spa	TME.MI	-0.007231	-0.192097
7	Xstrata PLC	XTA.L	0.001410	1.678643
8	Vinci SA	DG.PA	0.000718	0.823000
9	HeidelbergCement AG	HEI.DE	0.000731	0.932393
10	Pernod-Ricard SA	RI.PA	6.54E-05	0.477801
11	Linde AG	LIN.DE	1.91E-06	1.296794
12	Arcelor Mittal	MT.AS	0.002648	1.145751
13	Danone	BN.PA	-0.000262	1.040283
14	Alcatel-Lucente/France	ALU.PA	-0.000568	1.594165
15	AstraZeneca PLC	AZN.L	-0.000559	0.775155

2. For the calculated normal expected returns we use market-based method. The expected returns for each securities, for each day during the event period (-1 day to +1 day), was calculated using the formula:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} \quad (3)$$

3. Abnormal return was calculated as difference between actual return ( $R_{it}$ ) and expected return  $E(R_{it})$ , using the following formula:

$$AR_t = R_{it} - E(R_{it}) = R_{it} - \alpha_i - \beta_i R_{mt} \quad (4)$$

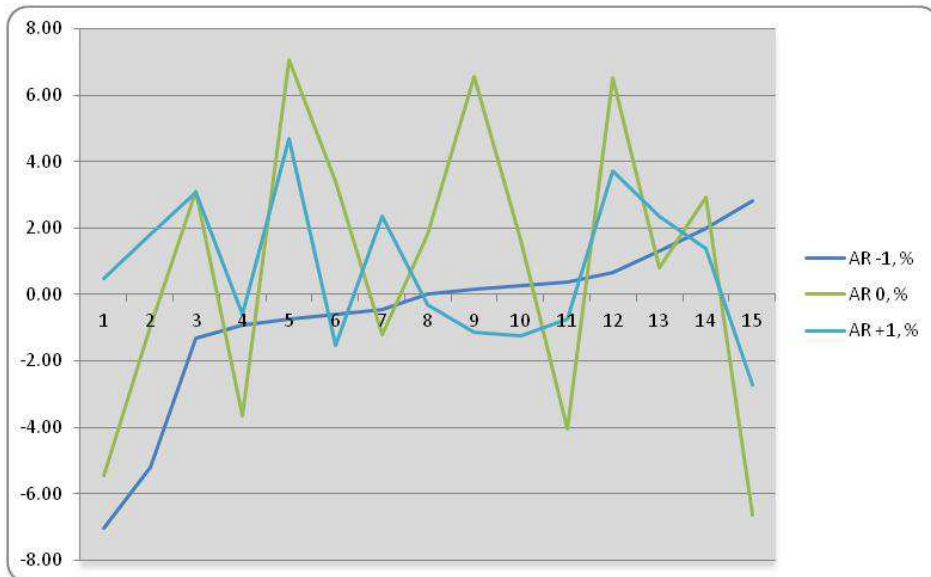
4. Cumulative abnormal returns (CAR), during the estimated period:

$$CAR_{it} = \sum_{m=1}^N AR_{it} \quad (5)$$

#### 4. EMPIRICAL RESULTS

Realized abnormal returns (AR) in the 3 days event window (-1, 0, +1) are shown in Figure 1. Results relating to the period -1 day show that all companies achieved abnormal returns (AR -1, %). A large number of the acquiring company has achieved positive values of abnormal returns (8 out of 15 companies). On the announcement of mergers and acquisitions, the number of companies that have achieved positive abnormal returns, increased slightly (AR 0, %). The abnormal returns for each company on the day after the mergers and acquisitions (AR+1, %) show that 7 out of 15 companies achieved a negative value of abnormal returns.

**Figure 1. Abnormal returns over event window (-1, +1)**

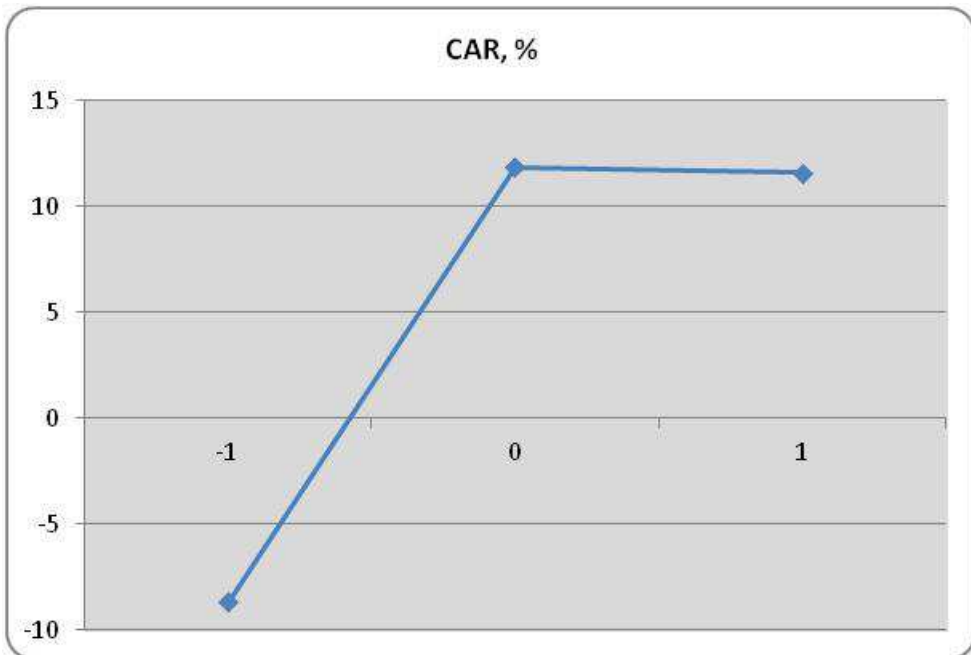




Based on the statistical tests we accept null hypothesis of no statistically abnormal returns from acquirer's perspective over the 3-day event window (see APPENDIX A, B and C).

In order to make inferences about the effect of the announcement, the abnormal returns have been cumulated across time for each company and across companies. Figure 2 presents cumulative abnormal returns (CARs).

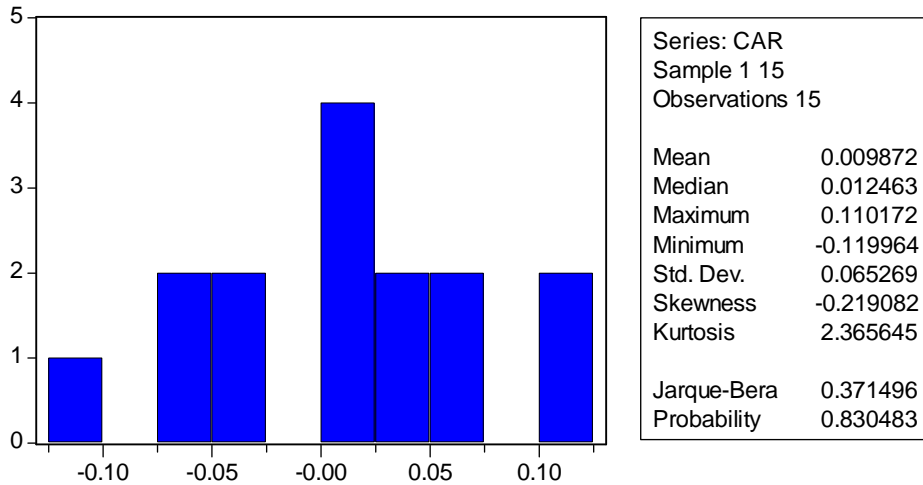
**Figure 2. Cumulative abnormal returns (CARs) over event window (-1, +1)**



According to the Figure 2, we conclude that the acquiring companies have achieved negative and positive cumulative abnormal returns due to mergers and acquisitions announcements.

Descriptive statistics of the CARs will give us information on normality of their probability distribution. Table 3 shows the results.

**TABLE 3. DESCRIPTIVE STATISTICS OF CUMULATIVE ABNORMAL RETURNS (CARs)**



According to the descriptive statistics, cumulative abnormal returns (CAR) show non-normal distribution (skewness = -0.219082; kurtosis = 2.365645). Jarque-Bara statistics also confirm that the CARs deviate from normal distribution.

When the assumption of normality of cumulative abnormal returns is violated, parametric tests are not well specified. Non-parametric tests are well-specified and more powerful at detecting a false null hypothesis of no cumulative abnormal returns. Table 4 shows statistical test of the CARs.

**Table 4. Statistical tests of the CARs**

Hypothesis Testing for CAR  
 Date: 10/04/14 Time: 19:01  
 Sample: 1 15  
 Included observations: 15  
 Test of Hypothesis: Mean = 0.000000

---

Sample Mean = 0.009872  
 Sample Std. Dev. = 0.065269

<u>Method</u>	<u>Value</u>	<u>Probability</u>
t-statistic	0.585792	0.5673

---

Test of Hypothesis: Median = 0.000000

---

Sample Median = 0.012463

<u>Method</u>	<u>Value</u>	<u>Probability</u>
Sign (exact binomial)	10	0.3018
Sign (normal approximation)	1.032796	0.3017
Wilcoxon signed rank	0.709952	0.4777
van der Waerden (normal scores)	0.593803	0.5526

Median Test Summary

---

<u>Category</u>	<u>Count</u>	<u>Mean Rank</u>
Obs > 0.000000	10	7.30000000
Obs < 0.000000	5	9.40000000
Obs = 0.000000	0	
Total	15	

---

Testing null hypothesis that sample CARs mean is equal to zero we employed several tests. According to the results of all tests employed, the null hypothesis that sample CARs on average equal to zero must be accepted.

Ten out of fifteen companies in our sample achieved above the median value of the cumulative abnormal returns, and five achieved a negative value of CAR. According to the value of the Sign tests (both exact binomial and normal approximation), we conclude that the frequency of positive cumulative abnormal return are above 60%. Van der Waerden test has a value of 0.593803 with probability of 0.5526, and we conclude that the distribution of cumulative abnormal return is not identical, or at least one company in the sample tends to have higher values of CAR from others. According to these results, European equity markets are semi-strong efficient from the acquire's perspective in relation to M&A announcements.

## 5. CONCLUDING REMARKS

This study examine the short-run stock performance of 15 European acquirer companies engaged in mergers and acquisitions during the period 2003-2011. Minimum value of the M&A for 15 selected companies was 10 million.

Testing the market efficiency to the announcement of information on mergers and acquisitions is conducted based on the event study method. The key assumption is that the announcement of information on mergers and acquisitions has no significant impact on the value of the acquiring company. We use abnormal returns, denoted as the difference between actual company return and expected return on the BE500 market, to assess semi-strong form of market efficiency. Empirical results of our statistical tests show that the abnormal acquirer's returns exist, but are not significantly different from zero.

The study finds evidence that shareholders of acquirer European corporations engaging in mergers and acquisitions gain a statistically insignificant abnormal returns as well as statistically insignificant cumulative abnormal returns over three-day event window. According to the empirical findings, mergers and acquisitions do not create wealth for shareholders of European acquirers. The gains exist, but are insignificantly positive during the event window.

Our research hypotheses that the market value of the acquiring EU companies over the period of nine years (01.01.2003-31.12.2011) did not significantly change with the information on merging announcement is accepted at all conventional levels of statistical significance. We conclude that EU equity markets are semi-strong efficient in relation to M&A announcements from acquiring shareholders perspective.

Our empirical findings confirm the findings of Andrade *et al.* (2001) that value creation for acquiring firm shareholders is not so clear cut. Although we have obtained high positive and negative cumulative abnormal returns, neither of which is statistically significant at conventional levels. Thus, as Andrade *et al.* stated, it is difficult to claim that acquiring firm shareholders are losers in merger and acquisitions, but they clearly are not big winners, like the target firm shareholders usually do.

Since, according to the Moeller *et al.* (2004), large takeovers may give an incomplete picture of the impact of acquisitions on shareholder wealth, our result must be re-examined by including larger sample of companies.

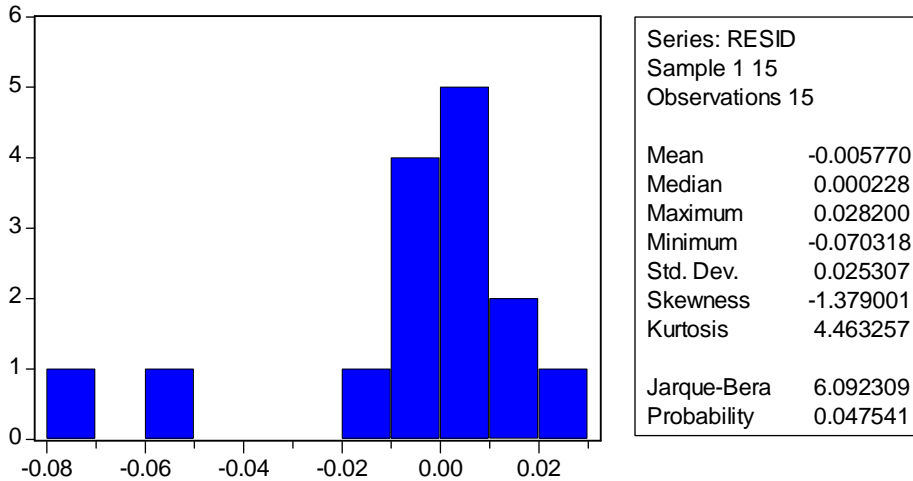
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APPENDIX A

**Table A1. Descriptive statistics of the ARs one day before the announcement of M&A (t=-1)**



**Table A2. Statistical test of the ARs one day before the announcement of M&A (t=-1)**

Hypothesis Testing for AR\_1  
 Date: 10/04/14 Time: 18:36  
 Sample: 1 15  
 Included observations: 15  
 Test of Hypothesis: Mean = 0.000000

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Sample Mean = -0.005771  
 Sample Std. Dev. = 0.025307

<u>Method</u>	<u>Value</u>	<u>Probability</u>
t-statistic	-0.883210	0.3920

---

Test of Hypothesis: Median = 0.000000

---

Sample Median = 0.000228

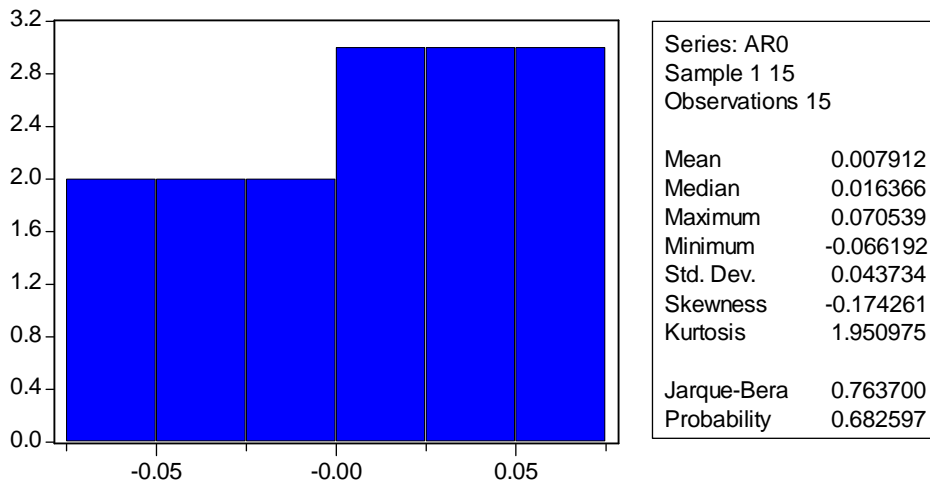
<u>Method</u>	<u>Value</u>	<u>Probability</u>
Sign (exact binomial)	8	1.0000
Sign (normal approximation)	-5.37E-17	1.0000
Wilcoxon signed rank	0.369175	0.7120
van der Waerden (normal scores)	-0.499130	0.6177

Median Test Summary

Category	Count	Mean Rank
Obs > 0.000000	8	6.62500000
Obs < 0.000000	7	9.57142857
Obs = 0.000000	0	
<b>Total</b>	<b>15</b>	

**APPENDIX B**

**Table B1. Descriptive statistics of the ARs on the day of announcement of M&A (t=0)**





**Table B2. Statistical test of the ARs on the day of announcement of M&A  
(t=-1)**

Hypothesis Testing for AR0

Date: 10/04/14 Time: 18:52

Sample: 1 15

Included observations: 15

Test of Hypothesis: Mean = 0.000000

Sample Mean = 0.007912

Sample Std. Dev. = 0.043734

<u>Method</u>	<u>Value</u>	<u>Probability</u>
t-statistic	0.700664	0.4950

Test of Hypothesis: Median = 0.000000

Sample Median = 0.016366

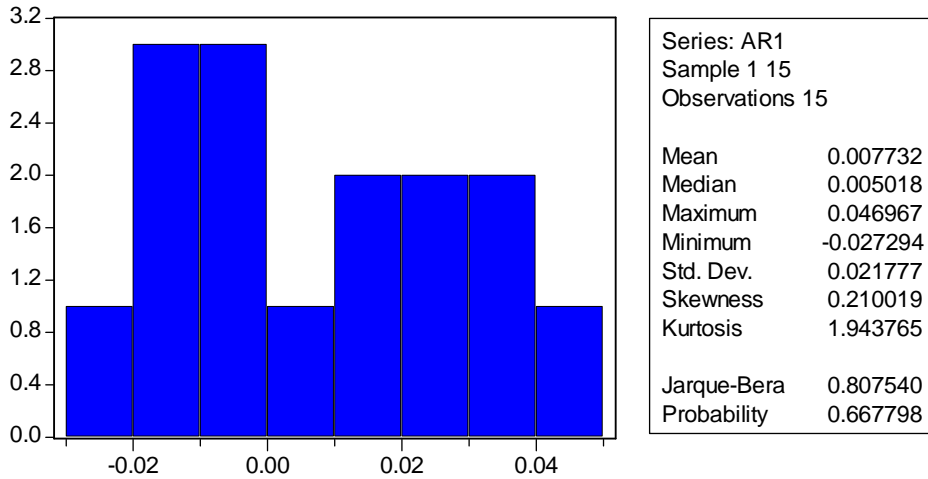
<u>Method</u>	<u>Value</u>	<u>Probability</u>
Sign (exact binomial)	9	0.6072
Sign (normal approximation)	0.516398	0.6056
Wilcoxon signed rank	0.596360	0.5509
van der Waerden (normal scores)	0.637814	0.5236

Median Test Summary

<u>Category</u>	<u>Count</u>	<u>Mean Rank</u>
Obs > 0.000000	9	7.88888889
Obs < 0.000000	6	8.16666667
Obs = 0.000000	0	
<b>Total</b>	<b>15</b>	

**APPENDIX C**

**Table C1. Descriptive statistics of the ARs one day after of announcement of M&A (t=+1)**



**Table C2. Statistical test of the ARs one day after the announcement of M&A (t=+1)**

Hypothesis Testing for AR1  
 Date: 10/04/14 Time: 18:58  
 Sample: 1 15  
 Included observations: 15  
 Test of Hypothesis: Mean = 0.000000

---

Sample Mean = 0.007732  
 Sample Std. Dev. = 0.021777

<u>Method</u>	<u>Value</u>	<u>Probability</u>
t-statistic	1.375072	0.1907

---

Test of Hypothesis: Median = 0.000000

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Sample Median = 0.005018

<u>Method</u>	<u>Value</u>	<u>Probability</u>
Sign (exact binomial)	8	1.0000
Sign (normal approximation)	-5.37E-17	1.0000
Wilcoxon signed rank	1.164322	0.2443
van der Waerden (normal scores)	1.341230	0.1798

#### Median Test Summary

Category	Count	Mean Rank
Obs > 0.000000	8	10.1250000
Obs < 0.000000	7	5.57142857
Obs = 0.000000	0	
Total	15	

# MARKETING OF RURAL TOURISM - DEVELOPMENT SUPPORT WITH EU FUNDS\*

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Aleksandar ANDREJEVIĆ<sup>1</sup>  
Svetlana MIHIĆ<sup>2</sup>

## **Abstract**

*European Union in several last decades have paid attention to specific instruments and funds development in order to give its contribution to harmonious popularization and development of rural tourism.*

*One of the most important strategic aims of Serbian economic development is supporting of the villages' sustainable development through rural economy diversification where rural tourism development has an important place. In spite of this model of tourism importance recognition as a possible way of rural areas development, Serbia is in an opening phase of it. Although there are several positive examples, it is significant that recent projects haven't been established according to national and European development programs, but according to private initiatives of individuals and groups.*

*This paper aim is to emphasise EU funds importance in touristic projects and rural tourism development projects investment, as well as cross border cooperation significance. Taking into consideration the importance of EU financial support in rural tourism development, the object of conducted research were analyses of touristic subjects in rural areas of Vojvodina information, interest and inclusion in projects invested by European Union funds.*

**Key words:** *marketing tourism, EU funds, development, rural areas.*

**JEL:** O57, M310, K320

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## INTRODUCTION

For years, a great consideration has been dedicated to tourism development in European Union area. New priorities of European Union tourism development are also exposed in the strategy „Europe 2020“where is emphasised that Europe must remain the world destination number one. So, the clear ambition of all European tourism policy representatives is to invigorate touristic industry and increase competition and quality in general. EU state members participate in the total world touristic turnover with 32%, at the moment.

EU tourism development support is noticeable through numerous miscellaneous programs established on partnership and cooperation principals of state members (and potential members) where touristic economy have a common aim to harmonize touristic sector of European Union through better education and training of personnel, recruitment increasing, faster development of regions, better information and natural and cultural heritage preservation and enhancement.

European tourism challenges are confronted to demands of unique policy competent for EU level. That policy should ensure the best appliance of available resources and employ all possible synergies. The main purpose of this policy should be European touristic economy competition upgrading and volume and quality of business enhancement for sustainable touristic increase in Europe in general.

The common touristic activities at EU level became more important at 1982 when European Union Council adopted the document: “Initial Guidelines for European Union Touristic Policy”. At 1986, EU formed an advisory body (Conciliation Committee EU) in order of efficient information exchange, consulting and cooperation between the state members. In all Conciliation Committee documents, tourism is marked as a sector of great importance for European Union, and reasons for such an approach are as follows:

1. Tourism is an economy section which provides a lot of problems solving referring to employment in EU with small investments;
2. Tourism is an important section in economy development in general. Its function of faster development of rudimentary regions and areas is specially emphasised;
3. Tourism has an important role in ecology and natural and cultural environment preservation;
4. Tourism breaks the lines and reinforces European identity, which means that it is a factor which has contribution in further European associating;

5. Tourism within EU presents the most appropriate and the most homogeneous factor in its aims achieving, considering economic and social development in general.

It is necessary to mention a perennial Program of support to European tourism named „Philo xenia” with clearly elaborated goals and actions, which adoption has been recommended by EU Commission. The final aim of this program was quality advancement and touristic offer of EU countries reinforcement in order of permanent income increasing establishing and better employment in this section of economy. Financial sources were earmarked as a support for this program in amount of 25 million of Euro for different areas with purpose of tourism development stimulation.

In 2005 European Commission has launched a new touristic strategy “According to stronger partnership for European tourism”. Revived policy of sustainable tourism was suggested through Lisbon strategy in February 2005 and three key directives of future development were emphasised: 1) challenge of growth and employment, 2) challenge within tourism and 3) dialogue and partnership between interest holders (stake holders) in tourism. [1]

## **2. TOURISM AS AN INSTRUMENT OF EU POLICY FOR RURAL DEVELOPMENT**

Rural development concept of European Union was changing and developing constantly during the time: from land consolidation and infrastructure development, through national programs for agriculture workers support, to EU policy making for regional and rural section development. Different programs of support for rural and regional development were evolved. The tendency of seventies was villages renewing, but in eighties the programs of nature and ecosystem preservation and recreation areas construction were actual. The nineties were marked by structural EU funds for rural development, when a special accent was put on rural development and regional management.

New ways of rural areas revitalization searching born a new concept, at first integral rural development and multifunctional agriculture activity, and later similar concepts which have made diversification of economy activities in villages (including tourism), rural landscape preservation, environment protection and advancement and reaffirmation of traditional cultural villages’ values [2].

Rural areas occupy 90% of European Union territory and 60% of its inhabitants live there. Agriculture and forestry use the biggest part of land and have the key

role in natural resources management in rural areas. The synergies of agriculture and tourism provide socio economic development of rural areas and it is a platform of economic diversification in rural communities and pursuant to that rural development policy becomes one of the biggest priorities of European Union. Recent experience of huge numbers of countries shows that the main support of rural economy can't be only agriculture, but also a wide spectrum of activities founded just on non-activated potentials of rural areas as touristic potential is. So, the most importance is given to an additional economic activity, from which is expected the most, tourism in rural areas. [3].

Having on mind multiple positive effects of touristic activities (especially economic), European Union undertakes numerous simulative measures which common purpose is development impetus for all relevant types of tourism, touristic turnover and consumption in the rural regions. These measures have a wide spectrum of appliance and effect and especially are directed to tourism development impetus, natural and other resources valorisation, permanent increasing of touristic products quality, export of goods and services stimulation through touristic activities, establishing of tourism management appropriate model, better organization, more efficient preservation of natural environment etc.

Tourism development is a heterogeneous and dynamic economic, social, areal and political feature which affects rural areas positively and negatively, what have to be put into consideration during preparation and implementation of program's activities. The positive effects are before all possibility of new working places opening and additional income realization which remains within local and regional outlines, higher degree of environment preservation through enhanced interest for its constitution and organization, revitalization of cultural and architectural heritage, permanent connection establishing between local communities and domestic or international markets. Negative effects comprise conflicts between different activities in a rural environment, various ecological problems induced by enhanced ballast and usage of the area, local settlement living cost increasing, rural areas commercialization etc. [4].

### **3. EU RURAL DEVELOPMENT PRIORITIES AND PROGRAMS**

Villages and rural areas deterioration is identified as a global problem, so that struggle against poverty, marginalization, depopulation and low quality of living in rural areas become an act of political determination and highly ranged aim in majority of countries, used as an instrument for different development options, strategies and programs. Aims and approaches to rural areas development are different from country to country, but a basic aim of development policy can be seen as preservation of socio-economic vitality of villages' and rural areas.

During seventies of last century European Union realized the necessity for organizational state consideration and intervention, i.e. for appropriate policies, mechanisms and instruments forming for rural development regulation, as at national and regional levels, so as at the level of European Union. At the end of nineties **European model of agriculture and rural development** was promoted and it assumed multifunctional nature of European agriculture and its role in economic and society. A great influence on European rural areas development has done by **Common Agriculture Policy**. Established in the first phase of development and EU founding in the first row with motive of food production assurance providing, with prices and product quality controlling, agriculture policy evaluated during the time and passed through several reforms [5].

Cork Declaration from 1996 presupposed that rural development policy was going to be based on an integral approach of all activities, and also on economic diversification which have to comprise section of tourism services as well. Proposed policy of rural development was multidiscipline and multi-sectional, with significant territorial dimension.

Reformed policy of rural development assumes that strategic approach to EU is directed on the implantation enhancement of the rural development support program and enlarged focuses considering employment, competition and innovations in rural areas. Rural development support is incorporated within unique common fund and program frame of **European Agriculture Fund for Rural Development – EAFRD**.

European Union stimulated rural areas development through sector approach till the beginning of nineties. It means that EU stimulated separately agriculture, fishing, cattle rising, independently one of each other. Emphasis was put on production and productivity enhancement priority. Such a model was proven as not efficient and not sustainable, so special programs were created for rural development stimulation which enclosed many economic activities, such as tourism between all others (especially village and ecological tourism).

Nowadays policy of European Union rural development is defined in Agenda 2000 and founded on principals of agriculture multi-functionality, activity diversification, and new income sources creation in rural areas, possibility of employment, rural resources preservation, decentralization, partnership at local and regional level and transparency in creation and management of development programs.

European Union is at the end of the fourth generation of **Rural Development Plan** (2007-2013). One of the main aims of this rural development policy is life quality



improvement through stimulation for miscellaneous economic activities in rural regions. Additional activities at villages and farms are enclosed to that, such as tourism [6].

European Union rural development policy from 2007-2013 has been focused on three thematic bases within the rural development regulation:

- competition enhancement in agriculture sector;
- environment quality in villages improvement, through land management support;
- life in rural areas quality improvement and diversification of rural economy;

EU priorities in the forthcoming period are considering the following fields: climate and environment, sustainable energy, enterprises development, tourism, human resources development, information society, media, intellectual cooperation, minorities, science and technology, sustainable agriculture, multimodal transport and cooperation between regions and cross border cooperation. Within tourism, cooperation in numerous fields is foreseen, such as education, cooperation considering sustainable development, touristic association of regions through different programs (wine, gastronomy travels etc.) [7].

#### **4. RESEARCH METHOD AND RESULTS**

Modern touristic tendencies in many countries of European Union, in many strategies of region and rural areas adjoined village tourism which helps in inhabitants detaining in the place, new working places creation and have contribution in socio economic advancement of backward areas. In the last twenty years, Serbia as a touristic destination has been almost out of international competition, which could be approved by nowadays unassuming results of touristic industry. Touristic resources of Serbia aren't valorised enough (participation in BDP is under 2% and only over 3% in employment). Main limitation for tourism development was in political and socio-economic contest of the total country development. Sustainable tourism and its integration with complementary economy activities are not established enough.

The main aim of this paper research is to identify if touristic subjects at rural tourism field in Vojvodina are informed enough about the significance and possibilities of cooperation with institutions and European Union funds; if there is an adequate way of informing about touristic projects investment from European Union funds and if they enough recognize chances and possibilities of cross border and regional cooperation in touristic projects.

The research started with the presupposition that without support system of European Union cognition for tourism development stimulation, without education and without knowledge providing about possibilities of scientific, competent and economic cooperation with European Union institutions and funds, without cross board and regional cooperation of touristic subjects, there is not possible adequate tourism development in Vojvodina.

Having in mind all above mentioned, the research comprises the following:

- Data collecting from primary sources has been done as a part of the study about tourism development in rural areas and conducted as a poll (variables definition referring to rural tourism field which would be overlooked, indicators determination which at the best possible way represents given variables, representative sample definition for data collecting including all stake holders from rural tourism field.)
- The research is realized at the base of secondary sources, i.e. available data;
- After data collecting completion they were processed into data base and prepared for statistic analyse. Statistics methods which were used are adequate for the features of overlooked indicators and sample characteristics (indicators of descriptive analyse, adequate statistics tests, as well as methods of multi-variation statistic analyse).

Samples of poll taking were stake holders (touristic subjects) who were engaged into village and/or ecological tourism in Vojvodina area. By statistic groups analysing, there was attempt of sample taking of 500 pulleys that were statistically analysed and relevant conclusions were fetched for the whole group.

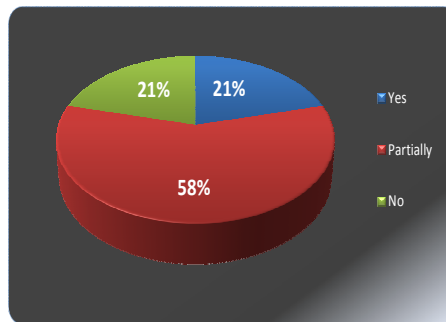
Poll taking is distributed by e-mail or by direct interview of polled. Touristic subjects were contacted via touristic organizations in Vojvodina communities. From the total number of pulleys, 489 were taken into consideration because of incomplete answers.

During data processing collected by poll taking, descriptive statistic processing was applied which comprised methods of collecting, assortment and presentation of the data. All questions are processed by appliance of the adequate mathematic statistics method and computer software SPSS 11.15. Procedures of data processing and presentation were adjusted to the established criteria defined in the poll – survey.

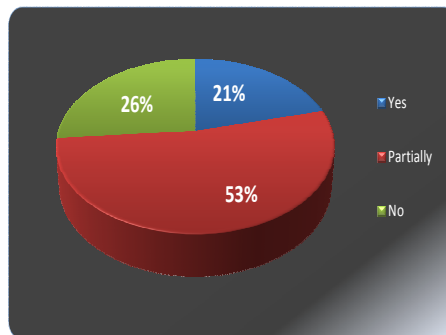
On the base of conducted survey about attitudes of inhabitants considering condition and development of rural tourism in Vojvodina and data processing from the poll, we came to the following conclusions: the majority of polled think that natural, cultural historic and anthropogenic potentials were very good (89% of the

total number of polled). According to citizens' opinion, touristic contents which attract the most tourists are cultural-historical contents and many of them also itemized the production of famous wines (78% of the total number of the polled). Available prices of hotel services (accommodation, food, entertainment) are according to polled opinion acceptable (88% give positive opinion), while roads condition and traffic infrastructure are not satisfactory. Most of the polled think that in cities the biggest disadvantage is lack of bicycle and pedestrian paths, and also badly developed traffic connection of city centres with rural tourism centres, i.e. lack of organized transport to picnic places (67% have such attitude). During conversations with polled, many of them emphasised the fact that streets in city centres are extremely narrow and that there was no possibility to be expanded for modern tourist buses necessity of high touristic classes and big dimensions. In the following section we present one part of questions and answers from the survey:

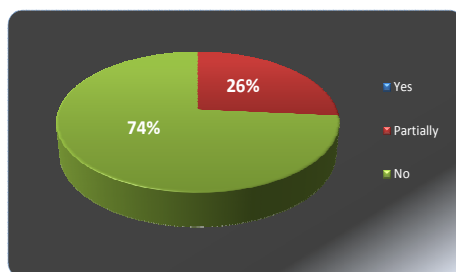
**Graph 1. Have you been informed about possibilities of cross board and regional cooperation in tourism?**



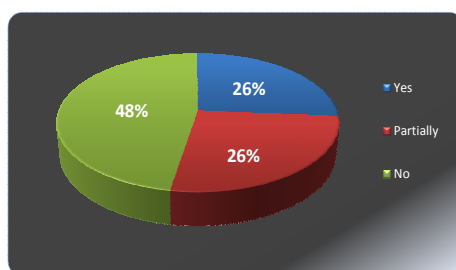
**Graph 2. Have you been informed about possibilities of investments use from European Union funds?**



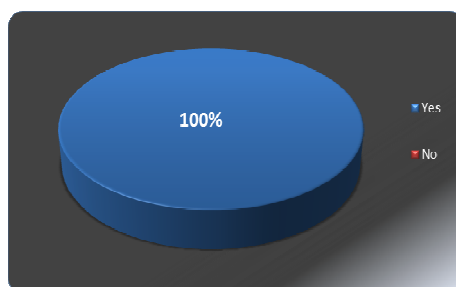
**Graph 3. According to your opinion if European Funds for touristic projects are used enough?**



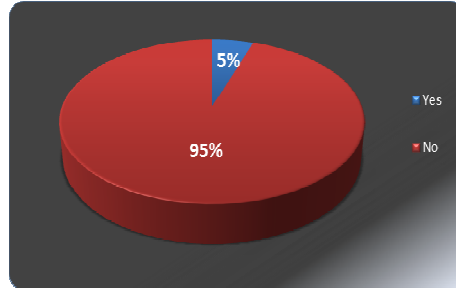
**Graph 4. Have you been informed about procedures and rules which have to be followed for EU sources use?**



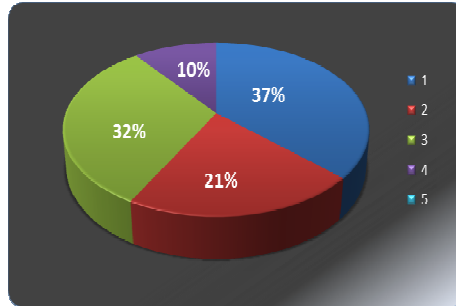
**Graph 5. Pursuant to preparation and realization of projects complexity if education and tuition are necessary?**



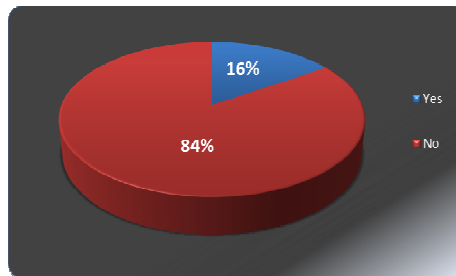
**Graph 6. According to your opinion if there is enough number of tuitions about sources from EU funds use?**



**Graph 7. Estimate possibility of information providing about touristic projects financing from European Union funds:**



**Graph 8. Have you participated in projects financed by EU?**



The results of the primary research are proved the fact that touristic workers haven't been informed on appropriate way about possibilities and haven't yet recognized the importance of EU funds. Touristic subjects come hardly to the information about actual invitations for investment and co-investment of touristic projects in Vojvodina and Serbia. Although there were several successful projects, relatively small number of projects is yearly submitted. Touristic subjects aren't

familiar, nor informed on adequate way about complex procedures and rules which have to follow in order to use EU sources.

### **Programs of cross border and transnational cooperation**

Programs of cross border cooperation are European Union's instruments for support providing to institution cooperation in adjacency area of neighbour states. Republic of Serbia was first time involved in such way of cooperation in 2004 through so called Cross border program financed by sources CARDS 2000-2006, and today programs are conducted within the second component of instrument IPA- a financial instrument of Union for adjoining support in period from 2007-2013. From 2004 till today, over 200 projects have been supported in Serbia. Republic of Serbia is managing programs with Hungary, Romania, Bulgaria, Montenegro, Bosnia and Herzegovina and Croatia [8].

The program realization produces numerous positive effects as on local, so on regional levels: a) long term personal contacts and connections are making between people from communities of both sides which presents a foundation for further cooperation and development; b) participants in projects from both sides of border provide more than precious experiences in project writing, specially having in mind a very complex procedure during quality estimation of a submitted project and final decision making about project adoption/rejecting; v) after successful project managing, a productive ground for new projects ideas is created and pursuant to that chances for the new investments gaining for the European funds are much bigger.

Types of financed programs are before all small infrastructures cross border projects, projects of economic cooperation, as well as activities considering environment protection, tourism, culture, agriculture, education, research and development, employment, institutional cooperation. Sources are non-repayable with beneficiary obligation to co-finance his project later, in amount of minimal 15% of the project value. Sources award through public competition. In order of sources awarding it is necessary to prepare a high quality project, which requires great endeavours [9].

Having in mind above mentioned, IPA component which refers to cross border cooperation presents an ideal mean for sources for development of tourism in AP Vojvodina providing, but only in case that problem in project preparation would be solved. The answer is in professional improvement of employees, i.e. in special teams making specialized for proposal projects writing. Second, communities and cities have to fasten cooperation with units of local autonomies in neighbour countries in order to provide high quality and confident partners for projects.

## 5. CONCLUDING REMARKS

In GDP structure of European Union service sector is dominant with percentage of 69,4% in relation to industrial of 28,4%. Tourism would soon become the largest service industry in EU and would realise more than 13% GDP (directly and indirectly), participating with 6% in the total employment and 30% in external trade exchange. Tourism presents the main source of working places today and in the future period also.

Villages and rural areas deterioration is identified as a global problem, so struggle against poverty, marginalization, depopulation and low living quality in rural areas in the most of countries became an act of political determination and high ranged development aim. Today EU policy of rural development is defined in Agenda 2000 and founded on multi-functionality of agriculture which comprises active rural tourism development.

Rural tourism development depends on numerous different factors. Presuppositions for tourism development are stability and safety. Foreign investments, as well as tourists don't come if there is the smallest risk considering their safety. Tourism development is in direct proportion with infrastructure development. Investment into road nets, railway, air and river transport is presupposition for tourism development. Also, without investment into capacities as in existent, so in new constructing, tourism development isn't possible. EU assists with no repayable sources and indirectly through funds of special assignment. By investment increasing into tourism, stability of a country is higher, mobility of goods and settlements, recruitment of cultural contacts, which reflects on the state image and tourists' attraction.

Surveys conducted within the project show that there is interest, but degree of information about the ways and possibilities for EU sources use for rural tourism development and tourism in general are very weak. It is undoubtedly one of the indicators which show that there is necessity for education in order to stimulate business initiatives and show how offered possibilities of EU funds could be used.

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# SEGMENTATION OF 'CONSUMER AUDIENCE' IN IMPROVING TELEVISION VIEWERS SATISFACTION IN THE REPUBLIC OF MACEDONIA

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Tatjana PETKOVSKA MIRCEVSKA<sup>1</sup>  
German FILKOV<sup>2</sup>

## **Abstract**

*In the 21<sup>st</sup> Century, the television audience is becoming the most important category in television business, and creating effective campaigns the most difficult task in television marketing. Continuous audience measurement, segmentation and targeting is necessary for designing programs and attracting viewers from the same segment, which contributes to higher ratings and revenues in the television business.*

*Television viewers are also consumers, often defined as 'consumer audience'. The segments are determined by key characteristics (e.g. demographic and psychographic) that make them similar to each other. With the development of sophisticated techniques for measuring television audience, broadcasters and advertisers pay more attention to the segmentation as a basis for programming and advertisements. This, in turn, affects the consumer audience satisfaction and at the same time attracts companies to advertise their offers in a related round.*

*Calculations and analyses of the consumer audience segmentation contained in this paper are based on the data obtained by the Nielsen Audience Measurement (Macedonia). The segments are defined according to several criteria, based on a critical period for television audience measurement, which is considered as most relevant for comparison to the previous analyses.*

*The analysis shows that in addition to the so-called average viewer – adult female, with an average income, high education, coming from a moderately large family, and most often a viewer in prime time, a significant number and composition of segments of television viewing exist outside of prime time, which is an opportunity*

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*for advertisers to target these parts of the "consumer audience" in a more effective and less expensive manner.*

**Keywords:** *segmentation, consumer audience, television marketing, television audience*

## **THE CONCEPT OF "CONSUMER AUDIENCE" AND THE VIEWER (CONSUMER) BEHAVIOR**

Media and marketing researchers are increasingly more speaking about consumption of media products instead of receiving or interpretation of media content. This clearly indicates that media content is seen as a product that is sold to the consumer audiences. Wernick (1991) is among the first that considers this merging of the concepts of audience and consumer target group to be part of the phenomenon called commercialization. Since then, understanding the process of the so-called media consumption has been a central part of many scientific researches that are grouped around two opposing poles: the first assumes that the audience is relatively passive and powerless, while the second puts media consumption as an active process in the center of focus. (Puustinen, 2006, p.3)

In 1977 the economist Dallas Smythe was the first to reveal the idea of "commercial media economy", which is based on the concept of selling the audiences to advertisers, whereby the audience in that sense is bought and sold based on its viewing habits and consumer capacities. (Puustinen, 2006, p.12)

In regards to the audiences seen as consumers, critics (Ang, Carpenter, Lury and Warde) mainly speak from a constructionist perspective and view the consumer-audience relationship as a "discursive constructs produced by media and advertising organisations".

According to them, the issue refers to "imaginary groupings of people that advertising agencies sell to goods producers". Lury and Warde (1997) represent the idea that all this is actually a product of the companies that are advertising, more specifically, that the entire concept of creating an audience and then selling it as a commodity to the advertisers is actually not created to help consumers in easing their access to products and services, but rather to help companies to "reduce their anxiety and lack of knowledge and imagination".

Puustinen (2006) concludes that the daily life of the consumer audience is not predetermined by the media and commercial world, but that the audiences and consumers still have the power and space to act within the structures of economy

and culture. Nevertheless, she suggests that both consumption and communication should be seen together by all three aspects: their structure, process and agency. (Puustinen, 2006, p.17-18)

According to one approach “if television viewing were habitual, the estimation of future advertising audiences would be much easier” (Kasari, 1985, p.30). Consumer behavior is most closely related to the media, and within this framework to television as well, as the factors that motivate consumers in making a purchase decision determines how to define the groups of people who will continue to be targeted with commercial messages. The study of consumer behavior helps advertisers in designing effective campaigns. Because of this, there are increased discussions about the so-called consumer audience and despite the opposing views a general conclusion among analysts dealing with this issue is that the need for measuring, segmenting and targeting the audience has emerged exactly from commercialization.

MacBeth (1996) poses a dilemma on the various influences television has on different viewers, proving that two viewers sitting next to each other and watching the same television program will have different impressions, recollections and understandings of that program. It is believed that during such different impacts a same program has on different viewers, there are cases when the characteristics of the viewer prevail and others when the characteristics of the message or content prevail. In this context, the same author states the conclusion made by Langer and Piper in that “how one person views television is much more important than what that person is viewing” (MacBeth, 1996, p.5). Thus, television in this sense is considered to provide the ability to control the viewer in choosing what program to watch, whereas the predictability of “what the viewer will watch”, which is enabled by certain characteristics of the viewer or the program, is an important part of that control. In this respect, studies have shown that it is very important if the viewer is watching the program with attention or absence.

According to Slater (1997), analysts in the field of the behavior of media audiences as consumers are in general divided into two opposing groups. The first, led by liberals, sees consumers as “heroes” of the market economy, while the second, represented in social studies, seeks to view consumers as “culturally misled persons” manipulated by commercials and media.

Aside from the opposing views, members of the media audiences as consumers have gone in full depth in all media related studies and a predominant part of all media studies are performed for the purpose of assessing the audience as consumers in the process of purchasing.

The role of media is very important in this process from various aspects. Television advertising is frequently used to create or enhance awareness, or to inform people on the qualities of a particular brand and what that brand can offer. In this way (e.g., ranking of automobiles based on awards received, comparing a product with the same sort of products from other manufacturers and etc.), the consumer may develop certain buying preferences. Furthermore, television commercials can help reach consumers in search of certain brands. Sometimes, advertisers offer such things as better warranty and other terms so as to help or encourage consumers in choosing exactly their product. On the other hand, all these specific offers allow advertisers to measure the results of advertising more easily (Katz, 2003).

Vollmer and Precourt (2008) highlight the need for a change in the behavior of marketers through continual experimentation, innovation and shifts in strategy so as to be more confident in that they have connected effectively and are communicating with consumers. In this sense, instead of being satisfied with knowing how many people are exposed to their messages, marketers should strive in determining how well their messages are received, whether it caused a consumer response and exactly what those responses are. This means that it is not important how many people are watching, but rather do they pay attention and respond.

## **SPECIFICS OF CONSUMER AUDIENCE SEGMENTATION**

No media of mass communication has succeeded in becoming as popular in modern societies and having such an enormous impact on people as television has. Unlike print media, which is losing a significant portion of its popularity and circulation due to the Internet, television has managed to maintain its dominance primarily as a result of its successful convergence with this relatively new means of communication. With continuous technological developments, people are increasingly more adjusting their environment according to their needs and goals. Today, in the developed world, the television set is still the single most widely owned technical device of households. In EU countries 97.1% of households own a television set, 98.7% of households in Macedonia, 98.9% of Americans (USA) and 99.5% of Japanese (Kirsch, 2011, p.10). They differ by types of receivers that tend to change as technology changes. At the same time, various technological devices have been developed for recording programs and delayed playback, for fast forwarding contents we do not wish to view, for rewinding and repeating same contents, for saving and storing contents and etc. This changes the manner, time and place of television viewing, which along with the changes in the rhythm of life and the viewing habits of people in general, creates a continuous and even greater need for getting to know those viewers.

In modern times, it is important both for society and for companies to understand the television viewers, in other words the “consumer audience”, when sending their messages across to consumers, but also for televisions in order to better meet the needs of the viewers and achieve positive results in their working.

In order to better understand television viewers, their number and their so-called viewing habits need be determined primarily.

In this sense, one of the greatest researchers on television audiences, Ien Ang (1991) considers that one of the most important features of modern commercial television is that viewers are referred to as the “market”. Hence, this market is viewed as a mass that needs to be divided into segments, which will then be targeted appropriately. These segments consist of well-organized serial units that are defined as households or individuals with specific viewing habits.

Audience segmentation, aside from its own specifics, basically does not differ much from the common concept of segmentation. “The idea behind segmenting people into groups is that groups of people to whom advertisers direct their messages are defined by certain characteristics – usually demographics and psychographics – and these characteristics make them more alike than different. Furthermore, those characteristics also define how they are different from other people who may not be as ideal a market for a product”. (Wells, Moriarty and Burnett, 2006, p.147).

In order for companies to be able to properly direct their marketing efforts and communications, they first need to divide the viewers they will target into homogeneous groups with similar characteristics. Once they have performed this division, companies must choose one target group of viewers to which to direct their marketing and communications efforts. This is especially important for the marketing activities, as billions of dollars are spent each year by companies throughout the world just for television advertising. How effective this money will be spent depends greatly on the choices that will be made by the television viewers – what and when they will watch television. It is therefore essential to better understand television viewers in order to be able to adequately respond to their needs and desires and for companies to realize positive results of their operations.

According to Osler (2005) audience segmentation is a key marketing activity which includes five steps: audience identification, audience prioritization, audience profiling, audience touchpoint analysis and resource allocation. Figure 1 (Osler 2005) shows the detailed description of the activities that need to be taken within each of the five steps.

**Figure 1. Five steps to audience segmentation (Osler 2005)**

Step	Activity	Description	Input
1	Audience identification	Defines all those individuals or groups who have a direct say in or have influence upon the buying decision.	Qualitative research - Internal interviews - External interviews Industry data/research Sales intelligence Channel intelligence
2	Audience prioritization	Forces tough choices about each segment's order of importance.	Qualitative research - Internal interviews - External interviews Industry data/research Sales intelligence
3	Audience profiling	Seeks psychographic understanding of the unique drivers, pains, and interests of each audience segment.	Qualitative research - Internal interviews - External interviews Quantitative research - e.g. Tradeoff analysis Industry data/research
4	Audience touchpoint analysis	Takes each audience segment and analyzes all the ways that the product comes into contact with each audience segment.	Customer interviews Communications audit Competitive best practices analysis Internal surveys
5	Resource allocation	Demands the prioritization of each touchpoint, for each segment, in order to direct marketing resource allocation.	Marketing data Channel needs Internal surveys Industry data Past performance

Determining the basic segments of television viewers by geographic, demographic and other characteristics is performed by measuring television viewership. In August 2007, the leading American agency for audience measurement, Nielsen, announced that it had developed a new methodology which would provide companies that advertise a significant insight into the media habits of several specific demographic segments of viewers, thus allowing them to connect with their target audiences more efficiently.

In segmenting the audience for the purpose of designing programs, aside from the so-called viewer ratings, qualitative analysis must also be taken into consideration. In other words, the need for making a distinction between the number of viewers and their satisfaction is pointed out.

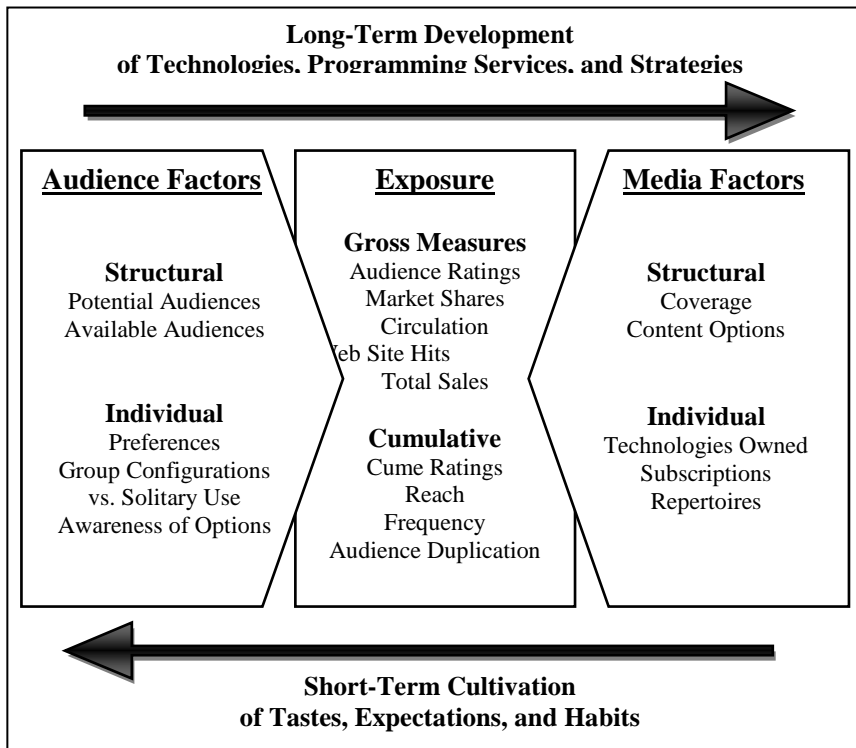
Knowing the composition of the audience segments is of great importance not only for companies but also for televisions, which must take into account the segments of their audience in order to design programs and schedules that will attract more viewers of a same segment in a given time. It will lead to higher viewership ratings of these programs, which will then allow attracting even more advertising and achieving higher revenues.

Segmentation of television viewers has its own specifics that make this process more complex.

Among the most important specifics that can be pointed out are:

- -The dual role of television viewers - as viewers and as consumers;
- -The need for audience segmentation by television stations and those who are advertising;
- -Manner of measuring television viewership as a basis for segmenting the audience.

**Figure 2. A model of audience behavior (WEBSTER, PHALEN, and LICHTY 2006)**



Webster, Phalen and Lichty (2006) set a summary model that they call “model of audience behavior” in which the main structural and individual factors of the audience and of the media are put in a wider context, in the context of their impact upon the exposure of the audience to television as a media (Figure 2).

As can be seen, the central component of the model refers to and is trying to explain media exposure. The main factors that determine exposure are the audience and the media. There could also be a cause-effect relationship between both of the factors.

One of the most complex activities related to the process of segmenting the television audience is narrowing the segments to the level of the so-called “key viewer”, which is actually a prototype of the average viewer of a television program. As a result, each television will be able to decide much easier on what to broadcast during a specific time of the day, while advertisers will be able to design their advertising messages more efficiently.

#### **MEASURING VIEWERSHIP AND SEGMENTATION OF THE “CONSUMER AUDIENCE” IN REPUBLIC OF MACEDONIA**

In Republic of Macedonia, the use of audience segmentation became more significant with the liberalization of the broadcasting sector following the years the country gained independence. Starting with the first private television stations (1992 and 1993) following through the beginning of the first systematic measurements of ratings, as the basis for a more thorough segmentation of viewers (1998), segmentation was performed on the basis of occasional and incomplete viewership surveys. In Macedonia the first regular measuring of television audiences started in 1998, although it was performed only four times a year. Since 2001, television audience measurement is performed every month. Monthly surveys that were carried out until 2008 used the method of maintaining logs. This type of television viewership analysis and the level of audience segmentation development, although significantly advanced compared to that of a decade before, still lagged behind other developed and even some neighboring countries in the region. This lag could be seen by the smaller number of features according to which television viewers were segmented and also by the non-application of more accurate and comprehensive methods of measuring television viewership, such as people meters. That, on the other hand did not provide sufficient preconditions for the development of the television business in the period it was experiencing full “blossoming”, both in neighboring and in other European and countries around the world, with serious investments in it.



The long period of not using people meters, as a more accurate and comprehensive method for measuring viewership compared to the one of maintaining logs, was another area which was lagging behind. All this also had an impact on the total amount companies spent on television advertising in Macedonia, which was significantly lower than in other Eastern European countries. At the same time, while the total amount of television advertising was estimated at 52 million per year in Macedonia, in other countries this amount was: 254 million euros in Croatia, 299 million euros in Serbia, up to 577 million euros in the Czech Republic and 1.8 billion euros in Romania (Kirsch, 2010, p. 39).

The first measuring in Macedonia based on people meters started in December 2007, experimentally only on the territory of the capital city of Skopje, and as of July 2008 the entire territory of Macedonia finally shifted to electronic measurement of viewership.

The following text presents the current state regarding the segments of television viewers in Macedonia, obtained by measuring the audience by the Nielsen Audience Measurement (Macedonia) agency, as the only measuring that is conducted regularly and systematically and that is comparable to audience measurements of other countries around the world. The month of February 2013 was taken as a critical period for the basic measuring of television viewership, a month which is considered as one of the most relevant for obtaining an accurate assessment of the composition of the segments of the television viewers. Viewership is measured through information obtained minute by minute from people meters, which are set in a panel of 400 households covering a sample of more than 1,300 individuals representing 1,905,777 viewers of television households over the age of 4 years.

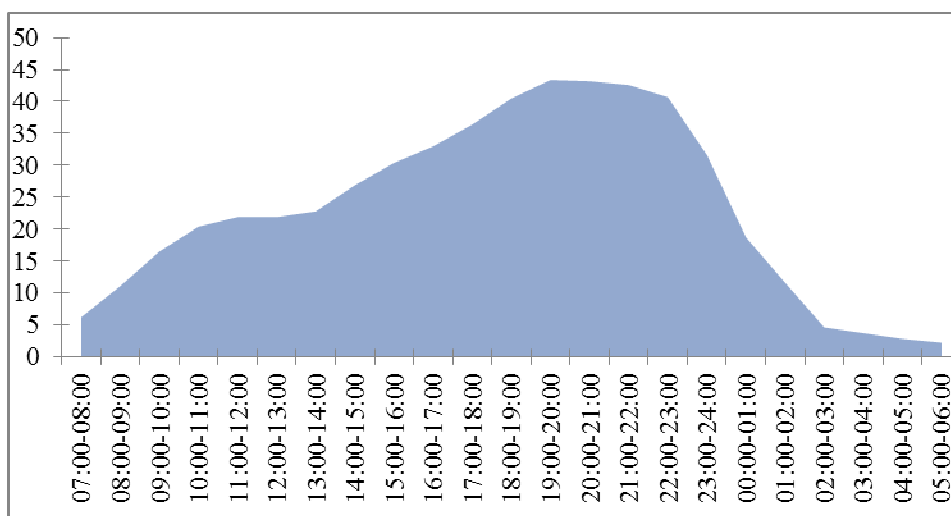
According to the data on the average percentage of a given population group watching television, the segment with the highest TV rating are females at the age of 60 to 64 who don't work and come from the urban areas. They earn above the average income and are responsible for purchases in their families which consist of 1 to 2 members.

On the contrary, the segments that watches television the least or the ones with the lowest TV ratings are young people at the age between 20 and 29, those who live in families of five and more members and who are not responsible for purchases in their households.

There is no particular difference in television ratings between segments with different levels of education, as well as between those who live in urban and in other areas. It could be of a particular interest from the advertisers' point of view

that those who are responsible for purchases in their households watch television far more than the ones who are not responsible for purchases. Another significant difference is between the segment of viewers with an above average income who watch television less than those with average or below average income.

**Table 1. Average daily TV rating in %, Nielsen Audience Measurement (Macedonia), February 2013**



Similar conclusions can be reached according to the data for the total number of viewers of particular population segments (Figure 3). Males watch television less than females, older people more than younger, and those who don't work more than those who do work.

These numbers are even more important given that they show the total number of viewers of a particular segment.

**Figure 3. Viewers for TV dayparts, Nielsen Audience Measurement (Macedonia), February 2013**

Dayparts (time segments)	Most numerous segments of TV viewers	Least numerous segments of TV viewers
Early morning 07:00 - 09:00 h	male, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	female, 20-24, northwest region, university education, 1-2 members, above average income, non-urban area
Morning 09:00 - 12:00 h	female, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	20-24, working (15+), university education, 1-2 members, above average income
Afternoon 12:00 - 16:00 h	female, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, working (15+), university education, 1-2 members, above average income
Early fringe 16:00 - 18:00 h	female, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, working (15+), university education, 1-2 members, above average income
Primetime access 18:00 - 20:00 h	female, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, working (15+), university education, 1-2 members, above average income
Primetime 20:00 - 23:00 h	female, 65+, east region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, university education, above average income
Late fringe 23:00 - 24:00 h	female, 65+, Skopje region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, 1-2 members
Late night 24:00 - 02:00 h	male, 45-49, Skopje region, non-working (15+), high school, 3-4 members, average income, urban area	25-29, 1-2 members
Overnight 02:00 - 07:00 h	male, 30-34, northwest region, working (15+), high school, 3-4 members, average income, urban area	female, 4-9, southwest region, university education, 5+ members, above average income, non-urban area

There is a serious debate across the world on whether the segment of television viewers between the ages of 18-34 or between 18 to 49 years should still be the most important ones for the advertisers or whether the same or at least similar

attention should be given to other segments according to age (Holmes, 2012). Hence, advertisers have been for many years focusing on viewers of these age groups, considering that they still lack solid purchasing habits, and that they are still creating them. On the other hand, although the most numerous, the older segment of viewers older than 60 years is not given proper attention as it is considered that these are people who have already established purchasing habits that are difficult to change. But the number of these viewers is much greater and they have such a significant purchasing power, which means that they simply must not be ignored by advertisers.

The comparison between segments of television viewers in 2013 and 2011 shows that there are some changes in a relatively short period of two years (March 2011 to February 2013). There is a reduction in the average ratings among men as viewers, while the same average rating among women remains the same. The rise of the average rating among young people ages 4 through 14 is what is important for advertisers, but there is a decline in the following group ages 15 to 19 years which along with the group 20 through 24 years is a group that has the lowest average TV ratings. There is also a more significant increase in the average TV rating among the group of ages 25 through 34 years, which is among the least numerous according to the average number of viewers. Regarding the most elderly viewers, those over 55 years of age, there is a certain increase in the average viewership rating among them all. In regards to the regions, there is an increase in the average TV ratings in the southwest region, on account of the reduction in the eastern and northeastern region with an unchanged rating in the capital city. There are no changes in the average TV rating in regards to segmentations performed according to employment, education, number of members, responsibility for purchasing and place of residence.

## **CONCLUSION**

Audience segmentation, aside from its own specifics, basically does not differ much from the common concept of segmentation. In order for companies to be able to properly direct their marketing efforts and communications, they first need to divide the viewers they will target into homogeneous groups with similar characteristics. Once they have performed this division, companies must choose one target group of viewers to which to direct their marketing and communications efforts.

Television viewers have a dual role: for television they are viewers of their programs, whereas for companies that are advertising they are consumers of their products and services.

It is of key importance to better understand and have an analysis of the television viewers for both televisions and for companies that are advertising, but also for the viewers as the level of their satisfaction grows.

The large number of people who regularly watch television represent a great opportunity for any company to reach out to their target customers through television by means of sending their advertising messages.

The availability of information on the exact number of viewers according to different segments during an entire day should be used in the direction of significantly expanding the scope of television advertising outside of prime time. By this approach, segments of “consumers” which are very significant in number and composition and which in prime time can easily be overlapped and lost by other segments, can be included for less money and with less effort.

Taking into consideration that in just a relatively short time of two years there is a change in the average ratings of television viewing within certain segments of the population, there is a need for regular monitoring of these changes so that televisions and advertisers can adapt their marketing activities accordingly.

With the increase in the number of viewing options (DVD recorders, Internet, video on demand, etc.), the increase in the available TV channels (satellite and cable) along with the changes of behavior in the family and working lifestyle of viewers, it is becoming more important to determine and analyze the segments of television viewers in more detail, primarily in terms of their role as consumers.

With the expected process of a harsher fragmentation of television viewers in the future, it is estimated that the need of a more detailed segmentation of television viewers will become even more important. The designing of the programs will increase as viewers will become more selective, they will have less and less time for watching television and will increasingly more often watch television in different individual periods. On the other hand, companies will be able to reach out to their target customers much easier as viewers will become more homogeneous for each type of program.

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# FACTORS OF JOB DISSATISFACTION AMONG EMPLOYEES DURING RECESSION

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Irina PIPERKOVA MAJOVSKI<sup>1</sup>

## **Abstract**

*The current economic downturn creates major challenges for organizations which significantly affects the way companies manage their workforce. Globally, companies struggle to survive in this uncertainty with cost-cutting measures reflected in redundancies, frozen recruitment, lack of employee training and reductions in compensation and benefits. At the same time, there is a substantial pressure on employees to increase their productivity and work longer hours. The above inevitably affects employees by hindering their well-being, job satisfaction and commitment. This raises issues related to the implications of the recession and companies' implemented measures on the employee satisfaction and productivity. While companies implement rigorous cost-cutting measures that affect employees, their survival and sustainability depends, among other, on employee productivity.*

*Considering the relationship between job satisfaction and employee productivity, it is paramount to determine the factors of dissatisfaction among employees during economic downturn. This paper aims to identify the factors that are of highest importance to employees as well as those that cause job dissatisfaction among employees in private companies in Macedonia during these recession years. The findings indicate that job insecurity and the relationship with superiors are among primary factors that cause employee dissatisfaction.*

**Keywords:** *job dissatisfaction, economic downturn*

## **INTRODUCTION**

The economic downturn in recent years has taken its toll more or less in all economies in Europe and the world: high rates of unemployment, major employee layoffs, failure of many businesses, lack of finance, shrink in market share, decline in companies' sales and profit. In such a context, the issue of employee satisfaction might seem trivial. However, the uncertainty both on the economic and political

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scene in Europe changes employees' perceptions and expectations, thus having an impact on the job satisfaction factors.

While the job uncertainty and undergoing major redundancies put high psychological pressure on employees on one hand, companies on the other hand seek to reduce their costs and maintain their market share, profitability and performance. A closer look on a micro level reveals that most of the companies strive to survive or to maintain as much as possible the projected level of performance and productivity while at the same time reducing their costs. The above imposes great concern for companies about the effects on job satisfaction and, in turn, the impact on performance and other organizational outcomes.

In this setting, it is paramount that companies identify major factors of dissatisfaction among employees and develop further policies and measures, so as to maintain employees' levels of motivation and job engagement. Therefore, the paper addresses the topic of job satisfaction and seeks to identify the major factors of dissatisfaction among employees in R. Macedonia during the period of economic downturn.

## **1. THEORETICAL APPROACHES TO JOB SATISFACTION**

There are several theoretical approaches to job satisfaction classified into two major conceptual frameworks: content theories and process theories. Content theories consider job satisfaction from the aspect of factors and needs that encourage and inspire the behavior as well as performance. Job satisfaction is, hence, explained according to the feeling that employees have regarding the job and the sense of growth and self-actualization. On the other hand, process theories relate job satisfaction to the extent to which an individual's expectations and values are met. Based on these theories, the employee's behavior is driven by certain needs and therefore the main focus is on employee's diverse needs and the cognitive process behind them. These theories focus on the process itself, that is, the sources and causes of employee's behavior, as well as the motives that guide those behaviors.

One of the most controversial theories on job satisfaction in the literature is Herzberg's two-factor theory (Herzberg et al., 1959) which distinguishes two categories of factors, motivation factors and hygiene factors that determine the level of job satisfaction and job dissatisfaction. The theory states that job satisfaction and dissatisfaction are affected by two different sets of factors, i.e. factors causing job satisfaction (and presumably motivation) are different from that causing job dissatisfaction. Therefore, satisfaction and dissatisfaction cannot be



measured on the same continuum. This concept is opposite to the explanation of job satisfaction and dissatisfaction as extremes on a single continuum with a neutral condition in the midpoint in which the individual is neither satisfied nor dissatisfied (Behling, Labovitz, & Kosmo, 1968). The hygiene factors or maintenance factors are necessary to avoid dissatisfaction but by themselves do not provide satisfaction. Herzberg related intrinsic factors with job satisfaction and extrinsic factors with dissatisfaction. In other words, hygiene factors include supervision, relationship with superiors and peers, work conditions, salary, status, company policy and administration, benefits, and job security. Motivation factors lead to positive job attitudes because they satisfy the need for self-actualization. Motivation factors are achievement, recognition, the work itself, responsibility, and advancement. The satisfaction of hygiene needs can prevent dissatisfaction and poor performance, but only the satisfaction of the motivation factors will bring the type of productivity improvement sought by companies (Herzberg et al., 1959).

Herzberg's theory has been as much cited as has been criticized. Certain studies criticize the theory in respect to the core assumptions (Lawler, 1970; Schwab, DeVitt, and Cummings, 1971), its methodology (Ewen et al., 1966; Smerek & Peterson, 2007; Dunaway & Running, 2009) and the findings (Brenner, Carmack, and Weinstein, 1971; Maidani, 1991; Ssesanga & Garrett, 2005; Schroder, 2008). Contrary to the previous, other studies supported Herzberg's findings (Cummings, 1975; Gaziel, 1986; Kacel, Miller, & Norris, 2005; Sharp, 2008). Among these studies is the empirical investigation of job motivation among 2665 workers in both heavy and light industries conducted by the Sociological Research Laboratory at the University of Leningrad. The research concluded that the most effective and important attitudinal factor for effective job performance is satisfaction with the kind of work (Herzberg, 1965, p. 248). Nowadays, Herzberg's theory is regarded by many as valid framework and as such it presents a theoretical foundation on much of the current literature in areas such as job satisfaction, employee motivation, and even reward and compensation systems. Recent studies have used the two-factor theory as the theoretical framework to study different phenomena in the workplace.

Although, there are differences in the theoretical approaches of job satisfaction, the prevailing literature in this area focuses on several job facets, defined as intrinsic and extrinsic factors that are considered to be major contributors to employee job satisfaction. Based on these work-related facets, several measures for employee job satisfaction have been developed.

The two most widely accepted employee attitude survey measures are the Job Descriptive Index (Smith, Kendall, & Hulin, 1969) and the Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967). Since its introduction,

Cornell's Job Descriptive Index (JDI) has had an impressive array of validation evidence and is thus frequently used job satisfaction scale (Saari & Judge, 2004). The JDI assesses satisfaction with five different job areas: pay, promotion, coworkers, supervision, and the work itself. The advantage of the JDI is that it measures various job-related facets of employee satisfaction. The Minnesota Satisfaction Questionnaire (MSQ), on the other hand uses both long and short forms as well as faceted and overall measures. It also one of the most validated job satisfaction scales and widely used as well.

## **2. IMPORTANCE OF EMPLOYEE JOB SATISFACTION**

Generally accepted definition of job satisfaction among researchers and practitioners is the one by Locke, according to whom a job satisfaction is "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (1976, p. 1304). It refers to the attitudes and feelings people have about their work generated from their perception of how well their job provides those things that are viewed as important. Job satisfaction is relative to the attitudes employees have about their job and job facets such as the working environment, working conditions, equitable rewards, and communication with management.

The topic of job satisfaction has received considerable attention from human resource professionals and organizational psychologists throughout the years. This is mainly due to its positive correlation to several organizational factors as enhanced job performance, positive work values, high levels of employee motivation, and lower rates of absenteeism, turnover and burnout. In this context, job satisfaction has been strongly positively correlated to organizational commitment (Brown & Peterson, 1993). The interest in job satisfaction and organizational commitment results from the view that these two concepts are potential predictors of future employee behavior and relate to productivity, attendance at work, participation and turnover (Camp, 1993). Job satisfaction has also been thought to have a significant effect on job performance. Although recent studies reveal stronger positive relationship between job satisfaction and performance (see for example Judge et al., 2001), support for this assumption has been hard to obtain (Christian, Iyer & Soberman, 2006).

Defining satisfaction as the sum of an individual's met expectations on the job, Porter & Steers (1973) presented strong support to the hypothesis that the overall job satisfaction represents an important factor in an individual's participation decision. In this context, job dissatisfaction among employees has been closely related to turnover. This is usually associated with decline in productivity, disciplinary problems, grievance, absenteeism, and employee turnover. Studying

turnover among employees, Udechukwu (2009) found close correlation between Herzberg's 'hygiene' factors and the high rates of turnover among employees.

High unemployment rates and decreased job mobility opportunities keep employee turnover relatively low. Namely, a recession and high unemployment restrain voluntary employee turnover and job mobility (Hom & Kinicki, 2001). Although dissatisfied employees are generally likely to leave the undesirable work conditions, in such conditions dissatisfied employees are often unable to leave their jobs as the prospects of finding another job are minimal. On the other hand, the retention of dissatisfied employees does not generate any positive effect on the companies. On the contrary, the behavior of dissatisfied employees who remain within the company could affect not only their own performance but also the performance of other employees as well. In addition, when the job market becomes more favorable dissatisfied employees will seek other job.

Studies on job satisfaction have confirmed that several internal and external factors can influence employee job satisfaction. These factors may differ based on industry, job profile and individual characteristics as age, educational level and personality traits and may as well change over time. Research studies, across several years and organizations as well as various types of jobs, confirm that the work situation is important in terms of job satisfaction and organization's impact. The most important situational influence on job satisfaction is the nature of the work itself or the intrinsic job characteristics which include job challenge, autonomy in decision making, and job variety and scope. The work itself emerges as one of the most important job characteristic along with supervision, pay and promotion opportunities (Judge & Church, 2000). Moreover, pay was found to be the prime factor for the motivation and job satisfaction of salaried employees of the automobile industry (Kathawala, Moore and Elmuti, 1990). The survey showed that compensation was ranked as the number one factor of job satisfaction and increase in salary was ranked as most important for employee motivation.

Generally, the research on this topic covers five most important job facets, about which employees have affective responses (Luthans, 1998), that have been widely used to measure job satisfaction:

1. The work itself – the extent to which the job provides the employee with interesting tasks and opportunities for learning;
2. Pay – the amount of financial compensation and its equitability;
3. Promotion – opportunities for career advancement;
4. Supervision – technical and behavioral support provided by the superior;
5. Coworkers – technical skills and social supportiveness by coworkers.

Nevertheless, the research on job satisfaction factors during recession is rather scarce. A job satisfaction survey conducted regularly in the last 10 years by the Society for Human Resource Management (2012) has identified a noticeable fluctuation in employees' overall satisfaction with their jobs. This fluctuation could be attributed to changes within the workplace as well as economic, demographic and social trends. The 2012 survey (SHRM, 2012) identified top five contributors to employee job satisfaction, two of which have remained same in the last 10 years: opportunities to use skills and abilities, job security, compensation, communication between employees and management and relationship with immediate supervisor.

### **3. FACTORS OF EMPLOYEE JOB DISSATISFACTION IN REPUBLIC OF MACEDONIA**

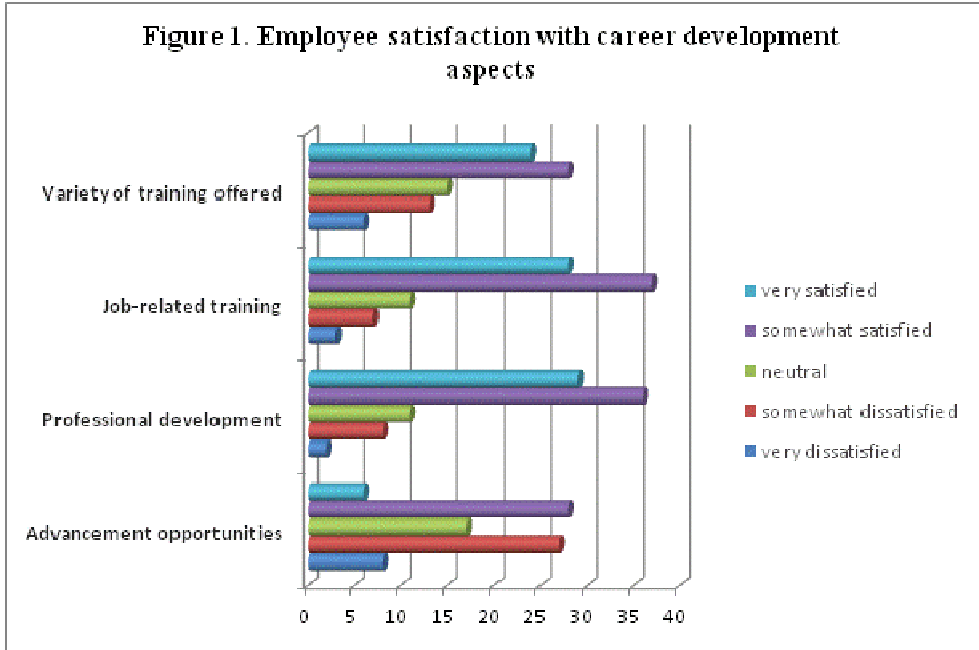
A review of previously conducted research on this topic identified several aspects that are directly related to employee job satisfaction. In this context, a questionnaire was developed encompassing factors that are considered to be major contributors to employee job satisfaction. The questionnaire, namely, included aspects pertaining to work-related factors as career development, compensation system, relationship with management, relationship with immediate supervisor, job-related issues, work environment and company policies and administration.

A preliminary survey was conducted in four medium and large companies in R. Macedonia, including 86 participants, out of which 38% were male and 62% were female. Most of the participants (43%) are at the age of 36 to 45 years, about 32% are at the age of 46 to 60 years, 14% are less than 35 years of age and the remaining participants are over 60 years of age. The majority of the participants hold a higher education degree (69%), whereas the rest have completed secondary education. In addition, 14% of the participants held managerial positions.

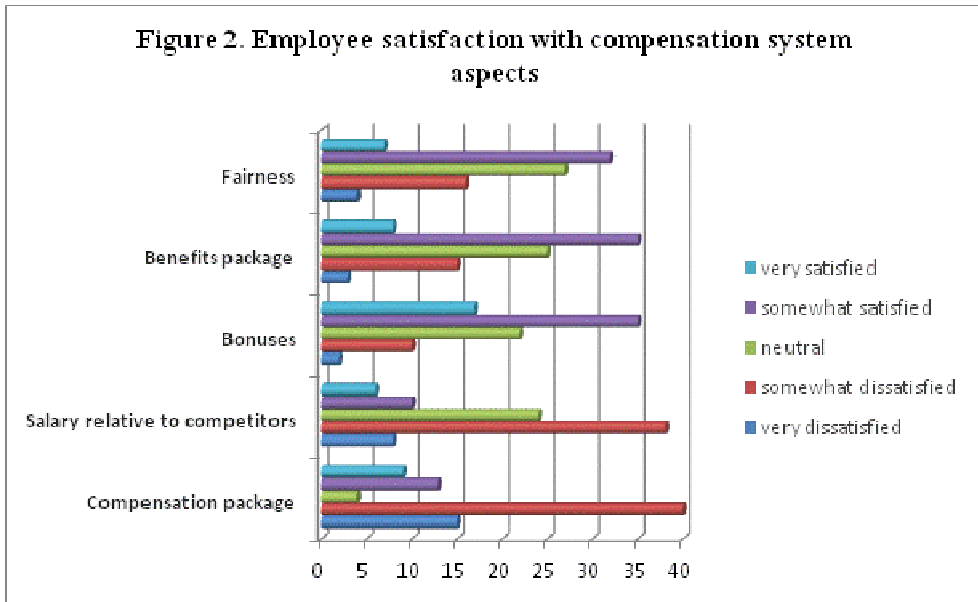
The participants were asked to rank work-related factors based on their importance and identify their level of satisfaction with aspects related to these factors.

The findings of the survey reveal significant differences in the employee job satisfaction level relative to various work-related factors. Employees are generally satisfied with the opportunities for career development provided by the companies. In particular, more than 70% of the participants are satisfied with the opportunity for professional development (42% are somewhat satisfied and 34% are very satisfied) and job-related training (43% are somewhat satisfied and 32% are very satisfied) offered by companies. The employee satisfaction with career advancement opportunities provided by companies is rather divided. Namely, equal number of participants (about 40%) is satisfied (31% of these are somewhat

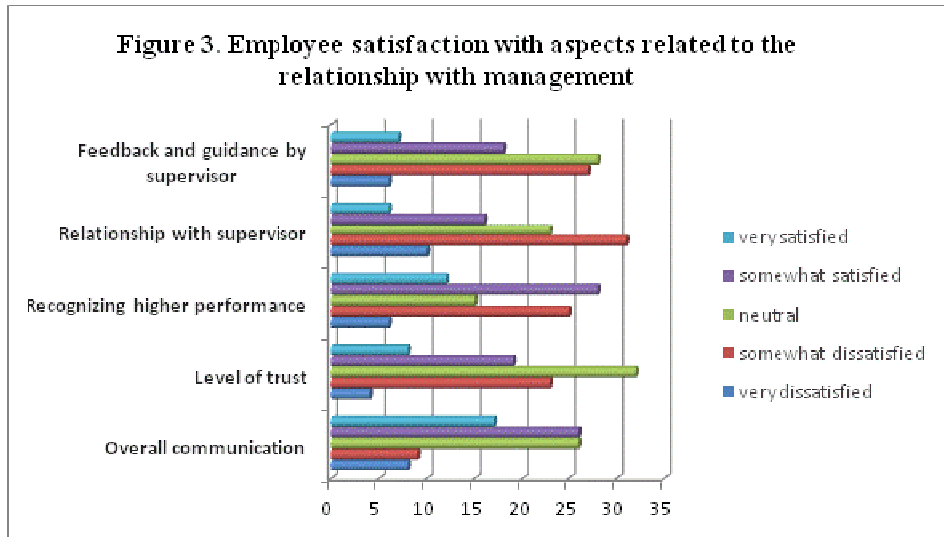
satisfied) and dissatisfied (again, 32% are somewhat dissatisfied) with the advancement opportunities available to them (see Figure 1).



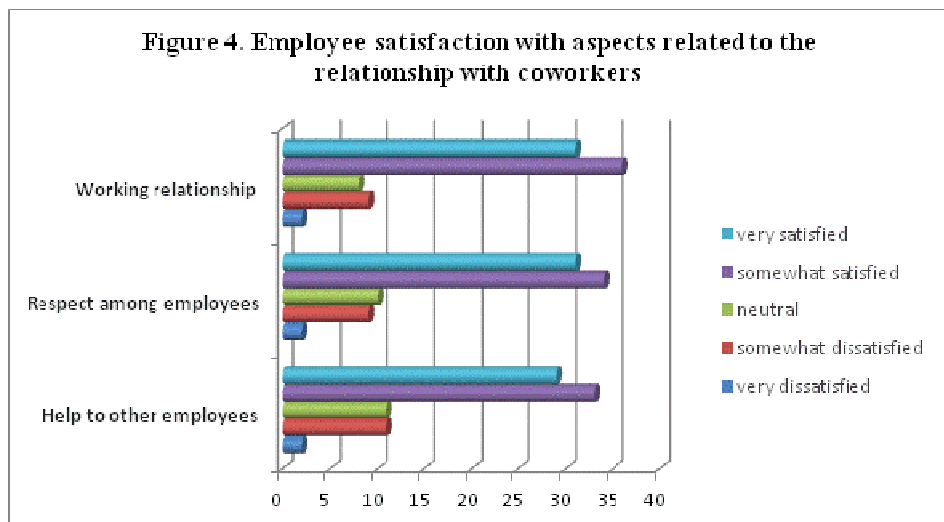
Compensation has been found to be the highest factor of dissatisfaction among the participants in the survey. Employees are generally dissatisfied with the compensation package offered by companies (52% are somewhat dissatisfied and 17% are very dissatisfied) and their salary relative to that of their competitors (44% are somewhat dissatisfied). However, the participants are rather satisfied with the opportunities for bonuses and monetary rewards offered by the companies (41% are somewhat satisfied and 20% are very satisfied) as well as the benefits package (again 41% are somewhat satisfied). There is a somewhat satisfactory level among employees regarding the fairness of the compensation system in the companies, that is, 31% are neither satisfied nor dissatisfied while 37% are somewhat satisfied (see Figure 2).



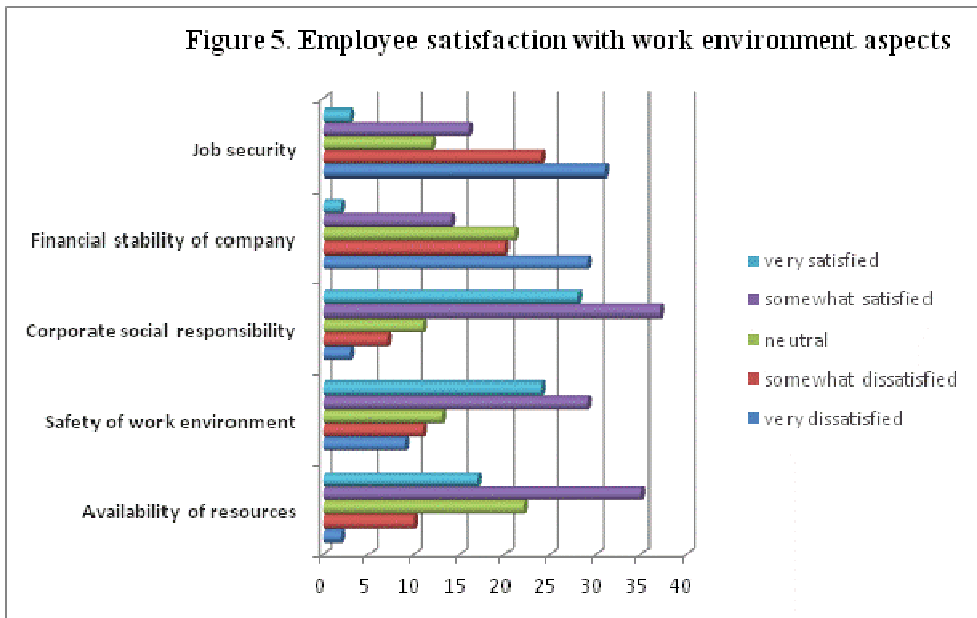
Concerning the employees' relationship with management, the survey has revealed that the overall communication between the employees and the management is rather satisfactory, whereas the relationship with the immediate supervisor have been identified a source of dissatisfaction (see Figure 3). In this regard, almost 50% of the participants are satisfied (30% of which are somewhat satisfied and 19% are very satisfied) with the overall communication with the management. Nevertheless, the relationship with the immediate supervisor has been identified to be a factor of dissatisfaction. More than 47% of the participants are dissatisfied (most of them, about 36% are somewhat dissatisfied) with the relationship with their immediate supervisor, whereas about 25% are satisfied. Noticeably, less than 7% of the participants are very satisfied with the relationship with their supervisor. In addition, about 31% of the participants are somewhat dissatisfied with the feedback and guidance that they receive from their superior and more than 32% are neither satisfied nor dissatisfied with this aspect. The level of trust, which is an essential part of the employee - management relations, has proven to be either a factor of satisfaction or of dissatisfaction. Namely, about 27% of the participants are somewhat dissatisfied with the level of trust developed with the management, while 22% of the participants are somewhat satisfied. In this context is as well the satisfaction of employees with the way the management recognizes employee's higher levels of performance. While almost 33% of the participants are rather satisfied, about 29% are dissatisfied with this aspect of the relationship with the management.



As for the aspects of the relationship with the coworkers, the participants' satisfaction is relatively high. Most of the participants are satisfied with the levels of respect developed among the employees (almost 40% are somewhat satisfied and 36% are very satisfied), and with the way employees support each other (38% of the participants are somewhat satisfied while 34% are very satisfied). As illustrated in Figure 4, the participants find the overall working relationship with their peers a factor of satisfaction. In particular, about 42% are somewhat satisfied and 36% of the participants in the survey are very satisfied with the relationship developed with the coworkers.



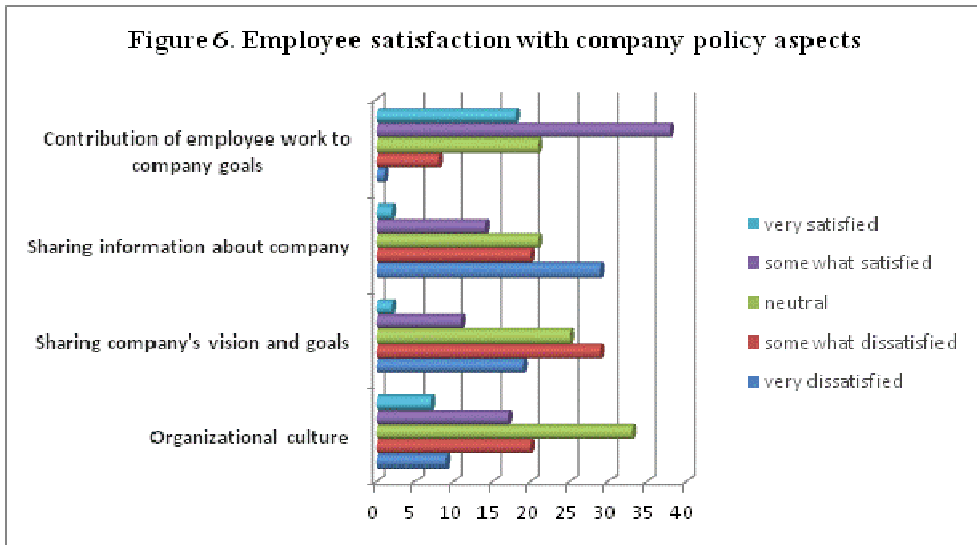
Job security and company’s financial stability have been identified as major factors of dissatisfaction among participants in the survey. Remarkable 36% of the participants are very dissatisfied, in addition to the 28% that are somewhat dissatisfied, with the job security, hence ranking this aspect as a primary factor of dissatisfaction among employees during recession (see Figure 5). The above, however, is not surprising as in periods of economic downturn many companies strive not only to sustain their market share and profitability, but many times even to survive. As company’s financial stability deteriorates, it becomes a factor of significant dissatisfaction among employees. In this regard, almost 57% of the participants are dissatisfied with the financial stability of the company for which they work. Contrary to the previous, there are relatively high levels of satisfaction among participants regarding safety of work environment, the socially responsible manner in which companies operate and the availability of resources provided to employees. Most of the participants are somewhat (41%) to very (20%) satisfied with the availability of resources necessary for performing their work. Moreover, the safety of work environment and the socially responsible manner in which the company operates are a cause of satisfaction for 62% and 76% of the participants, respectively.



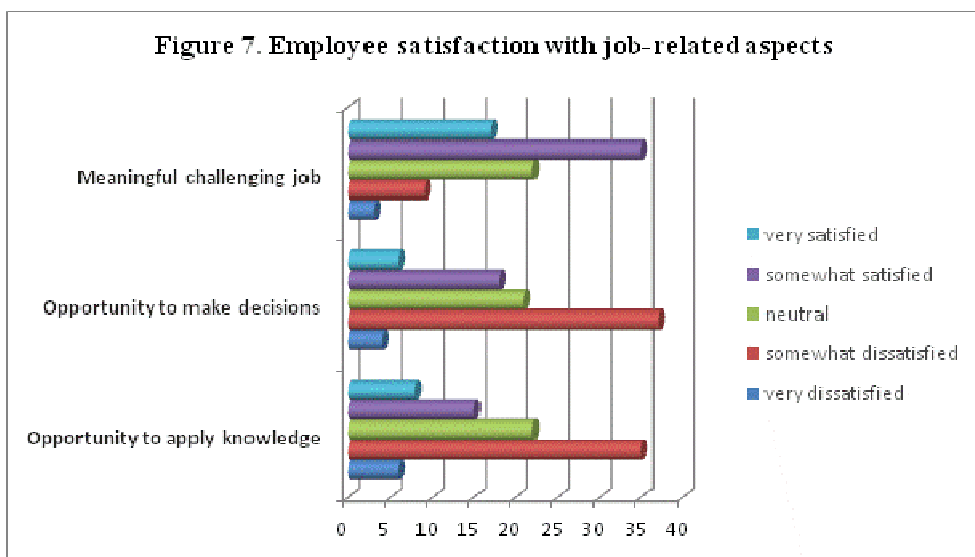
As presented in Figure 6, the participants in the survey have neutral level of satisfaction (38%) regarding the organizational culture in the company in which



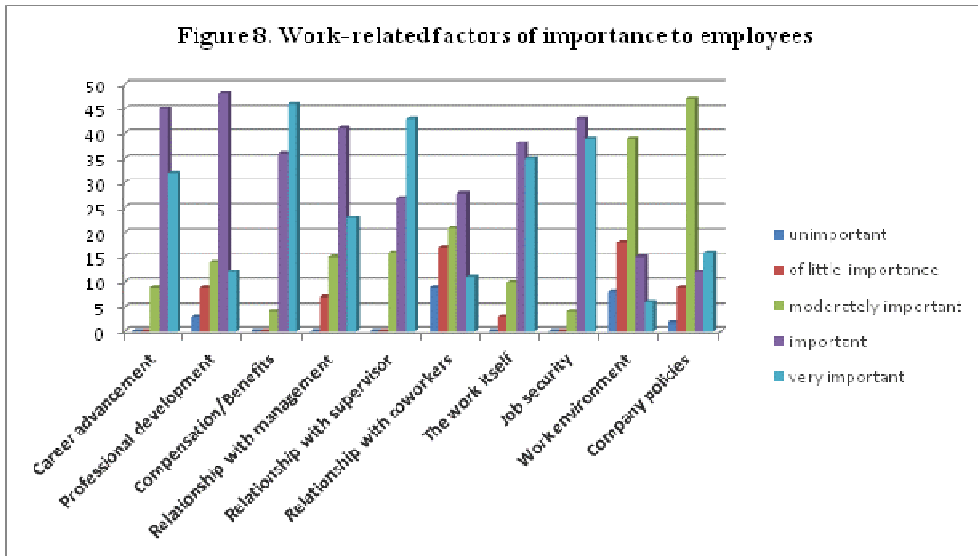
they work, while some are somewhat dissatisfied (23%). Higher levels of dissatisfaction among more than half of the participants are identified on aspects related to the way the company's values and goals are transmitted to them and the amount of information they receive on company's performance. About 34% are somewhat dissatisfied and 22% are very dissatisfied with the manner in which the vision and goals of the company in which they work are transmitted to them. Even more, about 34% of the participants in the survey indicated high levels of dissatisfaction with the amount of information that they receive on company's performance. The latter, however, is crucial especially in times of downturn for companies not only for developing relationship based on trust with the employees but also for maintaining their levels of motivation and engagement.



The survey's participants are rather satisfied with their job as 41% are somewhat satisfied and 20% are very satisfied with the way their job is meaningful and challenging (see Figure 7). Opposite to this, however, the findings revealed higher levels of dissatisfaction among employees regarding the opportunity to apply their knowledge and expertise and make decisions affecting their work. About 41% of the participants have moderate level of dissatisfaction with the opportunity available to them to apply their knowledge and skills, and about 43% with the opportunity to make decisions relative to their work. On both aspects, about 25% are neither satisfied nor dissatisfied.



The most important factors to employees, according to the findings of the survey, are job security and compensation, immediately followed by career advancement, the work itself and the relationship with supervisor. Compensation, job security and relationship with supervisors are identified as very important factors by 53%, 45% and 50% of the participants, respectively (see Figure 8). A significant gap was identified, comparing the factors that are regarded as most important to employees and those causing greater levels of dissatisfaction. As illustrated in Table 1, and as indicated previously, job security and compensation are most important factors and at the same time those causing significant dissatisfaction among employees. While 95% of the participants consider these two factors as most important, more than 60% are dissatisfied with the same in the company in which they work. The other significant gap detected while comparing the factors of importance and dissatisfaction refers to the work itself. In this regard, the work itself has been ranked third in importance by the participants in the survey, while 48% of them regard the opportunities to make decisions and to apply knowledge as somewhat to very dissatisfactory. The relationship with the immediate supervisor is as much a factor of importance as it is of dissatisfaction among employees. More than 80% of the participants consider this relationship as important while at the same time almost half of the participants are dissatisfied with the relationship with their supervisor.



**Table 1. Rank-based comparison of importance and job dissatisfaction factors**

<i>Factors of importance</i>	<i>Factors of job dissatisfaction</i>
Job security	Compensation
Compensation/Benefits	Job security
Career advancement	Financial stability
The work itself	Sharing info on company
Relationship with supervisor	Sharing vision and goals
Relationship with management	Salary relative to competitors
Professional development	Relations with supervisor
Relationship with coworkers	Opportunity to apply knowledge
Company policies	Opportunity to make decisions
Work environment	Advancement opportunities

## CONCLUSION

The findings of the conducted survey revealed a significant gap between work-related factors that are of highest importance to employees and their level of satisfaction with the same. In this context, job security and compensation levels are considered to be most important factors to employees and, at the same time, these are found to be primary factors of job dissatisfaction among employees.

During a recession, job security and compensation are primary cause of concern and dissatisfaction among the employees on one hand, while on the other hand

financial instability represents a major concern for the company. Increased financial insecurity and raised costs of living could explain why factors as pay and monetary rewards are most important job facets to employees in R. Macedonia. During the period of recession, when companies are forced to reduce their costs this would subsequently lead to increased employee job dissatisfaction. However, as job dissatisfaction among employees could easily affect their levels of productivity and commitment to organizational goals, companies should try to develop policies that would mitigate the negative effects of decreased levels of job security and compensation on employee dissatisfaction.

Furthermore, a great gap in the importance–dissatisfaction factor comparison was identified in job facets as the work itself and the relationship with the supervisor. While the opportunity to apply knowledge and skills and to make work-related decisions as well as developing good relationship with the immediate supervisor are as much a factor of importance, they are as well one of primary factors of dissatisfaction among employees. This, however, proves to be a chronic issue in companies in R. Macedonia. Research on human resource practices in Macedonian companies (Majovski & Angelova, 2010) revealed lack of employee decision making opportunities and limited inclusion of middle management in developing HR policies. Therefore, this is an area in which companies should develop policies that would allow opportunities to employees to apply their knowledge and expertise as well as autonomy in work-related decision making. In addition, the participation of middle management in people-related issues is essential during periods of uncertainty and turmoil. Sharing information on company's goals and performance would diminish the levels of employee dissatisfaction and could as well positively impact employees' commitment to organizational goals as it would increase their feelings of belongingness.

As the conducted survey is a preliminary research, further studies in this area should focus on in-depth research of those job facets that cause greatest levels of dissatisfaction among employees and seek to identify possible differences in job important factors based on industry, job, age and education levels.

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# STRATEGIES OF FINANACING COMPANIES IN SERVICE SECTOR IN THE REPUBLIC OF MACEDONIA IN TERMS OF CRISIS

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## **Abstract**

*Decisions related to financing the operation and development of companies are one of the most important decisions. Which source of funding will be used, or how to mobilize financial resources to carry out business activities, are decision that may influence the success of the operations of the companies. For them it is especially important to use sources of funding that will be consistent with funds purpose.*

*By combining different sources of funding, companies have ability to apply a variety of funding strategies. As with all businesses, with companies in the service sector in the Republic of Macedonia also, the use of any type of funding strategy has positive and negative effects on the performance of companies and brings a different level of risk. Strategies depend on funding and set financial targets enterprises. From the strategies can be seen financial growth that the company wants to achieve and the level of risk that is ready to take in order to achieve their targets.*

*The purpose of this paper is to show the potential sources of funding available for companies in the Republic of Macedonia in terms of crisis. Furthermore, to describe the characteristics, advantages and disadvantages of each potential source of funding. Also main aim of this paper is to show the sources of finance companies in the service sector of the Republic of Macedonia, used to finance its assets or funding strategies implemented, and thus perceive and approach the companies in this sector to risk and profit they want to accomplish in terms of crisis.*

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**Key words:** *financing, strategies of financing, companies, service sector, crisis, Republic of Macedonia.*

## **INTRODUCTION**

In the performance of business activities and goals, companies use different approaches in managing inventories, receivables, liabilities and cash. By applying a certain approach to management of current assets and current liabilities, companies are trying to reach the desired balance between profitability and risk .

When it comes to financing assets, companies can provide funds from various sources . Each of the sources of funding have certain advantages and disadvantages , so companies must determine the optimal structure of the sources of funding at certain time. Determining the right combination of funding , the actual strategy of funding is essential for companies . When choosing a specific strategy, it is to be measured the relationship between risk , return and liquidity , because companies tend to choose the financing strategy that will optimize the relationship between profits and risk.

Different strategies of financing have their positive and negative effects on the performance of companies and brings a different level of risk . Using a strategy of funding depends on: the activities of the company , its size , the availability of certain funding sources , the set financial goals and growth of the companies want to achieve and the level of risk they are willing to undertake. Besides these factors , the choice of the financing strategy of the enterprise depends on the environment in which the company operates , especially in very complex conditions of functioning, such as working conditions in the global economic crisis.

### **1. TYPES OF FUNDING STRATEGIES OF COMPANIES**

In determining access to funding general "starts from three assumptions: first, long-term sources of funds are more expensive than short-term sources ; second , long-term sources of profitability is higher than the short-term ; and thirdly , the risk of the enterprise financing by long -term sources is less than the short-term funding sources ." <sup>3</sup> With this in mind , three basic strategies are distinguishend in determining the mix of funding sources: aggressive strategy; moderate and conservative strategy strategy.

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<sup>3</sup> Spasov S. , Arsov S .: Financial Management , Faculty of Economics - Skopje , 2008, p.260



The conservative approach to financing companies sacrifice part of yield to be liquid, that means have high amounts of financial assets and store large quantities of inventories. So , companies are protecting themselves from unexpected illiquidity, because they have sufficient funds to pay all of its obligations , and have enough stocks to meet all needs. Conservative strategy of financing the assets requires the use of long-term sources of funds to finance fixed assets and total current assets (permanent and temporary working capital). Short-term sources of funds intended only for unforeseen and accidental increased current assets and to maintain liquidity in the form of securities.<sup>4</sup> As a result, current assets exceed current liabilities by a large margin and companies have a large amount of net working capital . High amount of net working capital is relatively secure , risk-free position that is because companies have enough liquid assets to be able to repay short-term debt .<sup>5</sup>

The degree of conservative approach depends on the amount of long term used resources. The greater portion of long-term funds to finance current assets , the more conservative strategy . Conservative strategy of financing is low -risk and relatively safe strategy . On the other hand , the security offered by the conservative strategy affect yield . The long-term financing is generally more expensive than short-term , and the company also pays interest on funds that are not needed at a given moment . The use of long-term debt and equity capital to finance the necessary funds , means engaging the funds that could be used in a more productive way .

"Some companies are more flexible then other , because there are not limited only on a few available resources. Enterprises would like more financial alternatives in order to minimize its cost of funds from any vantage point . Unfortunately, many companies are in such an enviable position in the course of the business cycle,"<sup>6</sup> and especially in times of global economic crisis . In such conditions, often lack low cost funding alternatives, as is the case with companies from the Republic of Macedonia . Such restrictions, assume that enterprises prefer more conservative approaches in their funding.

The moderate approach means that companies have more balanced attitude to risk and return . The moderate approach involves maintaining a certain level of funds and supplies that are necessary to meet the needs of enterprises . This level is called

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<sup>4</sup> Brigham F. E., Ehrhardt C. M.: Financial Management: Theory and Practice, 13<sup>th</sup> Edition, Sout-Western Cengage Learning, Mason, 2011, str. 646

<sup>5</sup> Gallagher J. T., Andrew D. J. Jr.: Financial Management – Principles and Practice, Prentice Hall, New Jersey, 1997, crp. 417

<sup>6</sup> Block B. Stanley, Hirt A. Geoffrey: Foundation of financial management, Mc Graw-Hill Irvin companies, 2008, New York, p.165

the permitted level, or close to optimal . Tthe moderate strategy of funding, known as the concept of leveling, means the cost of the assets to be equal to the period for which the asset will provide income.<sup>7</sup> The fixed assets and permanent current assets are financed from the company long-term sources of funds , while the occasional current assets are fully financed by short-term sources. Moderate strategy implies equalization of assets with maturity of liabilities. Also, the moderate strategy of financing enterprises provides a reasonable amount of net working capital .<sup>8</sup>

Modest funding strategy in practice is difficult to be fully implement, because of two factors : 1. life of the assets is uncertain . 2 you have to use common equity and common equity has no maturity . However, if the company applied moderate strategy of funding , or fails to come close to the point of aligning resources with the time of maturity of liabilities, it is about taking relatively reasonable risk, with relatively balanced reasonable expected return .

Aggressive financing approach assumes acceptance of greater risk by the company , pending the higher yield . Companies in this strategy , have very little own funds in the structure of funding sources, because aggressive approach involves keeping a minimum level of liquid assets in order to minimize excess liquidity. This situation increases the potential risk of payment obligations . In order to increase the yield of available liquid assets, they are invested in long term assets. Besides the minimum level of liquid assets , companies also keep a minimum level of stocks. By keeping the minimum level of inventory, expected higher profits because it reduces the costs associated with holding inventory , but on the other hand increases the risk of lower sales because of the potential lack of supplies that will be needed. When it comes to financing the assets, under an aggressive strategy of funding means using short-term sources of funding for temporary total working capital , to fund part or in whole of permanent working capital and perhaps part of the fixed assets. This approach to financing working capital and occasional large part of the permanent working capital by short-term sources, exercise lower costs of funding , but the risk increases in funding by reducing net working capital.

Depending on the nature of the industry in which the company operates , the dynamic of generation of cash inflows and cash outflows from different activities, and many other factors, the small amount of net working capital can be very risky

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<sup>7</sup> Brigham F. E., Ehrhardt C. M.: *Financial Management: Theory and Practice*, 13<sup>th</sup> Edition, Sout-Western Cengage Learning, Mason, 2011, str. 646

<sup>8</sup> Gallagher J. T., Andrew D. J. Jr.: *Financial Management – Principles and Practice*, Prentice Hall, New Jersey, 1997, crp. 418

for companies because there are not enough cash between the amount of liquid assets and the amount of debt that matures in the short term.<sup>9</sup>

Companies can use more aggressive strategies and so where despite for the occasional working capital, sources of short-term fully funded and permanent working capital, too. The net working capital will be zero, ie company runs without security means. More risky strategy is that involves the use of short-term sources of funding for fixed assets, which means creating negative net working capital. This funding strategy is highly aggressive and the company could face major problems if loans are not renewed or if interest rates rise.

It is not excluded that in making funding decisions "companies will choose a combination of strategies or companies will balance the short-term versus long-term compensations against the composition of the company's assets and readiness, willingness to accept risk."<sup>10</sup> But amid the global economic crisis, companies are more cautious in choosing a strategy for funding, or because of a risk that is generally exposed, revert to more conservative approaches to funding.

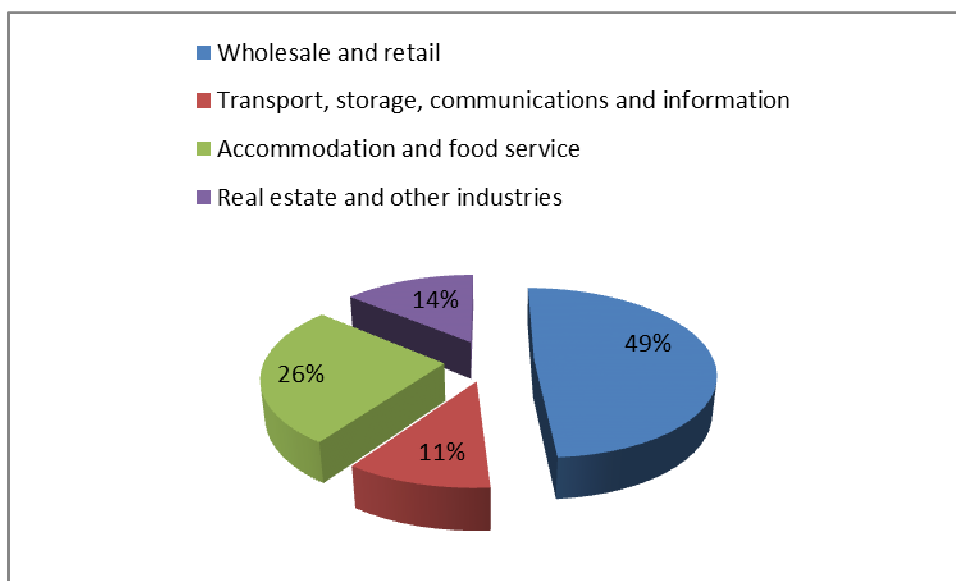
## **2. STRATEGIES OF FINANCING COMPANIES IN SERVICE SECTOR IN THE REPUBLIC OF MACEDONIA IN TERMS OF CRISIS**

The subject of research in this paper are the strategies of financing companies in service sector in the country, in order through empirical research to come to know of their willingness, in expectation of a certain level of income, to accept and appropriate level of risk in. Thus, despite the theoretical approach for determining the performances and financing strategies used by companies from the service sector in the country, is conducted quantitative research, too. Data that are further analyzed in the paper are derived through research conducted by questionnaire in period 2012 / 2013. The questionnaire was sent to 700 companies in service sector in the Republic of Macedonia (selected at random), of which 129 enterprises have provided the answers to the questionnaire.

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<sup>9</sup> Gallagher J. T., Andrew D. J. Jr.: *Financial Management – Principles and Practice*, Prentice Hall, New Jersey, 1997, стр. 416

<sup>10</sup> Block B. Stanley, Hirt A. Geoffrey: *Foundation of financial management*, Mc Graw-Hill Irwin companies, 2008, New York, p.166

**Chart 1. Structure of surveyed companies from the service sector by activity**

*Source : Data obtained from research conducted*

According to the classification of National Bank of the Republic of Macedonia, companies that submitted a response to the questionnaire, belong to: Wholesale and retail trade ( 63 companies) ; Transport , storage , information and communications ( 14 companies) ; Accommodation and food service activities ( 34 companies); Activities related to real estate and other industries ( 18 companies) (Chart 1).

### **3.1. Strategies of financing enterprises engaged in wholesale and retail**

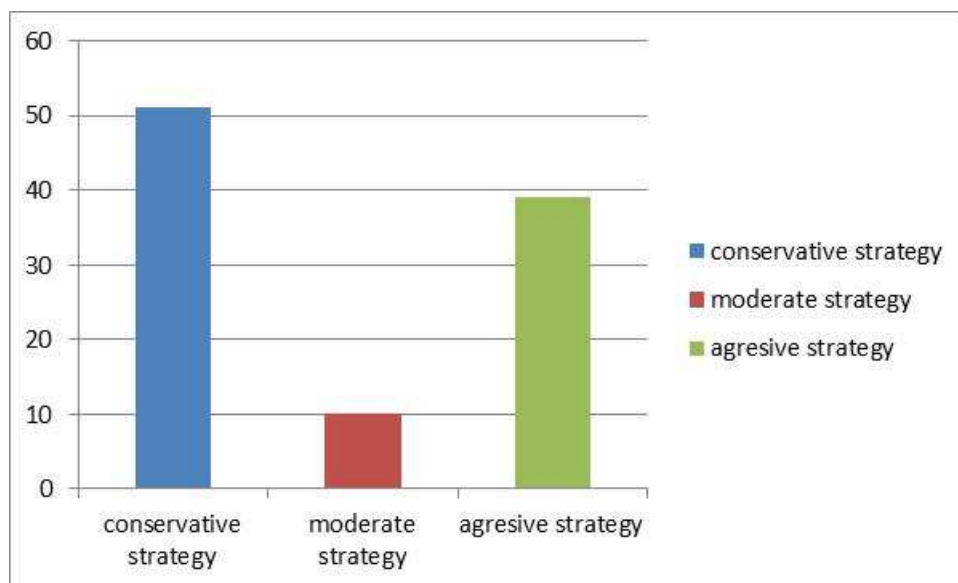
Financing strategies that companies use in the country vary depending on the industry in which they operate. Enterprises engaged in wholesale and retail trade because of its specificity kept normal or large inventory of finished products , and only 23 % of companies keep a minimum level of stocks of finished products . More than half of enterprises have a normal level of working capital , almost 10 % of them have a large level of working capital , while less than 40 % of companies keep minimum level of working capital . Because enterprises of wholesale and retail should have a turnover of assets, most or 60 % of them have low levels of liquid assets , normal levels were nearly 35 % of enterprises , and nearly 5 % of companies store large level of liquid assets . Only about 13 % of the companies offer their customers restrictive payment terms, and an equal number of companies give their customers normal and flexible payment terms. Many companies define their payment terms according to the customers . A quarter of companies said they

have a very low level of current liabilities, less than 65 % of companies that have normal levels of current liabilities and 10 % of them to have the maximum level of current liabilities . Similar to enterprises engaged in industry , but with a slightly lower percentage , or about 10 % of companies say they often need extra funds to pay current liabilities. More than 18 % of enterprises often need additional financial means, almost 45 % of companies have for time to time need for additional funds , and nearly 28 % of companies declare that they have no need for additional funds to pay current obligations .

More than half of the enterprises in wholesale and retail, despite of their own funds , are using foreign sources for financing their assets. From other sources , most companies use only short-term funding sources or more than 58 % of enterprises , almost 30 % of companies provide additional funding of short-term and long-term sources of funds , and only about 12 % of companies provide additional funds only from long-term sources . More than 53 % of enterprises, ongoing working capital finance from their own resources or from their own funds and funds from long-term sources , less than 10 % of enterprises in financing current assets using a small percentage of funds provided by short-term sources , while more than 37 % of the companies current assets financed with a percentage of funds from short-term sources . To finance the occasional , seasonal working capital 51 % of enterprises use their own or funds from long-term sources , less than 5 % of enterprises despite long-term sources of funds used funds from short-term sources , while 44 % of enterprises seasonal working capital needs financed by short-term sources . Enterprises of wholesale and retail for financing of fixed assets mostly use their own assets or funds from long-term sources, while 21 % of them additional use funds provided by short-term sources. To fund its business activities , 23 % of enterprises are willing to take a risk , almost 42 % are ready to overtake minimum risk , and just under 35 % of companies do not take risks . Only just over 2 % of all companies invested in securities, mostly in long-term securities. Two- thirds of companies are satisfied with the growth and development , and 55 % were satisfied with the profit according to the current way of funding and 69 % of enterprises believe that will have more profit if they change the way of funding .

More than half of the enterprises of wholesale and retail as well as companies from other industries in their operations mostly use moderate approach of funding, with one difference that these companies most of all enterprises from other industries use a conservative approach in operation or about 9 % of these companies use a conservative approach of funding (Chart 2).

**Chart 2. Strategies of funding the activities of enterprises in wholesale and retail**



*Source : Data obtained from research conducted*

From the above chart we can note that about 10 % of the enterprises of wholesale and retail are trying to apply moderate strategy of funding . Just over 44 % of the companies in their funding use only its own resources , which means that they use ultra conservative strategy . Additional 7 % of enterprises use a conservative strategy, because in financing the current working capital and seasonal working capital primarily are oriented to long-term funds , that means that about 51% of companies use conservative funding strategy .

### **3.2. Strategies of funding companies in transport activities, storage, communications and information activities**

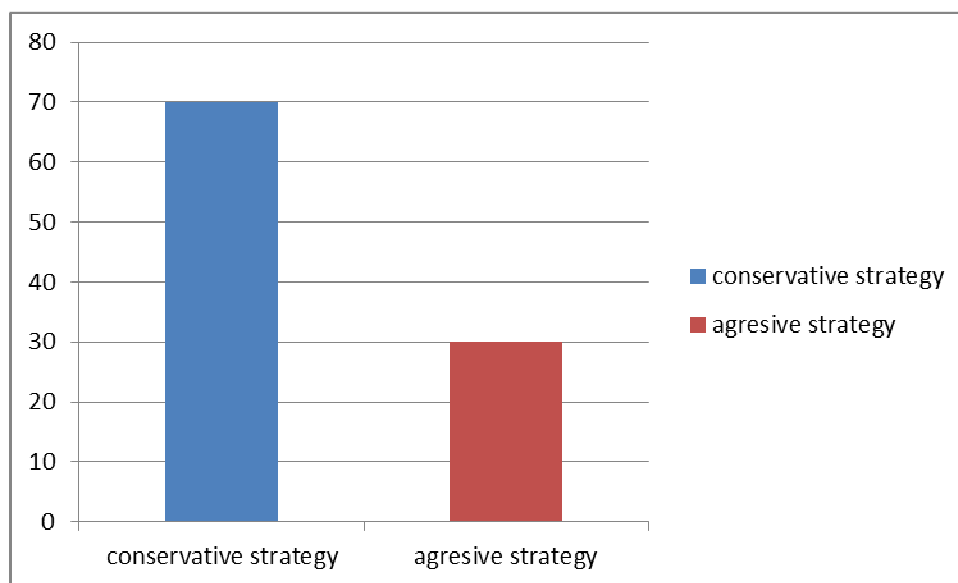
Due to the specific operation of enterprises in the transport, storage, information and communications activities , only some of these companies have inventories of finished products and most of them , more than 71 % keep a minimum level of stocks of finished products, while other companies kept normal level of finished products. Only about 60% of these companies have a stock of working capital, where the majority, or more than 55 % have a normal level of inventories in current assets , while 45 % of companies have a minimum level of stock of working capital. Neither of those enterprises not keep the maximum possible level of liquid assets, almost 68 % of them have a normal level of liquid assets , while

approximately 32 % of the enterprises have very low levels of liquid assets. Specific for enterprises of these activities is that half of them offer their customers flexible credit payment terms, more than 42 % of the companies offer their customers the normal payment terms, while only 7% of them to its clients offer restrictive payment terms. In case of current liabilities, more than 71 % of companies pay the normal period, while 29 % of them pay immediately and have minimal level of current liabilities. More than 30 % of companies claim that do not need additional funds to pay current liabilities, almost 30 % of them rarely have need, 40 % of companies often need additional funds to pay current obligations.

Most of the enterprises of transport, storage, information and communication activities, ie about 57 % use its own resources and foreign sources for funding their operations . The most of enterprises, or more than 75 % use short-term and long-term sources of funds, 25 % of enterprises use their own funds and funds from long-term sources. Among companies that provide funds from short-term and long-term sources, mostly, or approximately 80 %, of the funds arise by long-term sources. If we take into account the characteristics of these activities, it is noticeable that there is no enterprise that uses only short-term funds for financing operations. Also specific point for these enterprises is that more than 71 % of them finance ongoing working capital from its own resources , while 29 % of companies additionally use short-term sources of funds for financing current assets . Also, only 28 % of them said that they sometimes use short-term sources of funds to finance fixed assets. In terms of risk associated with financing the assets , most companies say they take minimal risk , do not take risk 7 % of companies , while a high level of risk are ready to overtake more than 14 % of enterprises . According to the used way of financing 71 % of companies are satisfied with their growth , while 57 % are satisfied with the profits and more than 64 % of enterprises believe that will have more profit if they change the current way of funding.

From the above mention we can say that enterprises of transport activities, storage, information and communication activities do not use conservative approach in their working, more than 60 % of enterprises use moderate strategy, while less than 40 % prefer aggressive strategy.

**Chart 3. Strategies of funding enterprises in transport , storage , communications and information activities**



*Source : Data obtained from research conducted*

Similar to the operating way of these enterprises, in financing activities they mostly use conservative strategy of financing the assets, or that's more than 70 % of enterprises . Conservativeness in financing that enterprises apply can be seen from the fact that more than half of these companies are using only its own resources . It may be noted that companies in transportation activities, storage, communications and information activities did not apply moderate strategy in financing the assets, because almost 30 % of them apply aggressive financing strategy (chart 3) .

### **3.3. Strategies of funding enterprises in accommodation and food service activities**

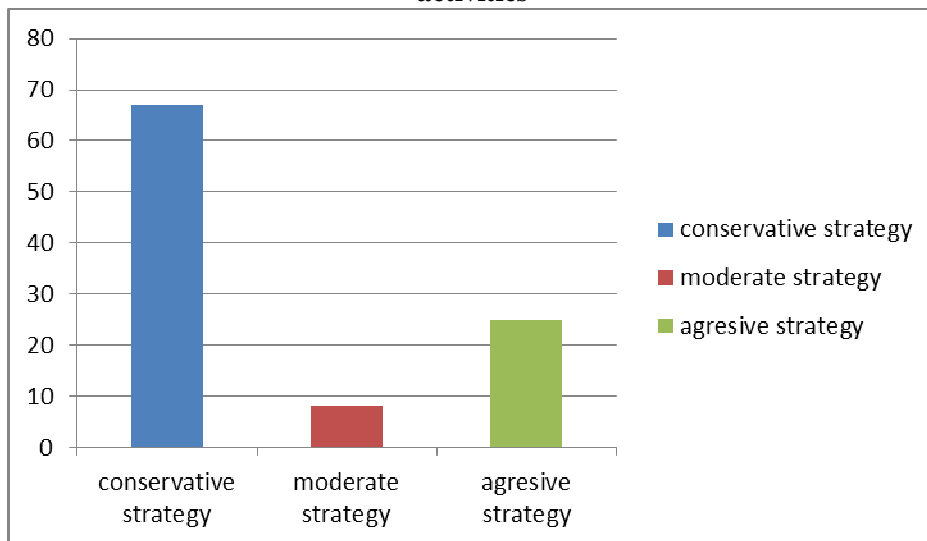
Businesses in accommodation and food service activities due to the specificity of the activit, generally have low level of inventory and finished products or working capital at whole, or two -thirds of them , while one -third of enterprises have normal level of stock of working capital and the finished products . Most of these companies or 75 % of them also have a minimum level of liquid assets , while only 25 % of them have a normal level of liquid assets . Only just over 16 % of the companies offer their customers restrictive payment terms , while a half of rest of the enterprises provide normal conditions to their customers provide, and the second half flexible payment terms. More than 91 % of companies have normal



level of current liabilities, and only slightly more than 8 % that have a minimum level of current liabilities. In order to pay current liabilities, a quarter of companies do not need additional funds , about 67 % of enterprises that rarely need additional resources , and only slightly more than 8 % that often need additional funds to pay current obligations.

Businesses in accommodation and food service activities mostly only use their own funds to finance their operations. Namely, 42 % of companies that use foreign sources of funds , more than 60 % of them use both short and long-term sources of funding , while the remaining 40 % of enterprises use both or only short-term sources or only long-term sources of funding . Typical among these companies is more than 81 % use their own funds or funds from long-term sources to fund ongoing working capital , while just over 18 % of enterprises use a large portion of the funds received from short-term sources of funding for ongoing working capital . Seasonal working capital most of enterprises financed by own funds or funds from long-term sources , while short-term sources for funding seasonal working capital use 27 % of enterprises . Small section or about 25 % of companies say they sometimes use short-term sources for financing fixed assets , and no enterprises related to these activities do not invest in securities. Least of all companies or only a third of companies are satisfied with their growth and development. Half of businesses are satisfied with realized profit, but more than 67 % of enterprises don't believe that will have a larger profit if they change the way of funding.

**Chart 4. Strategies of funding enterprises in accommodation and food service activities**



*Source : Data obtained from research conducted*

Because of the specifics of enterprises in accommodation and food service activities, enterprises are forced to apply an aggressive approach, less moderate approach and to avoid the conservative approach when working .

We have an opposite situation when comes the question for financing assets, because two thirds of the companies or 67 % apply conservative financing strategy , and more than 58 % of companies use only their own finances or ultra conservative strategy . The aggressive strategy of financing funds use approximately 25 % of enterprises, while moderate strategy of funding more than 8 % of enterprises (chart 4).

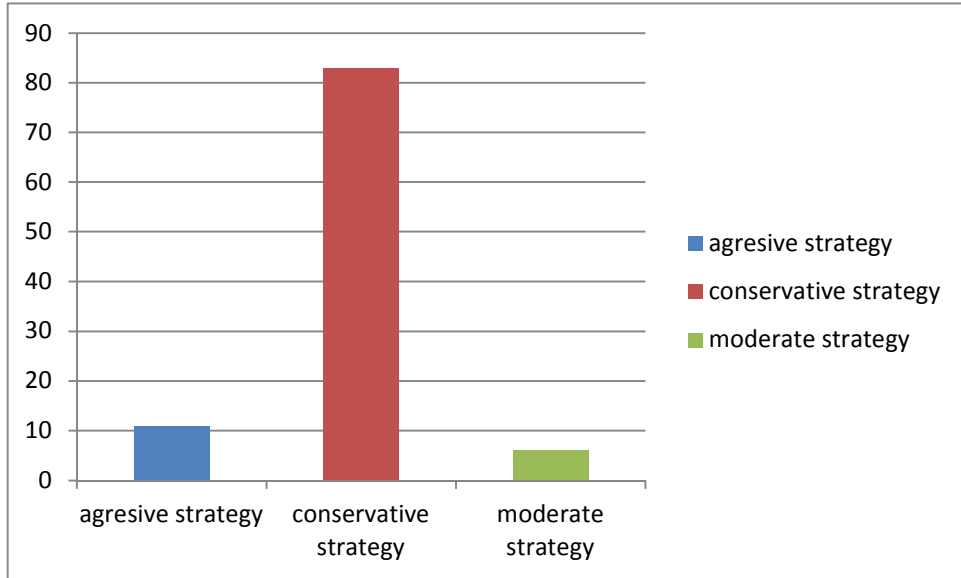
#### **2.4. Strategies of funding enterprises in activities related to real estate and other industries**

Analysis of the operation of enterprises in activities related to real estate and other industries shows that over 75 % of them have no or rare need for additional funds for payment of current liabilities, while 25 % of them have a minimum level of liquid assets . Normal credit terms to its customers are offering half of the enterprises, while flexible credit terms offer 28 % of enterprises. Enterprises related to real estate and other activities do not keep its current liabilities as much as possible, while the minimum levels of current liabilities have more than 29 % of enterprises.

Most of these companies , or 83 % finance its operations with its own resources and long-term sources of funds , and nearly 67 % of them finance their operations only with their own funds . This is understandable if we take into account that more than 80 % of companies do not undertake or assume very little risk in the financing of their activities . Companies that despite their own resources use short-term sources of funds, too mostly used them to finance current assets , while only 6 % of companies use only a small percentage of short-term funds for financing current assets . Neither one of the company related to real estate and other businesses , do not use short-term sources of funds to finance fixed assets , while 5 % of them invest their surplus liquidity in short-term securities . More than 70 % of companies say that they are pleased with the growth and development and of the profit according to the method of funding , but nearly 30 % of them think that they will be able to realize more profits if they change the method of funding , while 39 % of them think that the way funding won't have influence on profit in positive context .

Analysis of the operation and financing activities of companies related to real estate and other industries shows that they apply the most conservative approach and conservative strategy of financing its business

**Chart 4. Strategies of funding enterprises in activities related to real estate and other industries**



*Source : Data obtained from research conducted*

Over 83 % of enterprises apply conservative financing strategy, and more than 66 % of them apply ultra conservative strategy, ie using only its own resources to finance their business activities. Aggressive financing strategy use around 11 % of enterprises, while about 6 % of enterprises use small amounts of short-term funds to finance their ongoing work or they use relatively moderate strategy.

## CONCLUSION

One of the most important decisions of companies is choosing an appropriate way of funding . The success of enterprises depends on whether they will be able to align their funding needs with funding sources that best suit their needs , because not all resources are appropriate for every company , every time. Sources of funding actually show how enterprises are providing assets for their needs. Each separate source of funding has its own characteristics and therefore they are classified according to different criteria . Selecting certain sources of funding , ie , a combination of funding sources , is an acceptance and implementation of a strategy of funding . Each company tries to select such a financing strategy that at a given moment will optimize the relationship between profits and risk .

It is evident that the benefits of running the conservative strategy of financing is most obvious when the economy is in crisis, because then banks do not approve loans very easily. In that case, companies tend to use conservative funding strategy in order to have more reserves of liquid assets to avoid hindering the maintenance of continuity in its operations, otherwise companies would not be able to fund its ongoing activities. This is especially true for economies where lacking alternative sources of funding, such as in the case of the Republic of Macedonia.

The results from the survey confirm that the service sector enterprises in Macedonia behave according to the above conclusion and mostly used less risky and relatively safe strategy of funding. The majority of these companies are financing only by their own funds, and some of them despite their own funds are using funds provided only by long-term sources. Hence, we can conclude that service companies from the Republic of Macedonia, dominant use conservative funding strategy, primarily to provide liquidity to fund current operations, but in that case companies don't use funds productively and lost profits. Very few companies use the moderate strategy of funding, which take moderate / reasonable risk and expect relatively reasonable yield, but some of the companies are willing to take risk, to exploit lower costs in order to make more profits i.e. aggressive strategy of funding despite the fact that the application of this strategy is not very common in times of crisis.

Basically it can be concluded that there is no universal access or universal strategy of financing companies in the country. As noted, the choice of a particular strategy of funding depends on a number of factors, such as, for example, economic conditions, various opportunities to access other sources of funding, activity in which they operate etc. However, in the harsh working conditions, most of enterprises resort to less risky funding strategies, as a conservative approach.

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3. [www.stat.gov.mk](http://www.stat.gov.mk)

# INTEGRATING TQM IN ORGANIZING PRODUCER'S ASSOCIATION OF ORGANIC PRODUCTION IN REPUBLIC OF MACEDONIA

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## ***Abstract***

*One important approach to sustainable development, which at the same time gives a good quality and safe product and has seen intense growth in the country, is organic farming. The Republic of Macedonia has excellent conditions for the development of organic farming due to the extensive farming mainly in the highlands and the adoption of the Law on Organic Farming followed by appropriately defined agrarian policy. In Republic of Macedonia there is a formal legal framework upon which several associations of producers of organic food have been formed. Nevertheless, associations are facing problems such as insufficient quantity for sale, poor market organization and division occurs in societies when in one region there are several manufacturers for the same product. In terms of managing these issues, there emerges the need for a new approach to management whose base is the multidimensionality of the quality, its operation and function in all spheres of social life.*

*By applying the concept of Total Quality Management - TQM as a way of organizing, the associations of producers of organic products have the potential to win and maintain the market. This paper attempts to answer the question of how TQM can improve the organization of associations of producers of organic products. The research in the paper is based on analysis of data obtained through interviews with the members of associations of producers of organic products in Republic of Macedonia on a previously prepared questionnaire with qualitative and quantitative data as well as their published information.*

**Key words:** *TQM, continuous improvement, associations, organic production, Republic of Macedonia*

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## INTRODUCTION

Organic production in Republic of Macedonia has excellent opportunities for development because of the extensive traditional farming and the adoption of the Law on Organic Farming. Also, it's provide producers to perform the same market with quality products which in turn is related to the possibility of achieving higher profits compared to when it could produce products in a conventional way, and large subsidies granted by the state. Researches show that producers consistently comply with the rules and procedures for organic production, but that also face serious problems in performance and continues present on the market. A relevant form for finding solutions to these difficulties that simultaneously affects a larger group of producers, is teaming on various grounds i.e. forming associations. In Republic of Macedonia there is a formal legal framework upon which several associations of producers of organic food have been formed.<sup>2</sup> They, unlike other types of associations of agricultural producers, are united by a very important denominator that is, certifying the method and procedure of producing organic products so the quality of the product is indisputable. However, a division occurs in societies when in one region there are several manufacturers for the same product. In terms of managing these issues, there emerges the need for a new approach to management whose base is the multidimensionality of the quality, its operation and function in all spheres of social life. By applying the concept of Total Quality Management - TQM as a way of organizing and innovative management tool, the associations of producers of organic products have the potential to improve the organization and with that to win and maintain the market, thus achieving a recognizable brand, and a higher level of development in terms of quality assurance.

The main objective of this paper is to investigate the possibilities of applying TQM as way of organizing the association of organic producers in the country in order to ensure improvement and progress in the work of associations of organic producers. The emphasis will be placed on "continuous improvements" as principle of TQM and an approach to quality as strategy for the competitive position improvement in organizing. Research subject of the paper is principle "continuous improvements" and principles of work that are used to organize and based on the difference between them to see how and how TQM can integrate in organization of the association of producers of organic production. For that purpose research in the paper is based on analysis of data obtained through interviews with the members of associations of producers of organic products in Republic of Macedonia on a previously prepared questionnaire with qualitative and quantitative data as well as their published information.

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<sup>2</sup> Law for Associations and Foundations (Official Gazette No.52 of 16.04.2010)

## **1. THE CONCEPT OF TOTAL QUALITY MANAGEMENT**

TQM integrates various initiatives in the field of quality to allow for the needs and requirements of customers and employees with the highest efficiency in the company in every aspect such low cost, high income, respectively employed and satisfied customers. It is the process of creating thought that quality care and responsibility all that is achieved through total commitment and continuous improvement in all aspects of operations. This concept gives importance to the quality and performance in the organization of work is not only a responsible sector, but all. Thus quality extends across all sectors and in all functions and take a new role - the quality of the work and organization of work. Hence, the new concept of TQM incorporates five principles:<sup>3</sup>

- Management's commitment (leadership), oriented in creative thinking, innovation, change, growth and renewal. Management should have a vision and a strategy to create space for the participation of all in the creation of future improvement and achieving results which establish a balance in meeting the needs and interests of all stakeholders (customers, members and society).
- Focus on the customer and the employee, a principle which is based on the view that the focus of attention should be the customers, meeting their requirements and needs while meeting the needs and demands of the employees to be able to accomplish the customers.
- Focus on facts, mean bigger, better and proper utilization of available resources, data and information in order to satisfy customer requirements and achieve the goals set.
- Continuous improvement, means improvement in all aspects of operations, and external aspects in terms of better and better quality products, quality and better service, and as a result, satisfied customers, better market position and achieve a higher income and inner aspects regarding better use of resources, effective production process, smaller faults and defects, and consequently lower costs and higher revenue.
- Everybody's participation, principle means unique commitment of all stakeholders accomplishing goals.

In Masaaki Imai's book "Kaizen" is presented an interesting connection between quality and the continuous improvement.<sup>4</sup> They consider that quality can be achieved through internal and external improvements. Internal improvements

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<sup>3</sup> Dahlgaard J.J., Kristensen K., Kanji G.K., *Fundamentals of Total Quality Management*, Taylor & Francis, London and New York, 2002, p.17

<sup>4</sup> *Ibid*, p.32



means to prevent defects and problems in internal processes which leads to lower costs, and external improvements means to increase customer satisfaction and thereby achieve a bigger market share. Both types of improvements are closely connected to quality improvement process. It means that quality in working can be achieved through continuous and consistent identifying, investigating, analyzing and solving their work – related problems.

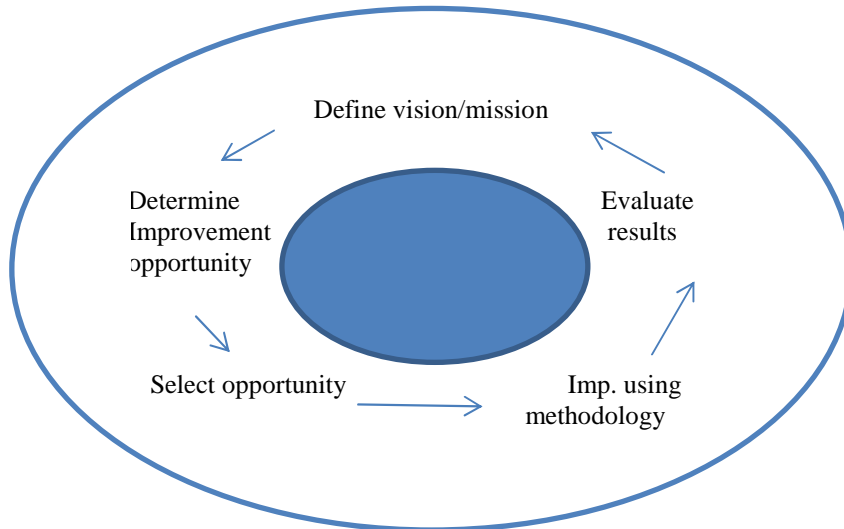
## **2. CHARACTERISTIC OF CONTINUOUS IMPROVEMENT**

The TQM philosophy provides the overall concept that fosters continuous improvement in an organization. Continuous improvement is essential for successful TQM, it gears the organization toward attainment of the vision. The improvement system must not only be continuously applied, but also consistently, through out the organization. This requires a disciplined continuous improvement based on trust, with everyone in the organization striving to improve the system.<sup>5</sup>

Continuous improvement can be shown as cycle that involves five stages. (Figure 1) The cycle starts by defining the vision or mission of the organization. The leaders determine the vision, with input from everyone. Then everyone in the organization ascertains his specific mission to accomplish the overall vision. In doing so this, the focus and priorities of the vision are determined, established, understood and supported by all. After defining their vision, the next phase includes listing all improvement opportunities. It is important to obtain an understanding process of determining improvement opportunity at this stage. Customers are identified and their needs and expectations understood. Suppliers also are matched with requirements. Any potential problems are identified during this process. For the third stage of selecting improvement opportunity, specific improvement opportunities are selected based on the critical processes that have the greatest impact on customer satisfaction. These problems are solved using a disciplined methodology such as statistical process control, quality function deployment and process analysis. They should be used consistently to complete a mission, improve a process and solve problems through out the organization. Finally, similar to PDCA cycle, the results for the impact of improvements are evaluated against the overall mission. In this case, a sixth stage is stage of accepting or repeating the process. The cycle is never ending in a continuous improvement system.

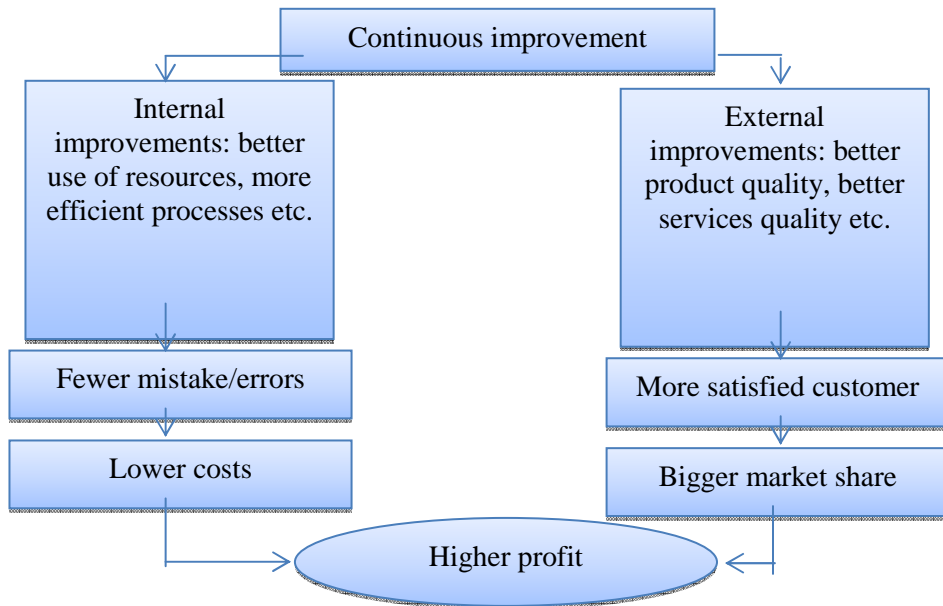
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<sup>5</sup> Eriksson H., “Benefits from TQM for Organizational Performance”, Lulea University of Technology, Porson, Sweden, 2002

**Figure 1. Continuous improvement cycle**

Source: Saylor J., "Continuously improving achieves excellence",  
<http://www.thebusinesscoach.org/continuous%20improvement.pdf>, 25.09.2014

Continuous improvement can be achieved through internal and external quality improvements. (Figure 2) Internal improvements refer to the utilization of resources and preventing defects and problems in the process. Gradually, this result in the effectiveness of controlling and minimizing production cost which in turn yield to higher profits. Similarly, external quality improvements put more emphasis on designing quality into the product, which aims to earn higher profits by remaining competitive with a bigger market share. This can be done through the ability of companies to respond quickly to the demands of their customer and offering them with a better value added services. As the figure shows, both types of quality improvements – which should be seen independently of each other – result in higher profits.

**Figure 2. Continuous improvement and their consequences**

Source: Dahlgaard J., Kristensen K., Kanji G., “Fundamentals of Total Quality Management”, Taylor & Francis, London, 2002

According to International Standard Association – ISO key benefits of continuous improvement are performance advantage through improved organizational capabilities, alignment of improvement activities at all levels to an organization’s strategic intent and flexibility to react quickly to opportunities. Applying the principle of continual improvement typically leads to:<sup>6</sup>

- Employing a consistent organization – wide approach to continual improvement of the organization’s performance.
- Providing people with training in the methods and tools of continual improvement.
- Making continual improvement of products, processes and systems an objective for every individual in the organization.
- Establishing goals to guide and measures to track, continual improvement.
- Recognizing and acknowledging improvements.

Management’s job is to provide the leadership for continual improvement and innovation in process and systems, products and services. Achieving the highest levels of performance requires a well – defined and well – executed approach to

<sup>6</sup> Quality Management principles, [www.iso.org/iso/qmp\\_2012.pdf](http://www.iso.org/iso/qmp_2012.pdf), 15.11.2013

continuous improvement and learning. Improvement and learning need to be embedded in the way an organization operates. This means they should be a regular part of daily work, seek to eliminate problems and their source, and be driven by opportunities to do better as well as by problems that need to be corrected.

### **3. CONDITION OF ORGANIC SECTOR IN REPUBLIC OF MACEDONIA**

Organic production is recognized as one of the ways that lead to sustainable development, meet social expectations when it comes to environmental and sustainable management of natural conditions and development of rural areas. Republic of Macedonia has excellent conditions for the development of organic agriculture because agricultural production in the country is traditionally a family business which met local knowledge and traditions. Macedonian agriculture has undergone diverse methods and ways of functioning in social and economic development, but always remained an activity that takes place within the family. Also, taking into account the 2002 Census, according to which 43% of the population, 36% of the workforce and 44% of the poor live in rural areas, the adoption of the concept of organic farming by appropriate agriculture policy can contribute to increase employment and improve the living standards of the population.

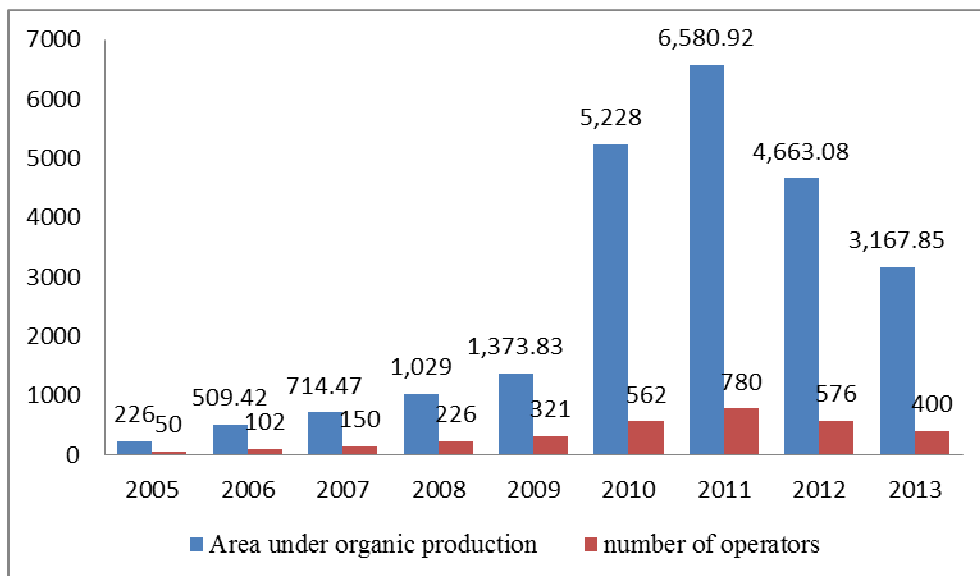
In total cultivated land, organic production is 2,74%.<sup>7</sup> The graph 1 clearly shows that the interest for the conversion of this production is intensive growth especially in the period 2005-2011, last two years the interest is decreases. Research shows that producers of organic products consistently comply with the rules and procedures or standards for organic production, but that also face serious problems in performance and continuous market presence and fragmentation i.e. in one region there are several association for the same product.<sup>8</sup> The inadequate internal organization of associations of producers of organic products and insufficient quantity ranking is forcing manufacturers to their products sold as conventional, for lower price in terms when it would have sold as organic products leads to reduced interest in this way of production.

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<sup>7</sup> Annual report for agriculture and rural development 2012, MZSV, [http://www.mzsv.gov.mk/files/GIZRR\\_2012.pdf](http://www.mzsv.gov.mk/files/GIZRR_2012.pdf), 30.12.2013

<sup>8</sup> Ibidem

**Graph 1. Area under organic production and the number of operators during the period 2005-2012**



Source: Ministry of Agriculture, Forestry and Water Management of Republic of Macedonia, [http://www.mzsv.gov.mk/organsko\\_zemjodelsko\\_proizvodstvo2013.pdf](http://www.mzsv.gov.mk/organsko_zemjodelsko_proizvodstvo2013.pdf), 22.09.2014

The organic sector in the country is by no means a homogeneous economic area. As part of agriculture is characterized by a heterogeneous structure in which besides agriculture, are included environmental, social, health and economic structures. The organic sector in Republic of Macedonia is composed by producers, cooperatives, associations, counseling stakeholders, control and certification bodies and government institutions involved in the implementation of organic farming policy.

Organic production in the Republic of Macedonia is recognized because of traditional mode of production in some regions where they are produced. Macedonian consumers often say they are "ecologically, quality and our". Hence, the next challenge is directing the attention away from the production of quality products (such as organic products) to promote full management of all aspects of working in associations.

#### **4. ANALYZES AND RESEARCH FINDINGS IN CURRENT SITUATIONS IN PRODUCERS ASSOCIATIONS OF ORGANIC PRODUCTION**

To explore the possibility of implementing TQM as way of successful working and organizing of producers associations of organic products it survey conducted on two basics:

- To determine the development of association by applying the principles of TQM and
- To determine the difference between the principles of operation used by associations and the principles of TQM.

Because the purpose of the paper is to investigate the possibilities of applying TQM as way of organizing the association of organic producers with emphasis on “continuous improvements” as principle of TQM, questions were raised to the use of certain principles in the operation of associations and in relation to continuous improvement.

According to the Central Registry of the Republic of Macedonia as the only institution that maintains records of producers associations of organic food, there is no exact number of registered associations of producers of organic food because they are registered with the Law on Associations and Foundations based on Articles 5, 18 and 20 belong to organizations and non-profit sector in which data associations are protected in accordance with regulations to protect personal data and classified information.<sup>9</sup> The questionnaire was sent to the highest form of organized associations in the country - Federation of Producers of organic products which includes nine regional associations, of which four (4) Associations ("Organik kaki" – Valandovo, "Aronia" - Gevgelija, "Ovcepolски eko-proizvodi" - Sveti Nikole and "Eko-Sar" - Gostivar) and sixty-five (65) members - manufacturers responded to the questions.

The question, "How do you see the benefits of organic production?" All sixty-five (65) respondents said 'total quality in production and operation, reducing total cost and customer satisfaction ". This shows that manufacturers know organic production as production for its high quality products with lower costs in order to meet the needs and demands of consumers. The same applies to the principles of TQM, namely TQM is a way of working and organizing the work with full dedication to quality, reduce costs and meet the needs and requirements of customers. Hence, we can say that there is a possibility of applying the principles of TQM in the organization and operation of associations because manufacturers create quality during the production of organic products, but the same principles

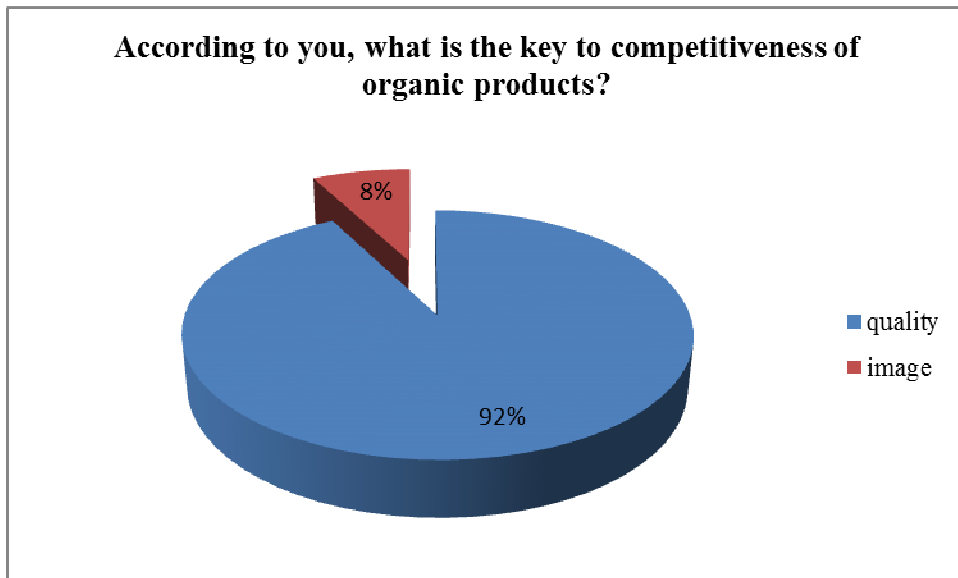
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<sup>9</sup> Official Gazette No. 52, 16.4.2010

need to be transferred in the way of organization and operation of associations to reorganize and improve operational and organizational capabilities, knowledge and skills of the producer associations of producers of organic products.

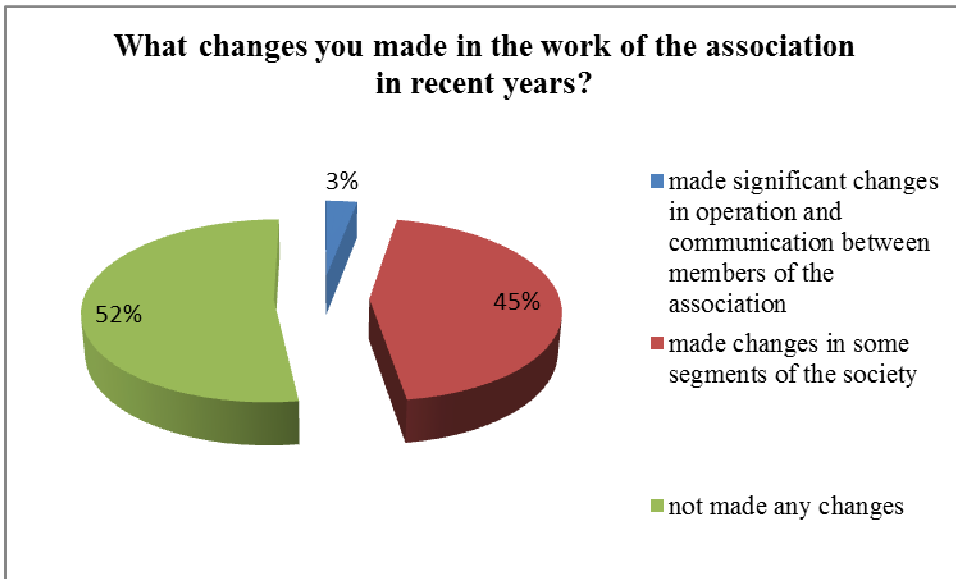
When asked, "According to you, what is the key to competitiveness of organic products?" sixty (60) manufacturers responded that the quality and five (5) that is the image (Graph 2). The most important feature of organic products is quality, hence manufacturers to compete in the market with organic products, leading idea should be that it is a product of exceptional quality. The results of this question confirmed it.

**Graph 2.**



*Source: Own research*

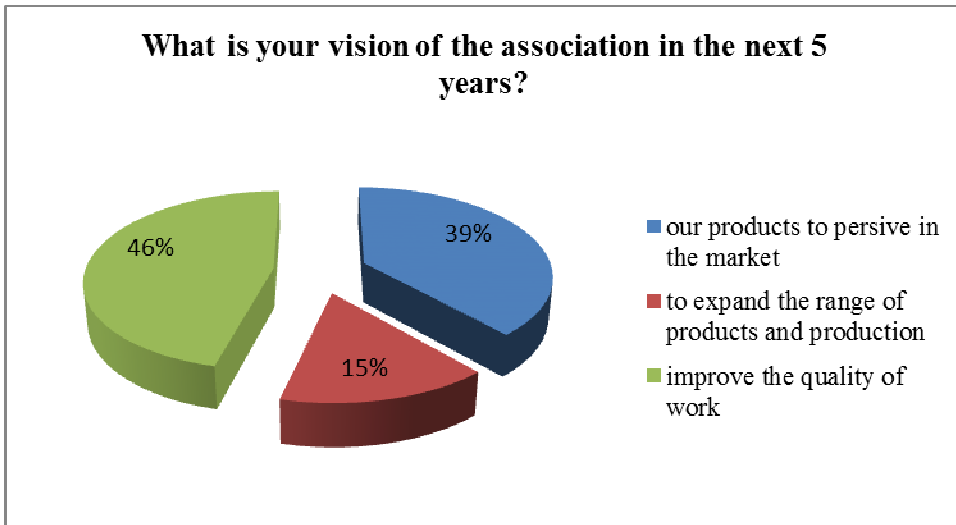
The question, "What changes you made in the work of the association in recent years?" thirty-four (34) respondents answered that they have made any changes, twenty-nine (29) have made changes in some segments of the work of the association and two (2) said they have made significant changes in the operation (Graph 3). The issue is set to find out whether the associations are subject to change at work and it showed that the associations in recent years there is a significant and major change. In terms of the principles of TQM means that requires a systematic approach to change that is gradually gaining knowledge and understanding of TQM and experience in the operation and organization of associations of producers of organic products.

**Graph 3.**

*Source: Own research*

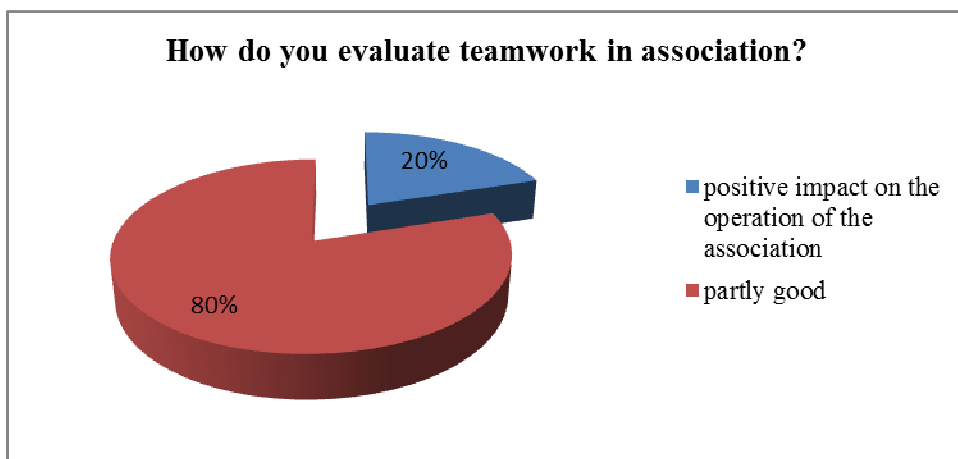
The question, "What is your vision of the association in the next five years?" Thirty (30) respondents answered "improve the quality of work," twenty-five (25) members responded "our products to survive in the market" and ten (10) responded "to expand the range of products and increase production". (Graph 4) This indicates that the association is a desire to improve the quality of work that relates to the possibility of change and new ways of organizing and running of the association or the possibility of applying the principles of TQM.



**Graph 4.**

*Source: Own research*

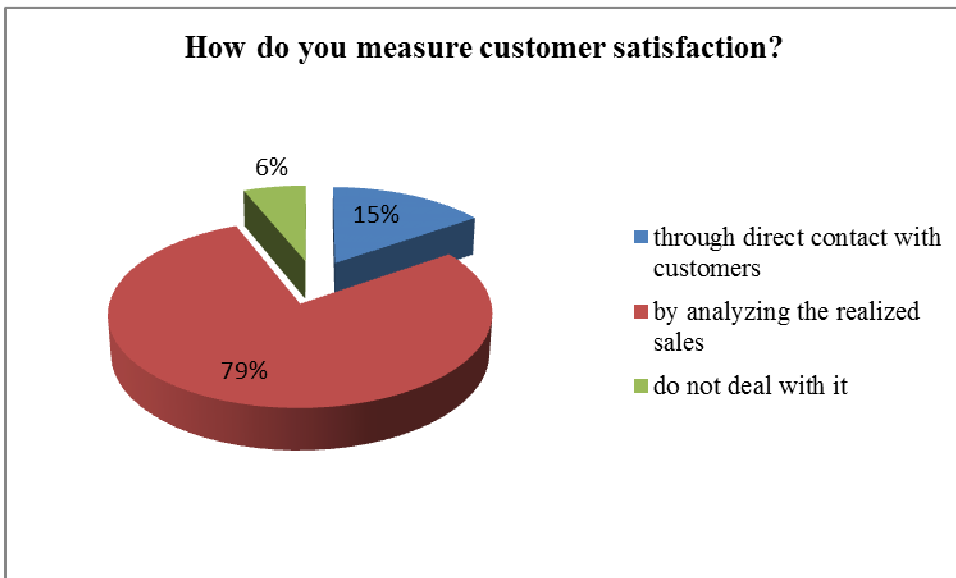
The question, "How do you evaluate teamwork in associations?" fifty-two (52) said that is partly good, and thirteen (13) respondents answered that positively affect the operation of the association (Graph 5). It shows that teamwork in association exists, but is not satisfactory i.e. existence does not provide a positive atmosphere in the work that is necessary to create teams that will be responsible for certain activities and tasks to achieve the given objectives of the association.

**Graph 5.**

*Source: Own research*

On the question "How do you measure customer satisfaction?" fifty-one (51) respondents answered that they do so by analyzing the realized sales, ten (10) to have direct contact with customers and four (4) not to deal with it (Graph 6). The results show that the associations of producers of organic products implementing quality measurement in accordance with the principles of TQM and indirectly measuring quality. Critical to the successful implementation of TQM is the knowledge of whether the requirements are met and customer needs, so more should be present direct measurement or contacts with customers and consumers.

**Graph 6**



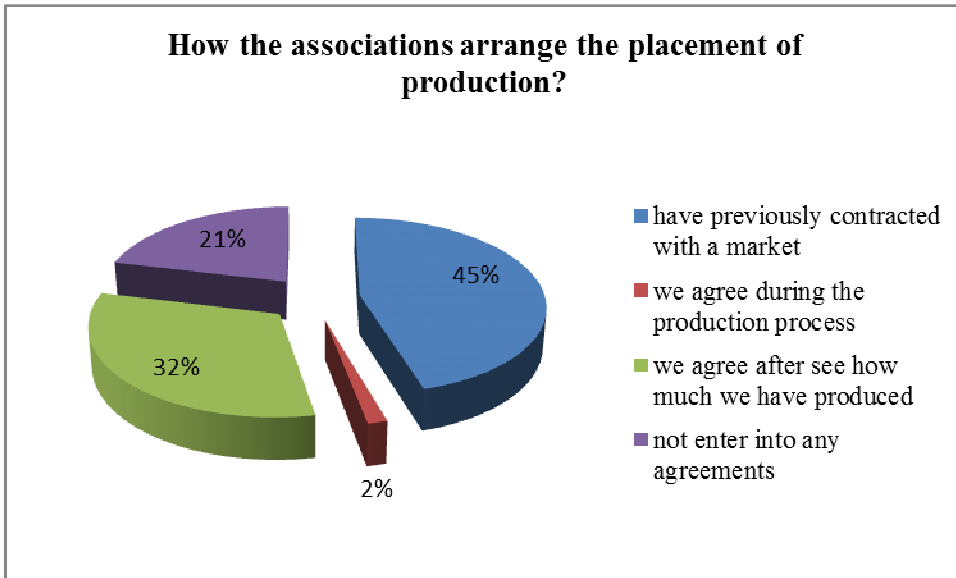
*Source: Own research*

On the question, "On what way members express the satisfaction for the work of the association?" all sixty-five (65) respondents answered that they do it in meetings, discussions with the opportunity to provide suggestions for improvement. It clearly shows that members express their opinions, views and ideas about the work of associations and influence the final decisions and the functioning of the work of the association.

On question, "How the associations arrange the placement of production?" thirty (30) respondents said that they have previously signed contracts, twenty-one (21) is arranged once the production process, fourteen (14) manufacturers responded that conclude no contracts and one (1) shall be agreed during the manufacturing process (Graph 7). The results show that the association is mainly contract farming, but still

high percentage of organizations who do not contract or agreeing on the spot - once the production process.

**Graph 7**



*Source: Own research*

From the above, it can be concluded that in association's producers of organic product there is basis for implementation of TQM in operation primarily because the recognition of organic production under the concept of TQM – total quality in production and operation, cost reduction and customer satisfaction. Also, as key to competitiveness of organic product the respondents stressed the exceptional quality of the products. In terms of the principles of operation of the association related to continuous improvement research showed that most of the associations have not made any changes, but there is also a desire for change and it relates to improving quality of work. The association use indirectly measuring of customer satisfaction and mainly have previously signed contracts, but still there is high percentage of association who doesn't contract. Producers have space to express their opinions and ideas, but the team work doesn't provide positive atmosphere in the associations.

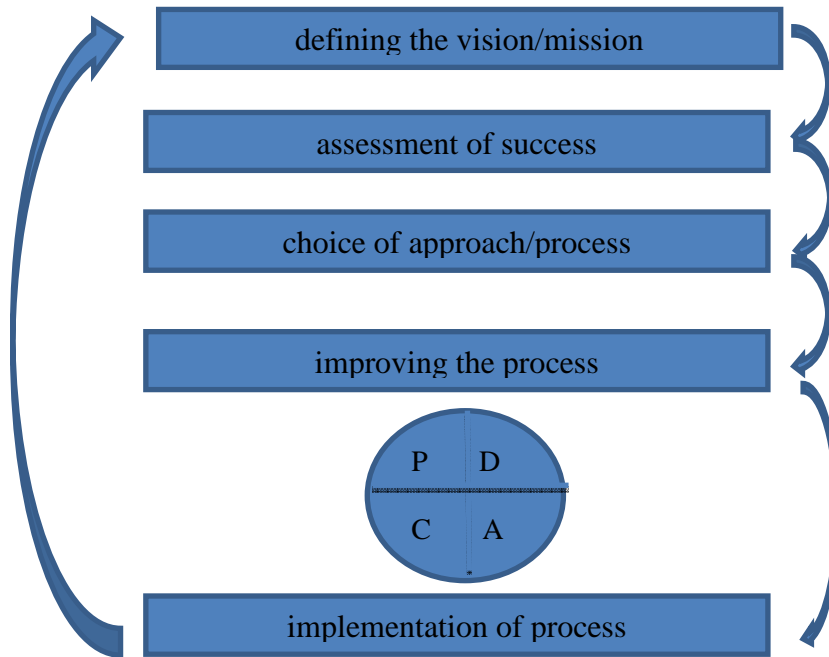
## **5. CONTINUOUS IMPROVEMENT IN THE ORGANIZATION AND OPPORTUNITIES FOR INTEGRATING TQM IN PRODUCER'S ASSOCIATIONS OF ORGANIC PRODUCTS**

TQM is a vision of a company or organization that can be achieved with long-term planning, commitment and full responsibility of all stakeholders at all levels and sectors and continuous improvement in all aspects of operations. It requires full responsibility of all, and the members and the presidencies of the associations. Continuous improvement is an important process in the application of TQM which starts from the presidency of the association and continues at all levels and stages of operation. The first step in the process is all members of the associations understand that their job is very important part in the operation and organization of associations and requires full commitment. It is a process that never stops and where it is happening gradual improvements. No matter how good the, always can be achieved better since the changes in the environment are permanent.

Continuous improvement is a process that generally takes place in five stages: planning, assessment of success, choice of approach/process will be applied, advancing of the process, and establishing of the process. (Figure 3)

1. Planning or defining the vision or mission of the associations is stage when the presidency identifying the customer requirements by researching the requirements and expectations of the customer to establish guidelines by which will moving activities. At this stage is important the inclusion of all, both the presidency and the members of associations. In this way, the priorities of the vision or mission are defined, understood and supported by all.
2. Assessment of success is stage in which the association should establish the ability to effectively use the resources it has. In this sense, the focus is on reduction or cost savings and time period. To achieve this, associations should:
  - shape the system to collect data on how to perform certain activity,
  - determine measures that represent appropriate indicators such as level of assets, degree of utilization etc.,
  - analysis of costs per activity which determines the cost of activities which create added value and those that aren't create value,
  - analysis of weather cycles or periods of activity that is required to perform a specific activity,
  - setting new goals for performance comparison with the competition,
  - reporting to perform synthesis task and activities relating to the utilization of resources and the same to be used in future new targets.

**Figure 3. Continuous improvement in organizing the producer's association of organic product under the principles of TQM**



3. Choice of approach/process that will be applied or analysis of the process is performed in order to study in detail the steps in the process to successfully be performed promotion. This step includes:
  - assessment of the resources – basic activity that should be done to start promoting,
  - identify opportunities for improvement,
  - determination of the child process as part of promotion. Namely, the child process is possible to be removed from some significant purpose so process of its expansion can improve an entire process,
  - choice of access improvement (continuous),
  - report or synthesis of all the facts relating to assessment of the current state of the process of continuous improvement priority.
4. Advancing of the process or improving the process aims to establish a process by which the best way will achieve customer requirements, and implemented the principle of Deming's cycle (PDCA). In this step is necessary to determine the reasons for the occurrence of problems and their sources. In this sense the concept of PDCA directs attention to the source

of the causes of existing problems and there is opportunity for improvement.

5. Establishing of the process or implementation of change is a step in the continuous improvement of organization in which decisions need to be implemented and enforced through three basic stages:
  - Pilot implementation, stage when are investigating whether the solution is adequate and the result gives the opportunity to make corrections.
  - Preparation of action plan, stage when the actions are detailing to be taken during implementation. They include: setting priorities, making a definite plan for implementation and revision of priorities.
  - Implementation of the plan.

The implementation of TQM as way of organizing in associations should include both approaches of continuous improvement:

- Internal improvement, perceived in the setting clear, unambiguous communication between members and thus networking, creating teamwork viewed in three ways:
  - Vertical – teamwork between presidency and all members of the association,
  - Horizontal – teamwork within work groups and across functional lines between two or more associations
- External improvement, can be seen in developing cooperation with other association, consulting firms and universities, promotion of knowledge and education, direct measurement of consumer satisfaction, thereby achieving customer satisfaction and community.

When continuous improvement and TQM will be accepted by all and at all levels of the association will lead to significant improvements and excellent results. These results are related with achieving higher quality of working, mutual satisfaction, improved organization which realizes higher profit, and ultimately a better market position.

## **CONCLUSION**

Given that organic farming is a way of growing plants and livestock products and their processing by creating quality principle in all aspects, there was a logical exploration of the possibility of application of TQM as a way of organization and operation of associations of producers of organic products. The research results in this paper showed that the associations of producers of organic products in Republic of Macedonia is possible to implement TQM as a way of organization

and operation of associations of producers of organic products, primarily due to recognition of organic products under the concepts of TQM - total quality in manufacture and operation, cost reduction and customer satisfaction. For integration of TQM is necessary the focus attention to organization of on work with continuous improvement of all and all levels and stages of operation.

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**PART VI.**

**REGIONAL TRADE INTEGRATION  
AND PROSPECTIVE OF SOUTH  
EASTERN EUROPEAN COUNTRIES**

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# INTERPLAY BETWEEN DEMOGRAPHIC AND REGIONAL DEVELOPMENT: CROATIAN CASE

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## *Abstract*

*Croatia is extremely heterogeneous country and regional differences are great, both in terms of demographic and economic development. The paper addresses the challenges of Croatia's uneven economic development in relation to general demographic trends. Data on demographic resources are linked to data of economic development in actual administrative organization in Croatia. In analysis, index of demographic resources and composite development index are used. As expected, composite development index of counties and index of demographic resources are correlated. Results provide us with important insights into intensity of demographic and socio-economic changes, which are spatial diversified. In addition it could offer some guidelines for efficient development policy.*

**Keywords:** Croatia, NUTS regions, index of demographic resources, composite development index.

**JEL codes:** O10, O15.

G – B theme: Regional economic growth and development

## **1. INTRODUCTORY REMARKS**

Croatia is extremely heterogeneous country and regional differences are great, both in terms of demographic and economic development. Population is relevant factor of economic development, and it is observed that development is characterized by uneven population distribution.

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Therefore, the aim of this paper is to analyze demographic resources from the regional development perspective. Disparities in regional development affect the mobility of the population from the periphery to the core which contributes to the further deterioration of the periphery. Because of this interaction demographic potential is a good indicator of the differences in regional development, as well as the basis for their mitigation.

Hence, we link data on demographic resources to data of economic development in actual administrative organization in Croatia. Index of demographic resources in combination with composite development index is used. As expected, composite development index of counties and index of demographic resources are correlated.

Analysis is performed on three spatial levels – statistical areas (NUTS2), planning areas and county level (actual administrative units) – while index of demographic resources is relevant and applicable to all territorial levels.

The paper is structured as follows. The second section elaborates in detail territorial organization of the country as well as population distribution. Composite development index is described in third section, while the indices of demographic resources are presented in fourth section. The final section offers some concluding remarks as well as future research agenda.

## 2. POPULATION ALLOCATION

Population is important factor in economic development. By forming labor supply it is the main driver of economy. In the same time consumption and appropriate standard of living are objectives and purposes of economic activities<sup>3</sup>. Therefore, it is important to monitor and evaluate demographic trends. Our analysis is performed on three spatial levels as presented in the following table.

**Table 1. Spatial framework of analysis**

Statistical region (NUTS2)	Planning area	County
	Central Croatia (Središnja Hrvatska)	Grad Zagreb
		Zagrebačka
		Sisačko-moslavačka
		Karlovačka
		Bjelovarsko-bilogorska
		Osječko-baranjska

<sup>3</sup> Refer to Wertheimer-Baletić (2000) and Olivera-Roca (1991).

Continental Croatia	Eastern Croatia (Istočna Hrvatska)	Virovitičko-podravska
		Požeško-slavonska
		Brodsko-posavska
		Vukovarsko-srijemska
	Northwestern Croatia (Sjeverozapadna Hrvatska)	Varaždinska
		Koprivničko-križevačka
		Krapinsko-zagorska
Adriatic Croatia	North Adriatic and Lika (Sjeverni Jadran i Lika)	Međimurska
		Primorsko-goranska
		Istarska
	Central and South Adriatic (Srednji i Južni Jadran)	Ličko-senjska
		Splitsko-dalmatinska
		Zadarska
		Šibensko-kninska
Dubrovačko-neretvanska		

Territorial organization has significant impact on regional development. It affects the spatial-functional organization as well as the development of urban and transport system. According to the Act on the Territories of Counties, Towns and Municipalities in the Republic of Croatia (Official Gazette, No. 86/06,125/06, 46/10, 145/10, 37/13, 44/13, 45/13) the entire territory of the Republic of Croatia is divided into 556 local self-government units (127 towns and 429 municipalities) and 21 counties (including Zagreb, having a dual status of a town and county). Counties represent the third level of the NUTS system, while the entire national territory represents the first level (NUTS1). As for the second level (NUTS2<sup>4</sup>) there are two units, Adriatic Croatia (7 counties) and Continental Croatia (14 counties).

As table 1 shows, according to the draft of the new Law on regional development<sup>5</sup>, there are five planning areas. It is important to stress out that planning areas are not administrative or nodal-functional regions (with common or complementary features with numerous and versatile flows and interdependencies) but regions formed for statistical as well as management purposes only. The main function of planning areas is to enhance strategic regional planning. Policy makers believe that

<sup>4</sup> For more detailed elaboration of regionalization in Croatia refer to Rašić Bakarić and Starc (2003).

<sup>5</sup>Croatia has been preparing the new Law on regional development, as well as National regional development strategy, two main documents for efficient regional policy. Refer to MRDEUF

(Usp.[http://www.mrrfeu.hr/UserDocsImages/Savjetovanje%20sa%20zainteresiranom%20javno%C5%A1%C4%87u/Nacr%20ZRR%20RH\\_04.10.2013.pdf](http://www.mrrfeu.hr/UserDocsImages/Savjetovanje%20sa%20zainteresiranom%20javno%C5%A1%C4%87u/Nacr%20ZRR%20RH_04.10.2013.pdf)).

presented division of national territory is the most appropriate spatial matrix for promotion of territorial cohesion<sup>6</sup> within national territory.

**Table 2. Basic characteristics of NUTS2 regions and planning areas in 2011**

Spatial unit	Area (km <sup>2</sup> )		Population in 2011		Population density (inh/km <sup>2</sup> )
	Aps.	%	Aps.	%	
Croatia	56,594	100.0	4,284,889	100.0	75.7
Continental Croatia	31,889	56.3	2,872,954	67.0	90.1
Central Croatia	14,435	25.5	1,528,725	35.7	105.9
Eastern Croatia	12,486	22.0	805,998	18.8	64.6
Northwestern Croatia	4,968	8.8	538,231	12.5	108.3
Adriatic Croatia	24,705	43.7	1,411,935	33.0	57.2
North Adriatic and Lika	11,754	20.8	555,177	13.0	47.2
Central and South Adriatic	12,951	22.9	856,758	20.0	66.2

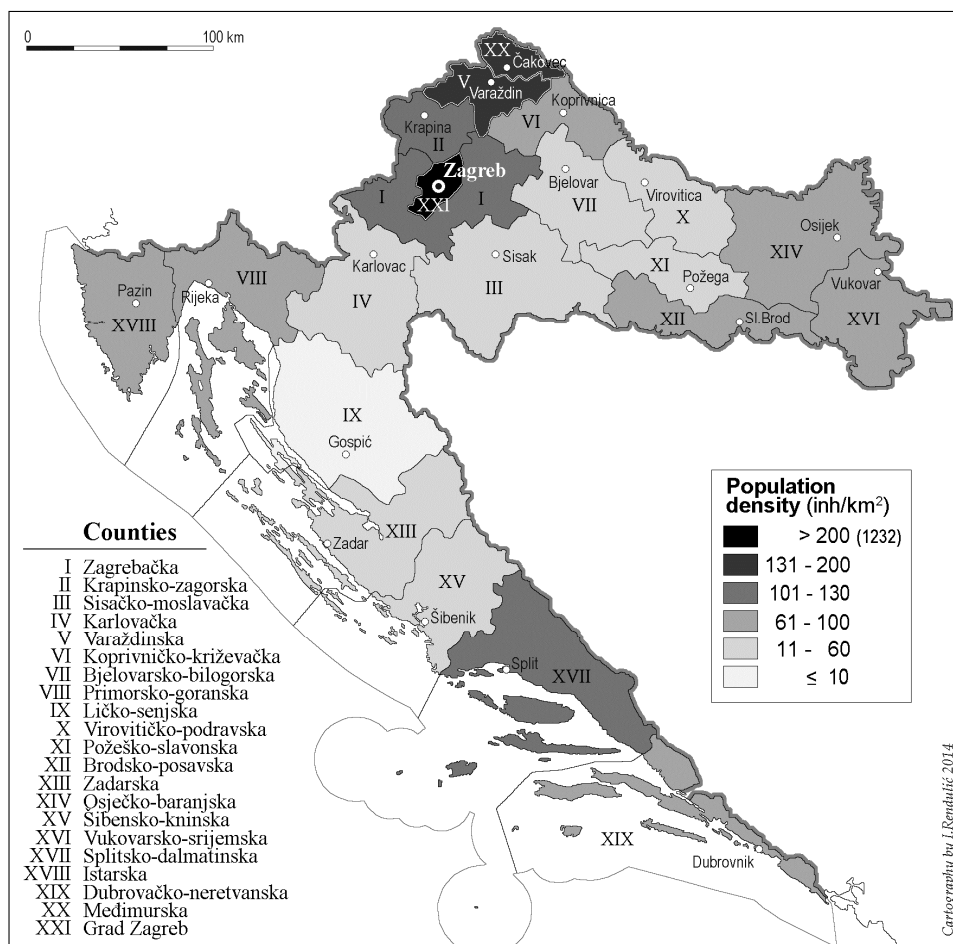
*Source: Central Bureau of Statistics.*

Croatia is characterized by an extremely uneven distribution of population, with related impact on the regional development of the country. The underlying causes of such demographic distribution are geographical, historical and economic conditions. A more thorough analysis of the population allocation at the county level shows a striking dichotomy. On the one side, there are counties with high and relatively high population density, and on the other side counties with low and relatively low population density. In the first group is planning area of Northwestern Croatia with counties whose centers are urban agglomeration (such as Međimurska county 156 inh/km<sup>2</sup>). In the second group are counties of “rural periphery” (such as Ličko-senjska county 9.5 inh/km<sup>2</sup>), areas outside the direct influence of development centers (macro centers). It can be seen from the analysis that the differences in population densities increase with the degree of spatial differentiation.

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<sup>6</sup> In order to reduce development disparities at EU level the concept of spatial development based on territorial cohesion was introduced. Spatial organization which respects specificities of spaces and places has a key role in achieving territorial cohesion.

Figure 1. Population density in Croatia, 2011



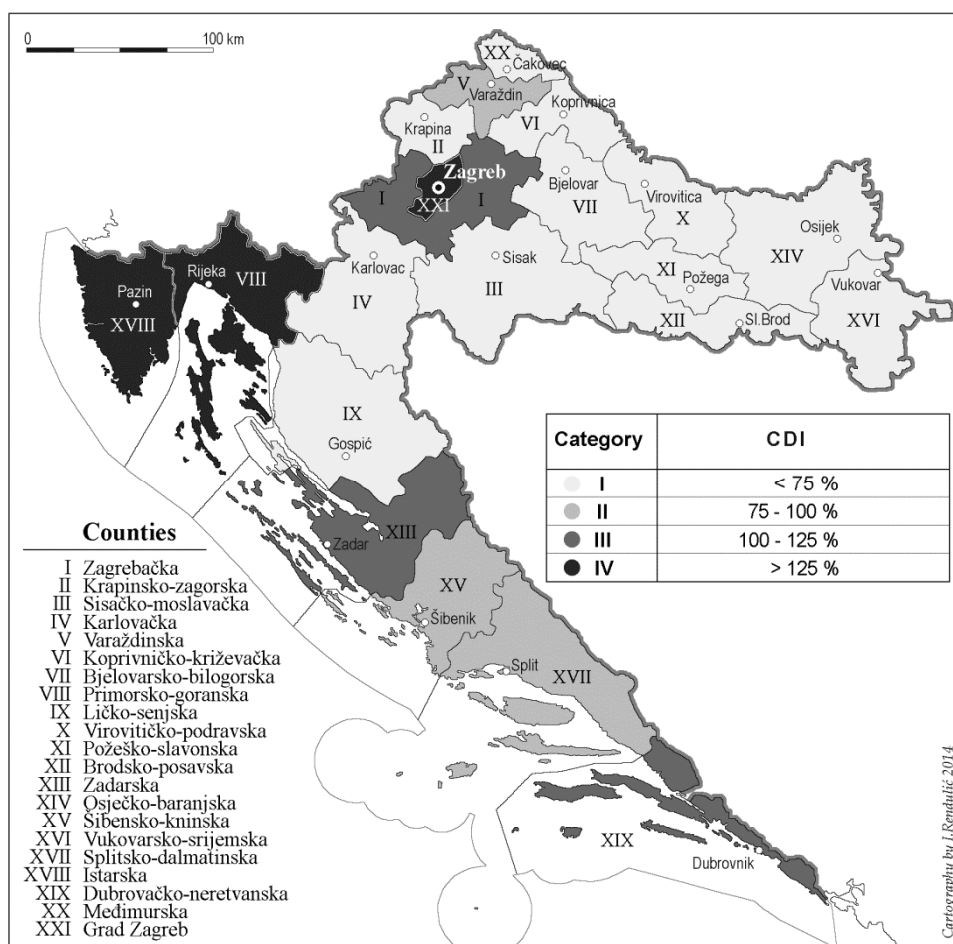
Source: Authors' calculation based on Central Bureau of Statistics data.

### 3. COMPOSITE DEVELOPMENT INDEX (CDI)

In terms of development level, counties are officially ranked according to the CDI. It is based on five indicators: personal income per capita; county budget revenues per capita; unemployment rate; change in population (change between the censuses) and educational structure of the population (educational attainment rate). This categorization was introduced by the Law on Regional Development in 2009 (Official Gazette, No. 153/09, 63/10 158/2013). CDI is calculated as a weighted average deviation from the national average of the five indicators. Unemployment

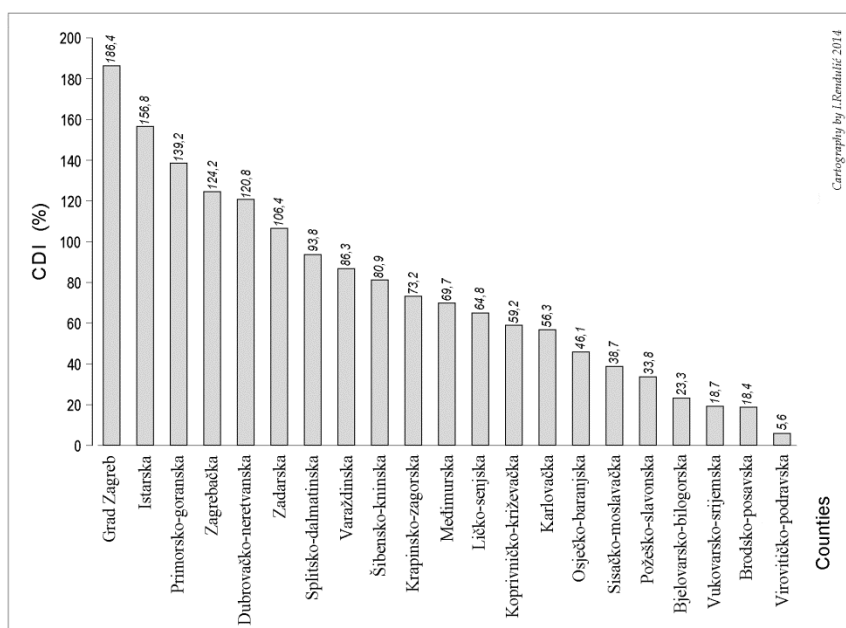
rate has 30 percent weight, incomes per capita 25 percent and other three indicators 15 percent weight each. County units have been divided in four different categories in accordance with their relative positions when compared to the national average. The 2013 CDI is calculated on the basis of indicators measured in 2010 – 2012.

**Figure 2. Categorization of counties according to CDI, 2013**



Source: MRDEUF (2013).

As twelve counties are in the first development category (less than 75 percent of national average) for detailed picture, CDI of counties is needed.

**Figure 3. CDI in counties, 2013**

Source: MRDEUF (2013).

As presented in table 2 uneven distribution of population is one of the main features of recent demographic trends. It is necessary to emphasize here that uneven allocation of population is also a critical structural problem which is reflected in regional development disparities. Therefore we here link development category (according to CDI) with population allocation and these interactions can be seen in the following table.

**Table 4. Area and population of NUTS2 regions and planning areas by categories of CDI, 2013**

Spatial unit (NUTS2 region, Planning area)	Area (km <sup>2</sup> )	Population 2011	Development category							
			I (<75%)		II (75-100%)		III (100-125%)		IV (>125%)	
			Area	Pop.	Area	Pop.	Area	Pop.	Area	Pop.
Croatia	100.0	100.0	57.0	38.3	15.5	17.3	15.0	14.2	12.5	30.2
Continental Croatia	100.0	100.0	84.4	55.3	4.0	6.1	9.6	11.1	2.0	27.5
Central Croatia	100.0	100.0	74.7	27.5	-	-	21.2	20.8	4.4	51.7
Eastern Croatia	100.0	100.0	100.0	100.0	-	-	-	-	-	-
Northwestern Croatia	100.0	100.0	74.6	67.3	25.4	32.7	-	-	-	-



Adriatic Croatia	100.0	100.0	21.6	3.6	30.5	40.0	22.0	20.7	25.9	35.7
North Adriatic and Lika	100.0	100.0	45.5	9.2	-	-	-	-	54.5	90.8
Central and South Adriatic	100.0	100.0	-	-	58.1	65.8	41.9	34,2	-	-

*Source: MRDEUF(2013) and authors' calculation based on Central bureau of statistics data.*

The analysis shows that 57 percent of Croatian territory includes areas in the first category of development measured by CDI and it accounts for about 38 percent of the country's population, while most developed areas (fourth category) cover around 12 percent of the national territory with 30 percent of total population.

There are profound differences in the structure of settlement by development category on NUTS2 level. Continental Croatia has above average proportion of area and population in the first development category (about 85 percent of the total area and 55 percent of the population). On the other hand, area and population of Adriatic Croatia are allocated more evenly in all development categories, with dominant share in the fourth development category.

Interaction of territorial development and spatial distribution of the population is even more obvious at the level of the planning area. It is particularly alarming that all counties in planning area of Eastern Croatia belong to the first development category. It clearly indicates the scope of the problem in that part of the country. Northwestern Croatia has a relatively high share of area and population first and second development category. The planning area of North Adriatic and Lika exhibits the highest share of area and population in the fourth development category.

#### **4. DEMOGRAPHIC RESOURCES**

Besides the overview of spatial imbalances of human resources our analysis of demographic aspects of regional development is supported by index of demographic resources, which reflect the existing disparities in regional development, as well as potential problems in promoting territorial cohesion within the national territory.

Index of demographic resources ( $i_{der}$ ) is developed by Nejašmić, Toskić and Mišetić (2009). It consists of two components: demographic index ( $i_{dem}$ )<sup>7</sup> and education index ( $i_o$ )<sup>8</sup>. Population size is included in the calculation as a corrective in the form of a coefficient ( $k$ ).  $I_{der}$  helps in evaluation of demographic resources. Index of demographic resources<sup>9</sup> is calculating by applying the following term:

$$i_{der} = k \times (i_{dem} + i_o)$$

Based on the indicator's values there are six types of demographic resources. Their basic features are presented in Table 5.

**Table 5. Types of spatial units according to index of demographic resources ( $i_{der}$ )**

Type	Characteristics	$i_{der}$
A - extremely favorable demographic resources	extremely favorable demographic features and potentials; very high educational level	> 80.0
B - favorable demographic resources	favorable demographic features and potentials; high educational level	40.1 – 80.0
C - good demographic resources	predominantly good demographic features and potentials; predominantly good educational level	20.1 – 40.0
D - weak demographic resources	somewhat good demographic features and potentials; mainly low educational level	10.1 – 20.0
E - very weak demographic resources	very weak demographic features and potentials; mainly very low educational level	5.1 – 10.0
F - extremely weak demographic resources	extremely weak demographic resources and potentials; extremely low educational level	≤ 5.0

Izvor: Nejašmić, Toskić, Mišetić (2009).

Results show that whole Croatia belongs to type C, which is characterized by predominantly good demographic features and educational level. Evaluation of demographic potential at NUTS2 level and the planning area level reveals much more complex picture of the index of demographic resources and its components. Therefore, table 6 presents results on NUTS2 level and planning area level in 2011,

<sup>7</sup> The first index-component consists of eleven variables. It includes a general direction of demographic changes in the past period, the most important indicators of demographic potential and the synthetic indicator of the population natural change and age structure.

<sup>8</sup> The second index-component consists of four variables. It includes the characteristics of the population's attained level of education, as well as indications of the most educated contingent's future proportions.

<sup>9</sup> For detailed elaboration of methodology please refer to (Nejašmić, Toskić, Mišetić, 2009; Nejašmić, Mišetić, 2010).

while figure 4 shows changes in index of demographic resources in the period 2001-2011.

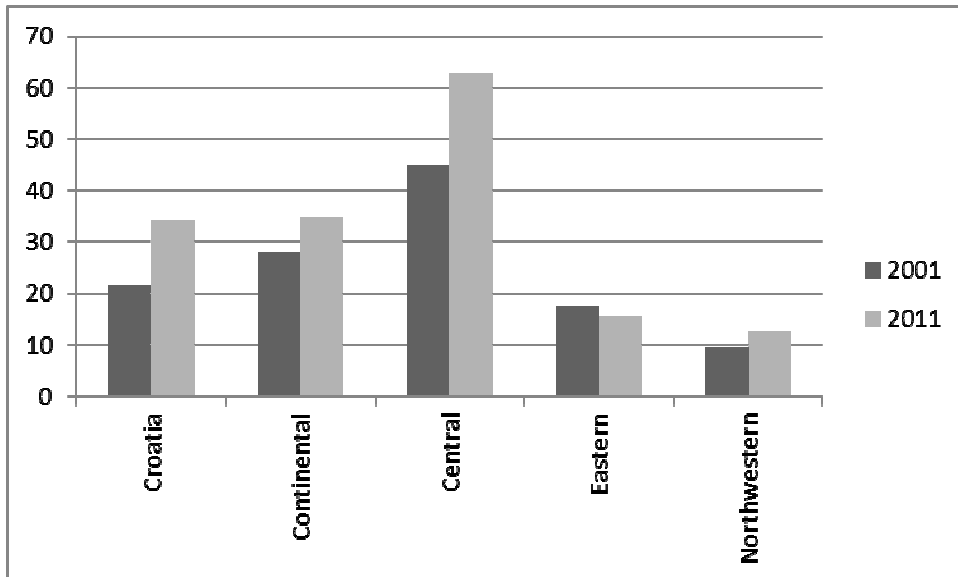
**Table 6. Index of demographic resources in NUTS 2 region and planning areas in 2011**

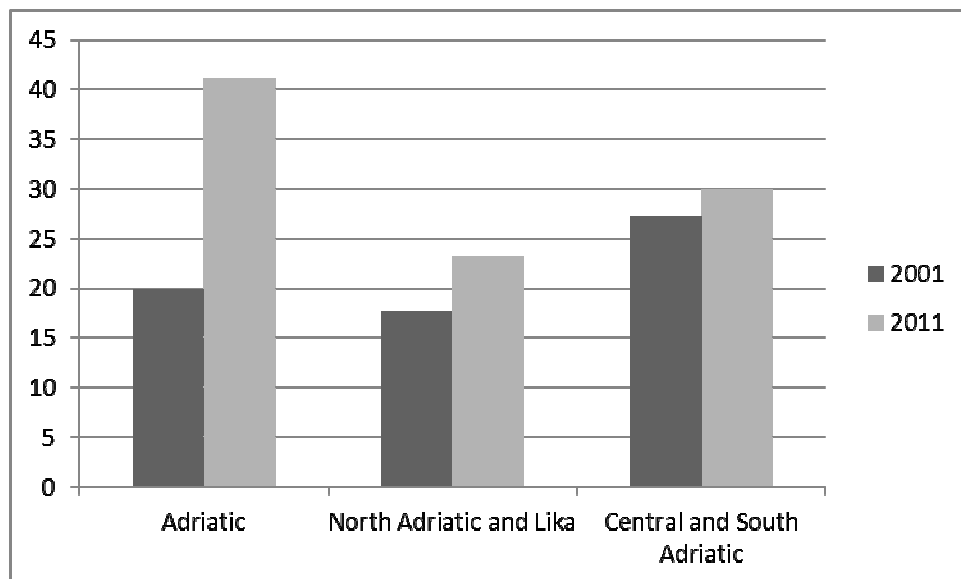
2011				
Spatial unit (NUTS2 region, Planning area)	Demographic resources*			
	$I_{dem}$	$I_o$	$I_{der}$	Type
Croatia	153.1	1,215.9	34.2	C
Continental Croatia	147.5	847.8	34.8	C
Central Croatia	148.1	1,248.5	62.8	B
Eastern Croatia	145.8	483.2	15.7	D
Northwestern Croatia	148.4	479.4	12.6	D
Adriatic Croatia	143.7	1,032.6	41.2	C
North Adriatic and Lika	90.4	1,079.3	23.3	C
Central and South Adriatic	194.5	1,002.2	29.9	C

Note:  $*I_{dem}$  = demographic index,  $I_o$  = index of education,  $I_{der}$  = index of demographic resources.

Source: Authors' calculation based on Central Bureau of Statistics data.

**Figure 4. Index of demographic resources in NUTS2 region and planning area in 2001 and 2011**





*Source: Author's calculation based on Central Bureau of Statistics data.*

In 2001 index of demographic resources in Adriatic Croatia (type D) noticeably lagged behind the value of the index in Continental Croatia (type C). In the period 2001-2011, by increasing the value of educational index, Adriatic Croatia, moved from type D to type C. The relatively slower development of demographic resources in Continental Croatia is the consequence of the low values of index in Northwestern and Eastern Croatia. Here we should emphasize the low value of index of education in Northwestern Croatia (the lowest value among the planning areas in 2001 and 2011).<sup>10</sup> It clearly indicates the need for a faster institutionalization of higher education in the main center of this planning area (Varaždin).

On the other hand, in the period 2001-2011, only Eastern Croatia experienced the decline of the index of demographic resources. This decline coincided with economic lagging of this part of the country. It is very important to note here that value of demographic index in ten-year period declined by more than 45 percent. It is the consequence of intensive, but selective emigration since the beginning of the 1990s (more than 150,000 residents left the area, of which 60,000 only between the last two censuses). While increased emigration during the 1990s was the result of direct war effects and transition problems, reported exodus of population in the

<sup>10</sup> Low value of index of education is the main reason that in 2001 planning area of Northwestern Croatia exhibited features of very weak demographic resources (type E).

period 2000-2011 is a consequence of the situation on the labor market (unemployment rate 30 percent). Such complex situation requires implementation of appropriate policy instruments and measures for regional development to address the negative process.

Due to interaction between the level of socio-economic and demographic development, features and types of demographic resources are much more predictable by different development categories. So the demographic resources of fourth development category belong to the type B - favorable demographic resources, third and second development category belong to type C - good demographic resources, and least developed areas in first category exhibit weak demographic resources and belong to type D.

**Table 7. Index of demographic resources in categories of development measured by CDI, 2013**

2011.				
Development categories	Demographic resources*			
	$I_{dem}$	$I_o$	$I_{der}$	TIP
<b>IV</b> (> 125% of average)	127.3	1,426.7	63.9	B
<b>III</b> (100-125% of average)	207.8	844.0	29.1	C
<b>II</b> (75-100% of)	154.3	651.9	27.7	C
<b>I</b> (< 75% of average)	125.9	487.5	14.4	D

\* $I_{dem}$  = demographic index,  $I_o$  = index of education,  $I_{der}$  = index of demographic resources.

The index of education has the major role in such typology scaling. Comparing to index of education (which is highly correlated with development level) demographic index is characterized by extremely irregular distribution across development categories. Thus, the most developed counties in fourth category (City of Zagreb, Istarska and Primorsko-goranska) have a value of demographic index almost the same as the counties in the least developed category.

Analysis of CDI and index of demographic resources across counties in 2001 and 2011 provides us with more detailed insights.

**Table 8 CDI and demographic resource index in counties in 2001 and 2011**

County	CDI in 2013* (RoC = 100,0)		Demographic resources 2001				Demographic resources 2011				Change of $I_{der}$ 2001-2011
	Categ.	%	$I_{dem}$	$I_o$	$I_{der}$	Type	$I_{dem}$	$I_o$	$I_{der}$	TIP	
Grad Zagreb	IV	186.4	229.5	1,816.4	102.3	A	180.9	2,057.1	111.9	A	9.6
Istarska		156.8	158.1	674.6	20.8	C	121.0	872.4	29.8	C	9.0
Primorsko-goranska		139.2	112.2	935.6	36.7	C	80.0	1,350.7	50.1	B	13.4
Zagrebačka	III	124.2	319.2	355.2	23.6	C	212.0	629.8	29.5	C	5.9
Dubrovačko-neretvanska		120.8	311.3	955.8	25.3	C	216.5	1,118.6	33.4	C	8.1
Zadarska		106.4	261.4	601.0	21.6	C	195.1	783.6	24.5	C	2.9
Splitsko-dalmatinska	II	93.8	419.0	885.2	58.7	B	241.8	1,108.6	60.8	B	2.1
Varaždinska		86.3	229.1	311.5	13.5	D	149.7	518.6	16.7	D	3.2
Šibensko-kninska		80.9	103.1	543.0	12.9	D	71.4	795.3	17.3	D	4.4
Krapinsko-zagorska	I	73.2	164.5	195.0	9.0	E	107.4	407.3	12.9	D	3.9
Međimurska		69.7	407.1	232.8	12.8	D	264.6	470.9	14.7	D	1.9
Ličko-senjska		64.8	47.4	298.2	6.9	E	41.0	544.0	11.7	D	4.8
Koprivničko-križevačka		59.2	163.2	280.3	8.9	E	121.9	508.7	12.6	D	3.7
Karlovačka		56.3	59.5	389.6	11.2	D	56.9	719.3	19.4	D	8.2
Osječko-baranjska		46.1	224.0	451.0	23.6	C	134.4	584.7	25.2	C	1.6
Sisačko-moslavačka		38.7	97.2	295.7	9.8	E	90.4	460.6	13.8	D	4.0
Požeško-slavonska		33.8	364.5	255.8	15.5	D	146.4	520.3	13.3	D	-2.2
Bjelovarsko-bilogorska		23.3	138.5	223.1	9.0	E	100.0	442.7	10.9	D	1.9
Vukovarsko-srijemska		18.7	331.8	245.8	14.4	D	158.4	396.1	13.9	D	-0.5
Brodsko-posavska		18.4	364.5	255.8	15.5	D	168.3	439.8	15.2	D	-0.3
Virovitičko-podravska		5.6	189.1	186.5	7.5	E	122.0	355.4	9.5	E	2.0

Source: MRDEUF(2013) and authors' calculation based on Central bureau of statistics data.

The most favorable situation, measured by index of demographic resources, is in the City of Zagreb which exhibits features of demographic resources of type A - extremely favorable demographic resources (particularly good demographic characteristics and potentials and very high level of education).

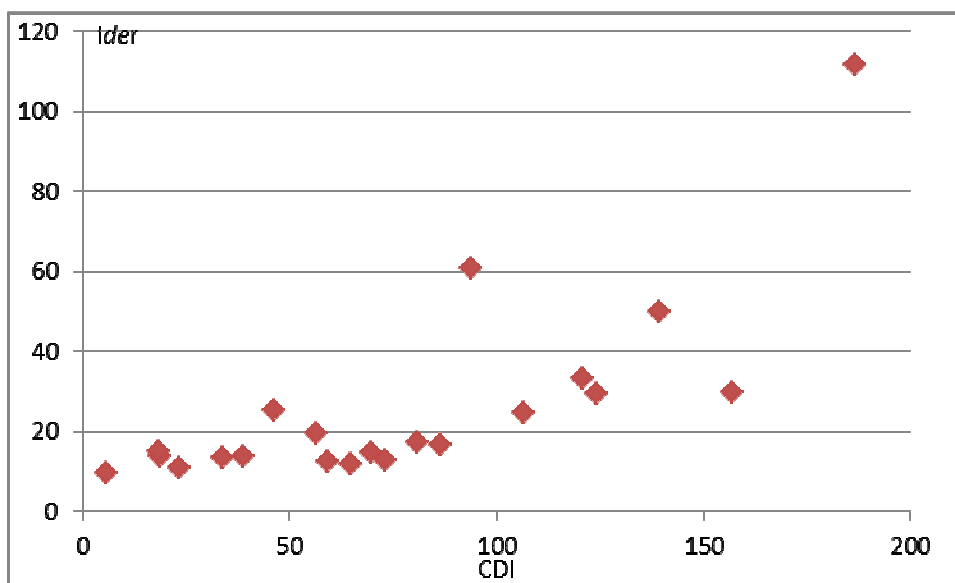
The change in value of index of demographic resources in the period 2001-2011 on the county level shows some inconclusive results. Related to this, it is possible to distinguish four groups of counties: the first one are counties with a negative deviation of the index of demographic resources in relation to CDI; the second group encompasses counties with a positive deviation of the index of demographic resources in relation to the CDI; the third group consists of counties with the lowest value of index of demographic resources; and in the fourth group are counties with the diminishing value of index of demographic resources in the observed period.

The first group includes the counties of Istria, Zagrebačka and Zadarska. High disparity between these two indicators is particularly seen in Istarska county. Although ranked second by CDI among all counties, it is ranked fifth by the value of index of demographic resources. As the result, Istarska county is the only county in the fourth development category which has good demographic resources (type C). A detailed insight into data reveals that this is primarily a consequence of the relatively low value of the index of education.

Splitsko-dalmatinska and Osječko-baranjska are counties included in the second group. Relatively high values of the index of education could explain performance of these counties.

The lowest values of index of demographic resources are observed in the following group of counties: Virovitičko podravska (9.5), Ličko-senjska (11.7), Koprivničko-križevačka (12.6) and Krapinsko-zagorska (12.9).

The most demanding policy issues are seen in the counties with diminishing values of index of demographic resources: Brodsko-posavska (-0.3), Vukovarsko-srijemska (-0.5) and Požeško-slavonska (-2.2). At the same time Vukovarsko-srijemska and Brodsko-posavska are counties with the lowest CDI in the country – 18.7 and 18.4, respectively.

**Figure 5. Interplay between CDI and IDER**

Source: MRDEUF and authors' calculation based on Central Bureau of Statistics data.

## 5 CONCLUDING REMARKS

Croatia exhibits unfavorable dynamic and structural demographic features. They are reflected in further decline in labor potential and consequently in regional development problems. Results show that changes of the index of demographic resources are determined by differences in the development levels of certain parts of the territory. Therefore, analysis of demographic resources should be an integral part of socio-economic analysis, especially of the analyses of less developed units.

One of the most important challenges to policy makers and research community is to formulate composite demographic-regional indicator as a potential tool to strengthen the governance of regional development. Such tool could provide us with important insights into intensity of demographic and socio-economic changes, which are spatial diversified.



## HARMONIZATION OF NATIONAL STRATEGIC DOCUMENTS WITH THE DOCUMENTS OF EU – LICENSES AND PERMITS FOR SMEs<sup>1</sup>

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Sonja ĐURIČIN<sup>2</sup>  
Olivera PANTIĆ<sup>3</sup>

### **Abstract**

*Administrative procedures significantly burden small and medium enterprises and entrepreneurs (SMEs). Their simplification is recognized as one of the main goals of the strategic documents of the European Union in this field. Establishment and registration, licensing and business permits and inadequate government support are factors that, not only in Serbia, significantly slowing down the growth and development of the SMEs sector. Considering that this category of companies are drivers of economic growth and development, reducing the cost of establishing and time savings due to more efficient licensing and business permits, are the priorities of EU policy in the field of SMEs sector. The aim of the paper is to determine the degree of harmonization of strategic documents adopted in the EU with national strategic documents in SMEs sector. The case of research in a widersense, includes relevant strategic documents from the above mentioned areas with emphasis on The May 2011 commitment which provides regulatory reform in the area of licensing and business permits SMEs. In a narrow sense, the case study examined the effects of the implementation of The May 2011 commitment in the field of hospitality services (hotels and restaurants), plumbing companies, wholesale and retail trade, manufacturing of steel products and small IT devices. For realization of goal of this research, data were collected using the survey through interviews with representatives of relevant institutions in Serbia and questionnaires which were distributed to small and medium-sized enterprises selected by the simple random sample.*

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**Keywords:** SMEs, permits, licenses, May 2011 commitment, Small and Medium Business Act

## INTRODUCTION

Competitive sector of small and medium enterprises and entrepreneurs has a very important role in the economic growth and development of countries in transition. Successful examples of economically developed countries of Europe and the Balkans, where the transition process is terminated or completed, indicate the importance of this sector of the economy in the future economic development of Serbia. The characteristics of these types of companies, particularly their flexibility and responsiveness to the contemporary market demands, indicate that the stimulation of the competitiveness of SME sector should be integrated into the strategic documents of the relevant public institutions.

Economic circumstances of the domestic economy and efforts to achieve stability in the most important macroeconomic indicators such as inflation, trade deficit and unemployment, imply the creation of economic policy that will reinforce the development of economic branches, encourage the creation of new jobs and foster export of the local products. Chance lies exactly in the SME sector that, accompanied by an adequate support from the state, can respond quickly to the demands of foreign markets.

One of the preconditions for the development of the Serbian economy refers to the harmonization of its existing strategic documents with the documents of the European Union. The main or primary objective of the research is to determine the degree of harmonization of strategic documents adopted in the EU with the national strategic documents of the SME sector. The subject of the research consists of relevant policy documents governing the operations of SME with an emphasis on one of the crucial documents adopted in the EU. The document in question is "*The May 2011 commitment.*" Its significance is reflected in the proposed regulatory reforms and reforms of administrative procedures that should be implemented to facilitate the establishment and operation of enterprises, particularly in the area of obtaining necessary licenses and permits for operation. A secondary aim of the research is to identify the current problems facing the SME sector in Serbia due to regulatory reform. For these reasons, the subject of research, in the narrow sense, includes an analysis of the effects of implementation of *The May 2011 commitment* in certain activities important for the economic growth and development of Serbia. The analysis of the effects of the implementation of *The May 2011 commitment* was conducted within the following activities:

- hospitality services (hotels and restaurants),

- plumbing craft shops,
- wholesale and retail stores,
- production of steel products, and
- production of small IT devices.

The research included the relevant state institutions and entrepreneurs from the SME sector, and data were collected using the appropriate research methods. The research was conducted through the application of its basic techniques i.e. interviews and surveys. Direct interview was a method used to carry out the primary objective of the research, interviews were conducted with representatives of the institutions that are directly or indirectly associated with the regulatory reform, improvement of the quality of administrative procedures and increase of the competitiveness of the SME sector. The representatives of the following institutions were interviewed: Serbian Business Registers Agency (SBRA), Ministry of Economy, Ministry of Foreign and Internal Trade and Telecommunications, Serbia Investment and Export Promotion Agency (SIEPA), Serbian Chamber of Commerce (SCC), Belgrade Chamber of Commerce (BCC), Tax Administration, Fund for the Development of the Republic of Serbia, National Agency for Regional Development (NARD). The survey, which was carried out for a secondary aim of the research, was performed by filling out questionnaires by the owners or directors of the companies. In order to obtain objective and unbiased market information, the surveyed companies were selected by a simple random sampling method. For the purpose of making a research sample, the database that contains companies in Serbia was used. For the research purposes, the same number of companies in each activity was selected. The sample includes 25 representatives of the companies from the SME sector.

Besides the research method other scientific methods were also used. Besides the use of classical methods of collecting and analyzing data, the content analysis was also used, and by its application on the collected relevant literature, the necessary data for case processing and implementation of research objectives were obtained. By applying the descriptive method the importance of research objectives was highlighted along with the explanation made concerning results thereof. The method of synthesis was used in the final phase of the research. By linking the facts obtained into a single logical unit, and using the above methods, conclusions were made concerning the degree of harmonization of national strategic documents with the EU documents, problems facing entrepreneurs in the SME sector due to regulatory reform and potential opportunities for its improvement.

The data obtained through the research of the problems facing business entities from the SME sector, costs of establishing and obtaining permits to operate and conduct daily operations, opportunities to start businesses in foreign markets, have

multiple meaning and value in use. Besides listening to the problems and obligations that companies face, on the basis of information obtained regarding administrative barriers it is possible to create new goals that will improve the efficiency of the public institutions.

## **1. IMPORTANCE OF SME SECTOR FOR THE ECONOMIC DEVELOPMENT OF THE REPUBLIC OF SERBIA**

In the period from 2000 to 2012, the number of companies in the SME sector<sup>4</sup> in Serbia recorded significant fluctuations. By the beginning of the global economic crisis, the number of established enterprises was higher than the number of closed enterprises, while the number of employees in this sector was constantly growing. This has mitigated the negative effects of privatization because the SME sector was generating new jobs and supporting the major economic systems. As a result of the global economic crisis and the deterioration of economic conditions, from 2008 the development of entrepreneurship slowed down and its competitiveness was compromised. The number of new enterprises started to decline, while the number of closed businesses started to grow. Negative trends in the SME sector were present until 2012, when the number of new enterprises compared to 2011 increased slightly (+ 2.1%) and the number of closed enterprises decreased significantly (-45.8%). Despite these positive developments, the growth in the number of newly established companies does not necessarily imply an increase in the volume of business. Due to poor economic conditions, the share of enterprises that survive the first two years of operation decreased (from 61.7% to 57.8%) while the number of entrepreneurs with one or no employees saw an increase.

Based on the available data of the Statistical Office of the Republic of Serbia the changes may be noted in the number of companies in the SME sector during the observed period. The largest increase was reported in the micro-sized enterprises that have up to 10 employees, due to their flexibility and tendency towards transformation and rapid acceptance of the trends and changes in the market. A high degree of innovativeness of its owners and managers make them one of the key factors for the revitalization of the local economy. The largest decline in the number of companies is recorded in the medium sized enterprises, and the initial number of 2,572 companies in 2007 saw a decline of 16.71% in 2012, when its number was 2,142.

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<sup>4</sup> Entrepreneurs (shops), as well as natural persons who are self-employed, are included in micro-enterprises.

**Table 1. The number of enterprises in the SME sector in The Republic of Serbia, 2007-2012.**

Republic of Serbia						
Enterprises	2007.	2008.	2009.	2010.	2011.	2012.
<b>Micro</b>	71,065	75,540	76,243	77,989	78,890	79,189
<b>Small</b>	9,874	10,415	9,873	9,614	9,656	9,699
<b>Medium</b>	2,572	2,675	2,470	2,257	2,218	2,142
<b>Total SMEs</b>	<b>83,511</b>	<b>88,630</b>	<b>88,586</b>	<b>89,860</b>	<b>90,764</b>	<b>91,030</b>

Source: Statistical Office of the Republic of Serbia

The importance of the SME sector for economic growth and development can be seen in its contribution to the creation of GDP and other macroeconomic indicators such as participation in employment, total turnover, foreign trade activities, etc. According to the latest *"Report on SMEs and Entrepreneurship for 2012,"* out of the total number of 317,668 enterprises, the SMEs make 28,7% or 91,030. Out of this number the micro enterprises are the largest group 79,189 (0-9 employees), followed by 9,699 small (less than 50 employees) and 2,142 medium-sized legal entities (up to 250 employees). The SME sector generates about 34% of the GDP of the Republic of Serbia. These companies generate 65.1% of employment in the non-financial part of the economy and realize 65.4% of total turnover. In the GDP of non-financial sector, SMEs has a significant share of 55.8%, with a tendency of further growth. Foreign trade activity shows a dynamic export growth by 15.7% in this segment of the economy compared to the previous year, forming in such a way a satisfactory coverage between imports and exports of 51.3%. Although the foreign trade activity is considered satisfactory, bearing in mind the above stated indicators in the coming years it should be improved because of the influence it has on the amount of the balance of payments with foreign countries.

Despite the fact that the SME sector makes the basis of the economic growth and development, the access to the bank loans is limited and not at all easy (Đurićin, S., et al., 2013, p.150). Difficult conditions for obtaining external funding sources trigger the reduction of economic activity, inability to meet obligations on time and collection of claims jeopardizing in such a way the survival of the entire SME sector (Đurićin, S., 2011, p. 65). The most common complaints of SMEs when entering into a credit arrangement with banks, on which basis a realistic picture of the simplicity of the approach can be obtained, refers to the process of gathering of necessary documents (30%), difficulties in securing loans (22%), high interest rates (17%), slow and long procedure of application processing and approval of loans (13%), repayment term (9%), high bank fees and under-developed network of branches (4%) (Eric D., et al., 2012).

If an adequate state support improves the negotiating position of the domestic sector by coordinating schedules for collection of claims and payments of due obligations, providing incentives for financing through loans with favorable borrowing conditions, the opportunities for improving product range or services and strengthening of competitiveness would be greater, and therefore the prospects for strengthening the export activities. The first step in the process of improving the conditions in which the SME sector operates is related to the reform of regulations and administrative procedures for the establishment and operation of enterprises, particularly in the area of obtaining the necessary permits and licenses to operate.

## **2. PERMITS AND LICENSES AS A FACTOR INFLUENCING OPERATION OF SMES IN SERBIA**

Political changes in Serbia at the beginning of XXI century have led to the implementation of many reforms in almost all segments of the economy, aimed primarily at creating modern business methods and healthier macroeconomic environment. Domestic companies, regardless of their size, are stimulated to develop their production while subsidies were primarily intended to boost export in those economic branches that are considered generators of economic development. Through the implementation of the regulatory reform and the creation of strategic documents, public institutions have created the new laws in economy, law, health, agriculture, industry and other fields along with the efforts to reach a satisfactory degree of harmonization with the similar documents from the EU. The compliance was already achieved in some segments at the outset of reforms (such as health care, veterinary medicine and agriculture), while in other areas, the new documents and strategies are being created even today (such as industry, SME sector, environmental protection).

Looking at the five-year period from 2007 to 2012 it can be said that the business and investment climate in Serbia was not significantly changed. One of the factors is the harmonization of strategic documents and laws with those in force in the EU, which led to an increase in foreign direct investments. Opening of representative offices of large global companies and construction of new production facilities not only that boost the economy of Serbia but also led to the development of the SME sector which saw its chance in doing business with large multinational companies (Pantić, O., and Filimonović, D., 2013 , p. 576)

Regardless of size of the business entity or category of activity engaged in, almost all companies have to provide the necessary permits and licenses to operate. They differ depending on whether a company is engaged in manufacturing, services or trade, whether specific types of activities dangerous to life and health are involved,

or whether permits are issued for the first time or renewed. Law relevant for a particular activity defines that every company must have them.

Since every activity that takes place in the Serbian economy has been regulated by the law, not all are equally important for the registration and establishment of a company. Irrespective of the category in which the companies fall into and the activity they carry out, following laws are the backbone of regular operation of a company: the Law on Business Companies<sup>5</sup>, the Law on the Procedure of Registration with the Serbian Business Registers Agency<sup>6</sup>, the Law on Safety and Health at Work<sup>7</sup>, the Law on Classification of Activities<sup>8</sup>, the Law on Private Entrepreneurs<sup>9</sup>, the Law on Sanitary Inspection<sup>10</sup>, the Law Amending the Law on Veterinary medicine<sup>11</sup>. The most of the legal documents that required major changes and compliance with the European laws were amended at the beginning of the XXI century, and significant improvements were noted. However, there are laws that have not yet undergone amendments, and whose amendment is expected in the near future.

Issuance of necessary permits and licenses includes administrative procedures that require time and money. Procedures vary depending on the type of permit, and for each individual permit it is necessary to submit the required documents and pay stipulated fees. The problem of complicated administrative procedures provokes negative effects on current operation, and the companies in Serbia and throughout Europe are facing the same problem. Company operation slows down, significant financial resources have been lost, business uncertainty increases and the credibility of the company collapses. As a result, the European Commission in 2011 conducted a revision of the Law on Small and Medium Enterprises ("Small Business Act"), which is one of the most important documents for the regulation of the operation of the SME sector and for reinforcement of its development. The basic strategic goals that make the basis of the future documents and legal acts of the SME sector were adopted. The goals formulated in "The May 2011 commitment" are accepted by the EU countries and by the countries that strive to become members, as follows:

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<sup>5</sup> Off. Gazette of RS, no. 36/2011, 99/2011 and 83/2014 - other law

<sup>6</sup> Off. Gazette of RS, no. 99/2011 and 83/2014

<sup>7</sup> Off. Gazette of RS, no.101/2005

<sup>8</sup> Off. Gazette of RS, no.101/2005

<sup>9</sup> Off. Gazette of SRS, no. 54/89 and 9/90 and Off. Gazette of RS, no. 19/91, 46/91, 31/93 - Decision of the CCRS, 39/93, 53/93, 67/93, 48/94, 53/95, 35/2002, 101/2005 - other law 55/2004 - other law 61/2005, and - other law

<sup>10</sup> Off. Gazette of RS, no.125/2004

<sup>11</sup> Official Gazette no. 91/2005, 30/2010 and 93/2012

- Implementation of regulatory reform that triggers improvement of the business framework of SMEs along with the improvement of the analysis on its effects and promotion of procedures for the adoption thereof;
- Reduction of administrative procedures;
- Continuous exchange of information with businessmen and their active involvement in the creation and adoption of regulations and policies;
- Improvement of availability of sources of financing;
- Improvement of quality of the workforce by attending contemporary and relevant training courses;
- Active support for the development of innovations and stimulation of their implementation in practice;
- Enable better access to new markets through improving the competitiveness of local products, especially by granting export subsidies and incentives in foreign markets.

In accordance with the recommendations and goals proposed by the European Commission, the policy makers in Serbia have started to implement them into the national strategic documents. Given that the SME sector in Serbia has been recognized as a generator of economic growth, strategies to encourage its competitiveness have been created over many years. The Ministry of Economy launched in early 2014 the initiative for the adoption of the Strategy for the development of entrepreneurship and improving the competitiveness for the period 2014-2020, in which there are elements of *"The May 2011 commitment"*, with a special emphasis on regulatory reform, streamlining of administrative procedures and shortening of time necessary to obtain permits and licenses to operate. The reforms envisaged in this strategy will facilitate establishment and closure of enterprises, commencement and termination of employment, obtaining of the necessary permits for the work (technical, sanitary, veterinary), licensing etc.

Research conducted in the Serbian market shows that SME owners spend a lot of time in public institutions, filling out numerous forms that imply significant financial resources. In addition, the lack of a uniform system slows down the institutional efficiency in processing applications, increasing the time necessary for issuance of permits or licenses. Economists believe that, regardless of the activity in question, the introduction of e-business into the public institutions, electronic filing of forms and tax returns can be crucial for the survival of small businesses. This would make possible to achieve significant savings in time and reduce opportunity costs. The introduction of a uniform system increases the predictability of the regulatory environment, as it is known in advance how much money is necessary for obtaining certain documents and how long the procedure will last. Standards that would be attributed to each activity, not only that would facilitate



the operations of businessmen who would have a clear perception of administrative procedures, but also would increase considerably the efficiency of public institutions due to observance of the pre-defined standards.

Harmonization of the national documents with EU documents shows noticeable improvements almost every year. The work on improvement of the legal acts and strategic documents is constantly being done in order to bring closer the conditions in which the companies operate in the Serbian market to the conditions prevailing in the EU. The most problematic area in the harmonization process are administrative procedures which are numerous and expensive in Serbia, and whose implementation is inefficient. The changes do not only imply amendments of documents, but also reorganization of the public institutions. Every year the World Bank publishes a document which follows the progress or setback of an economy through certain indicators. A World Bank report for 2014 *"Doing Business- Understanding Regulations for Small and Medium- Size Enterprises"* puts at the center of analysis the regulatory and administrative barriers faced by the observed economies. The areas of business that stand out as the most important are starting a business, dealing with construction permits, getting electricity connection, electronic application and payment of taxes and fees, investor protection and trade on international markets. Implementation of reforms and integration of the new documents in everyday operation, condition the success of harmonization of the national legislation with the EU legislation. According to the World Bank report for 2012-2014, in comparison with 189 other national economies, the position of Serbia is showed in Table 2.

By analyzing the selected WB indicators which are followed on an annual basis, it was concluded that in certain segments the Republic of Serbia has made no progress, even regressed, although there are areas that recorded positive changes.

In comparison with the Western Balkans countries, Serbia in 2013 according to the conditions for business operation is one of the worst ranked republics. Only Bosnia and Herzegovina has a weaker position, while Macedonia achieved the best results (Đuričin, S., et al., 2013, p.24).

**Table 2. Serbia's ranking based on the Report of the World Bank by selected indicators, 2012 - 2014.**

Indicators	Rank		
	2012.	2013.	2014.
Starting a business	92	42	43
Dealing with construction permits	175	179	182
Getting electricity	79	76	85
Getting credit	24	40	42
Protecting investors	79	82	80
Paying taxes	143	149	161
Trading across borders	79	94	98

Source: World Bank

The most notable results in Serbia have been achieved in the field of establishment of enterprise, where is necessary to perform 6 procedures whose average duration is 11.5 days, and the amount of expenses is 7.2% of income per capita. This significantly speeded up the process of establishment and therefore the number of newly established enterprises increased.

**Table 3. Starting a business in Serbia, 2013**

No.	Procedures	Time required	Related costs
1.	Verification of the Treaty establishing by the Primary Court or municipal	1 day	The amount of the cost depends on the amount of the share capital and the value of the lease contract
2.	Payment of registration taxes	less than 1 day	EUR 45,83 (EUR 37,5 + EUR 8,33)
3.	Obtain a certificate of registration, PDI and ID number, verification of signatures in triplicate necessary for opening a bank account	3 days	Not charged
4.	Make stamp and seal	1 day	EUR 13,83 - EUR 23,33
5.	Registration by the local tax authority	5 days	Not charged
6.	Registration Contract of employment by the Department of Employment	1 day	Not charged

Source: World Bank

Note: The authors are performed a conversion RSD to EUR at exchange rate 1 EUR = 120 RSD

The most problematic area continues to be issuance of construction permits, in which case the Republic of Serbia is among the lowest ranked countries. Since "*The May 2011 commitment*" also implies the simplification of procedures in this area, in the coming period, through the implementation of the Strategy for Development of Entrepreneurship and Competitiveness for the period 2014-2020, improvement in construction activity and overall economic activity is expected.

### **3. LEVEL OF HARMONIZATION OF STRATEGIC DOCUMENTS AND ACTUAL PROBLEMS FACING SME SECTOR**

In order to examine the level of harmonization of the national documents with the EU documents and the adoption of its declarations, the authors have conducted research through interviews with the relevant public institutions and through survey of companies in the SME sector. The survey was conducted in the period January-March 2014, and the results are presented descriptively. The purpose of the survey of selected public institutions was to obtain information on the implementation of Decision of the EU Competitiveness Council from May 2011 ("*The May 2011 commitment*") in Serbia and to identify those institutions that are responsible for issuing permits and licenses for operation of SMEs in certain economic sectors.

In addition, the surveys conducted on small and medium-sized enterprises showed the current problems facing this sector due to regulatory reform along with testing of the level of satisfaction with the support for operation provided by public institutions.

The reforms that are being implemented in Serbia in recent years have been focused primarily on meeting the requirements and recommendations of the EU in order to accede to the European community as soon as possible. Representatives of the surveyed institutions emphasize their satisfaction for the way in which Serbia is progressing in implementation of reforms. Although there is a need for deeper and larger reforms in certain areas, especially in the field of ecology and environmental policy, environmental protection and energy, a progress can be seen. This is corroborated by the documents of the World Bank, the EU Council of Competitiveness, IMF and others who point out that Serbia is making positive changes towards the EU. According to the results of the research "*The May 2011 commitment*" is implemented into the strategic documents of Serbia. It was a part of the Strategy for the Development of Small and Medium Enterprises, 2008-2013, while the new reforms are envisaged in the Strategy of development of entrepreneurship and competitiveness for period 2014-2020. The changes are directed towards improving the legal, institutional and business environment. In Serbia there are several institutions that support SMEs in their approach to the

market and in their competitiveness. In cooperation with the Ministry of Economy and the Ministry of Regional Development, a number of activities has been implemented to improve the business environment and increase the rate of new business. Research has shown that the following activities have contributed the most the promotion of the SME sector:

- Implementation of a national campaign to raise awareness about the importance of realization of entrepreneurial ideas - supported by the NARD, SIEPA, Serbian Chamber of Commerce. Numerous fairs of entrepreneurship were organized to encourage entrepreneurs to put their ideas into practice.
- Training of potential entrepreneurs designed for owners or managers in order to get familiar with the basic administrative procedures, taxes and how to file tax forms, meeting with basic managerial principles. Institutions that carry out these activities are NARD, RRA and National Employment Service.
- Developing information infrastructure to help enterprises to come into possession of necessary information and data- This activity is realized through the development of annual, semi-annual or monthly reports by NARD, RRA.
- Improvement of the existing financial support from public funds through subsidies, and subsidies for activities in demand - Ministry of Economy, Ministry of Regional Development, RRA, CCS.
- Support programs that promote regional development, creating identity and brand of the region, supported by NARD.
- Monitoring and harmonization of legislation with the EU legislation in the field of technical quality standards, technical regulations, product standards, standards of safety and health.
- Creating an electronic registry of laws and regulations for SMEs by the Agency for Regulatory Reform and Regulatory Impact Analysis.
- Harmonization of statistical monitoring of the SME sector with statistics EUROSTAT -the competent institution is the Republic Statistical Office.
- Improving regulations governing the protection of competition and their full application - activities are carried out by the Serbian Chamber of Commerce.

The research found that there is a certain degree of harmonization of the strategic documents which tends to increase at a very high level in the near future. The preparation of a number of strategies which are complementary to the objectives, instruments and measures for their implementation in the EU. Although the effects of the implementation of such documents will be visible in a few years, it can be

concluded that the system of functioning of public institutions has much improved in recent years and is geared towards servicing the needs of the economy.

Survey of entrepreneurs in the selected sectors determined the extent of their satisfaction with the reforms so far done and critical points were identified. Given that the focus is directed to permits and licenses to operate, which issuance requires going through complicated administrative procedures, the analysis was performed on those that are common to all companies regardless of their activity. The results are shown in the Table 4.

**Table 4. List of license and permits in The Republic of Serbia**

<b>License/permits</b>	<b>Description</b>	<b>Institutions</b>
General license to operate a business	This license is given by Register of Business Entities after checking all relevant information and documents.	Register of Business Entities
License for sale of alcohol	Catering facilities must have a special license to sell alcoholic beverages.	Ministry of Trade
Smoking/non smoking premises	Under applicable law in Serbia entities must have clearly defined parts of the building dedicated to the smoking or non-smoking population, a market inspection control the compliance with these terms and give permission for the operation.	Ministry of Health
Television license	Every entities which allowing visitors access to television or radio must be authorized by institution SOKOJ (Music Authors Serbia). This institution requires yearly/monthly payment.	Ministry of Culture
External publicity or signage	Enterprises must regularly pay the obligations to the government in terms of taxes as provided for display advertising in public spaces and green areas.	Ministry of Trade
Fire protection premises	All companies must have the proper fire-fighting system. Also, the Law on Prevention of Discrimination against Persons with Disabilities stipulates the provision of conditions for free movement and life of people with disabilities in public areas.	Ministry of Labor and Social Policy
Sanitary premises	Sanitary Inspection stipulates that companies must meet the requirements in terms of hygiene, building, plant, machinery, furniture, equipment, supplies and funds.	Ministry of Health
Clean criminal record of	Every employee must have the proper document, issued by the Ministry of Interior that he was not	Ministry of Labor and Social

<b>License/permits</b>	<b>Description</b>	<b>Institutions</b>
employees	prosecuted, convicted or against him does not void litigation.	Policy
Proof of qualification required of employees	Every employee must submit proof of completion of education and acquired qualifications. Also, the work book is a necessary document which records the start and end of an employee.	Ministry of Labor and Social Policy
Health certificate of employees	Every employee before they start work, going through a medical test to determine his health safety.	Ministry of Labor and Social Policy
Safety for employees	Every company need to have safe and health environment for job activities for their employees.	Ministry of Labor and Social Policy
Permits for cross-border trade	Cross border permits are important for entities which want to operate with companies from other countries.	Ministry of Trade

*Source: Independent research of author's*

Business owners say that they are faced with complex administrative procedures. These procedures are often unclear and nontransparent and often the owners waste several days until it is determined which documents are required to obtain a specific permit. This occurs mainly in companies that are engaged in trade of goods dangerous to human life and the environment, or engaged in the production of specific products. These procedures take several weeks, and this damages company due to opportunity costs. Missed business opportunities increase the cost of issuance of permits and licenses, and such activities are very expensive for SME owners.

Proposal for new reforms is reflected in the creation of a single database of all permits and licenses that are issued on the territory of Serbia, along with an explanation about their obtaining in the relevant institutions. In this way, besides saving resources of the SME sector, the efficiency of public institutions would increase. The response rate to filed requests will increase and that would mean a greater number of issued permits in a shorter period of time.

## **CONCLUSION**

The SME sector in Serbia is important because it contributes to the creation of a significant part of GDP, and has a significant share in total employment, trade, foreign trade activities and the like. An increase in the rate of enterprises

established through realization of entrepreneurial ideas would contribute to the growth of production, improvement of efficiency of service delivery and creation of new jobs. In order to motivate the owners of SMEs to implement their ideas into practice, the support of public institutions is extremely important. This implies not only the provision of financial support in the form of subsidies and loans, but also the adoption of legal documents and strategies that will protect investors and direct them towards the economic development. Serbia, as a country in the process of joining the EU, aims to harmonize its legal, economic, educational, health and environmental system with the European one. The reforms that have been made have significantly changed the economic climate, have attracted foreign companies and encouraged domestic companies to take competitive approach. However, the current reforms have only partially improved the economy of Serbia. A lot of reforms are still needed to improve the efficiency and transparency of public institutions. The existing administrative procedures burden SME owners and thus threaten the survival of their companies in the market. Procedural simplification would have a positive impact on growth, development and promotion of the SME sector.

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## INNOVATION ACTIVITIES OF PRIVATE COMPANIES IN THE REPUBLIC OF MACEDONIA

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### **Abstract**

*The prosperity of any economy mainly depends on its innovation strategies and performance, because today innovations are the main driving force of economic growth and improved standards of living. European Union has a long tradition of good performance in research and innovation, and each member state has its own policies and programs on research and innovation. The support and development of innovation activities is one of the priority tasks for the government of Macedonia. One of the most significant ways is measuring the ability of private companies to innovate and identifying potential that may encourage more innovations. In order to assess the tendency and the absorptive capacity for innovation in the Republic of Macedonia, information on the innovation activity of the private companies are vital. The main objective of this paper is to measure and analyze the innovation activities of the private companies in the Republic of Macedonia. The research aims to assess the policy barriers that may limit the ability of private companies to innovate and to identify potential measures that may encourage more innovation in the country. The research could provide guidance for the creation of a Macedonian innovation policy and strategy, and will help to identify the possible directions of that strategy which will address the needs of the private sector in the country.*

**Key words:** *innovation, innovation activities, private companies, economic growth*

### **1. INTRODUCTION**

Over the past years in Macedonia there has been an intense debate among professional economists and policymakers about the relative importance of various factors in creating the conditions for sustainable growth. From early days an

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emphasis was put on macroeconomic stability. Later on, the debate has broadened substantially to include the role of institutions, education, the quality of governance, of public administration, the importance of entrepreneurship, and the increasingly crucial role of technology and innovation in enhancing the efficiency of the development process. Indeed, this debate has intensified as a result of the international financial crisis and its impact on the present economic growth.

Innovation is about helping organizations grow. Growth is often measured in terms of turnover and profit, but can also occur in knowledge, in human experience, and in efficiency and quality. Innovation is the process of making changes to something established by introducing something new. As such, it can be radical or incremental, and it can be applied to products, processes, or services and in any organization. It can happen at all levels in an organization, from management teams to departments and even to the level of the individual.

Since Macedonia is striving to continue with economic growth, it is important for the country to develop the competitiveness of its private sector. There are many indicators showing that Macedonia will not be able to build its competitiveness based on low wage costs in the long term, so, improving competitiveness through knowledge and innovation in general and in the ICT particularly will be the key. Therefore, the aim is starting the transformation of the country into a knowledge-based economy able to compete in international markets through its skilled workforce and innovative companies. Given the limited availability of resources and the need to develop a critical mass of resources and competencies to achieve competitiveness at international level, a strategy for "smart specialization" provides a sound basis for building a national innovation system.

## **2. INNOVATION ACTIVITY OF THE COMPANIES**

The propensity and the absorptive capacity for innovation is the innovation activity that every company should have. Innovations can make many kinds of changes as the working methods, the use of factors of production and types of production that improve their productivity and trade performance. Therefore there are more models, concepts and types of innovation covering a wide range of changes (OECD/Eurostat 2005):

- product innovation
- process innovation
- marketing innovation
- organizational innovation
- eco-innovation
- social innovation

- sustainable innovation

A *product innovation* is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. As long as a new or significantly improved use is occurred, a product innovation may be based even on a minor change to technical specifications. The term “product innovation” may refer both to goods and services. Product innovations in services may include significant improvements in how they are provided, the addition of new functions or characteristics to existing services, or the introduction of entirely new services. Examples of product innovations may be the introduction of a new good/ service or a change in materials, components that enhance the performance such as the efficiency of a good or the speed of a service.

A *process innovation* is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. The intention of a process innovation is the decrease of unit costs in production or delivery, the increase of quality, or the production and the delivery of new or significantly improved products. Examples of process innovation may refer to the involvement of new techniques, equipment and software in new production methods or the involvement of new logistics, equipment and software in new delivery methods. There is a clear distinction between product innovation in goods and process innovation. In the case of services, however, this distinction is not so clear and some determinants are proposed by the Oslo Manual:

- product innovation in services refers to new or significantly improved characteristics of the service,
- process innovation in services refers to new or significantly improved methods/ equipments/ skills used to perform the service,
- if both changes occur, innovation can be considered both product and process.

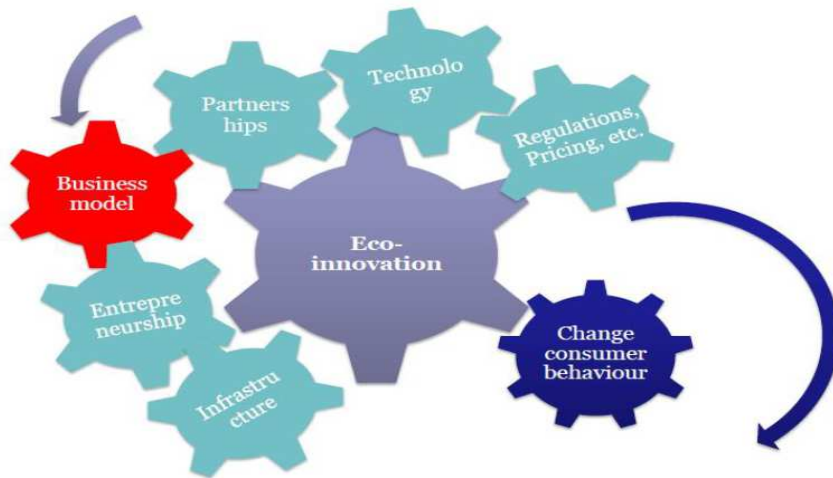
A *marketing innovation* is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm’s product on the market, with the objective of increasing the firm’s sales. Similarly to organizational innovation, marketing innovations must be part of a new marketing concept or strategy that represents a significant departure from the firm’s existing marketing methods.

An *organizational innovation* is the implementation of a new organizational method in the firm’s business practices, workplace organization or external

relations. Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies. Examples of organizational innovation are new types of collaborations with research organizations or customers or new methods of integration with suppliers. What differs an organizational innovation from an organizational change is that it has not been used before in the firm and it is the result of strategic decisions taken by management. Another point that needs further clarifications is the distinction between organizational and process since they may aim at common goals such as decreasing costs. The determinants that the Oslo Manual proposes are based on the fact that process innovation deals with equipment, software and specific techniques while organizational innovation deals with people and the organization of work (OECD/Eurostat 2005). So:

- Process innovation refers to new or significantly improved methods in the production or the supply part so as to decrease product cost or increase product quality.
- Organizational innovation refers to the first use of new organizational methods in business practices, internal and external relations.
- If both changes occur, innovation can be considered both process and organizational.

*Eco-innovation* is the creation of novel and competitively priced goods, processes, systems, services, and procedures designed to satisfy human needs and provide a better quality of life for everyone with a whole-life-cycle minimal use of natural resources (materials including energy and surface area) per unit output, and a minimal release of toxic substances (Reid and Miedzinski 2008). Eco-innovation encompasses novel or significantly improved solutions introduced at any stage of the product life-cycle with the aim of improving resource productivity or reducing environmental impact. Indeed, evidence suggests that the biggest resource efficiency gains can be realized in the upstream part of the supply chain that is in the production of basic (most notably during extraction of the raw material) or intermediate goods. In the downstream phases of the product life cycle (use of the product, consumer practices) resource efficiency gains are significantly lower. Overall there are a wide range of economic opportunities for leveraging eco-innovation by placing it at the core of business strategies. To capture such future opportunities, make them into a commercial success and disseminate good practices, both industry and policy makers need to better understand various factors enabling or obstructing eco-innovation (Figure 1).

**Figure 1. Various factors surrounding eco-innovation**

Source: (OECD 2012).

*Social innovation* is the development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations. It represents new responses to pressing social demands, which affect the process of social interactions. It is aimed at improving human well-being. Social innovations are innovations that are social in both their ends and their means. They are innovations that are not only good for society but also enhance individuals' capacity to act. In sum, Social innovation approaches are notably innovations in the internationally recognized Oslo Manual sense, but whose primary goal is to create social change. Just like not all enterprises are social enterprises, not all innovations are social innovations. Compared to mainstream innovations, 'social innovations' are critically driven by an extra motive: a social mission and the value they create is necessarily shared value, at once economic and social (Porter and Kramer 2011).

*Sustainable innovation* is the creation of new market space, products and services or processes driven by social, environmental or sustainability issues. Sustainable innovation is not just about new concepts but is about commercialization of technologies, products and services and about entrepreneurship. It can also be about the adoption of new processes and systems at societal level. Sustainable innovation is a process where sustainability considerations (environmental, social and financial) are integrated into company systems from idea generation through to research and development (R&D) and commercialization. This applies to products, services and technologies, as well as new business and organization models (Charter, 2007). Currently it is practically impossible to turn on the TV or browse

through a magazine without encountering advertisements of companies developing some sustainable innovation strategies. If we look at the list of the top most innovative companies in the world published yearly by Business Week and The Boston Consulting Group, we find that not only most of the top 50 companies in the ranking have extensive sustainability policies, but many of them are seen as leaders in the field of sustainability. These include Microsoft, IBM, Toyota, GE, Nokia, Unilever or Tata to name a few (BCG Perspective 2013). Inversely, if we look at a ranking centered on sustainability such as the Global 100 Most Sustainable Corporations in the World published by Corporate Knights and Innovest, we find that many of the leading sustainable companies are the same that appear in the rankings of the most innovative (Global 100 2014). The conclusion is that there seems to be a connection between innovation and sustainability.

### **3. ICT AND INNOVATION**

The existing empirical economic literature on the impact of ICT on innovation is quite heterogeneous with respect of the sectors of the economy and the time periods covered the measures of ICT and innovation as well as the methods of analysis used. Especially, the different points of time have to be taken into consideration when assessing ICT effects on innovation and/or economic performance at firm level because of the newness of these technologies and the different diffusion rates of them among sectors and countries in the last twenty years.

Use of ICT contributes to firms' innovation activities through three main channels. The first channel goes through the management of knowledge used in the innovation process. This knowledge might be internally created or externally acquired. Information technology enables an efficient storage and a high accessibility of knowledge throughout an enterprise. Internal networks, e-mail systems, and electronic databases all facilitate the transfer of knowledge and the communication between innovation participants. This is particularly the case for external information, which is critical for successful innovation<sup>3</sup>.

Second, ICT enables a more efficient cooperation in innovation with external partners. The creation of new knowledge through collaboration with other firms has become more and more important in the last twenty years. Information technology facilitates the exchange of information with external partners that are located far away from the focal firm.

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<sup>3</sup> A.K. Klevorick, R.C. Levin, R.R. Nelson, and S.G. Winter., On the sources and significance of inter industry differences in technological opportunities. *Research Policy* 24, 1995, 185-205.

Third, ICT contributes directly to the innovation production in several ways. First, the stage of the generation of ideas for new products can benefit from information systems (e.g., Customer Relationship Management CRM) that enable a firm to analyze customers and identify needs that can be covered by new products or significant modifications of existing products. Further, information technology enables the development of efficient design capabilities for new products. For example, technologies such as computer-aided design CAD and computed-aided manufacturing CAM help to digitize a new product's design and make it available throughout the innovation process. Finally, information technology helps integrate design and production systems, so that errors of information transfer and translation are reduced and, as a consequence, the efficiency of this last stage of the innovation process is increased.

#### **4. RESULTS OF ICT RESEARCH ACTIVITY IN ORDER TO IMPROVE THE INNOVATION FOR IMPLEMENTATION COMPETITIVE ADVANTAGE**

Any company that wants to achieve competitive advantage and thus to maximize profits (which also is the main goal of any business entity) should its future be required in introducing information technology and innovation in their work. For companies to grow and continue to be successful innovation is critical. Given the importance of this sector there is a need for governments and policy makers to understand innovation in companies particularly in terms of ICT implementation and use in order to formulate appropriate programs and policies. Innovation is regarded as a significant factor in determining a firm's success. Firm size is a critical factor often discussed in the literature. Rogers (2003) cites a number of studies indicating that larger organizations are more likely to be innovative than smaller ones. He does however qualify this, suggesting that size is an easy measure to use and suggests that there are significant other unidentified variables at play, that are perhaps not well understood and rarely used as measures. Small businesses have less money and therefore less to invest in ICT and innovation. Relationships between innovation behavior and firms' performance are very important. Analyzed innovation activities considering that some structural and process characteristics (size, resources, age, planning, development and control of activities, information management, etc.) influence of the innovation capacity. Moreover, cultural characteristics (market orientation, participative decision process, and so on) affect innovation receptiveness. The innovation capacity, its receptiveness and structural process, and cultural characteristics determine firm's competitive advantage. Also is important the relevance of organizational resources. Firms' innovative projects are the result of an accumulation of resources, generating new ones especially knowledge.

In order to realize the level of utilization of the innovation, a research on business entities in the Republic of Macedonia has been recently carried out. The results of such research have led to certain conclusions about the implementation of the innovation in the companies.

Most of the companies participating in the survey belong to the processing industry and trade industry (Chart 1), and according to the number of employees, most of them belong to the category of micro enterprises. This is due to the fact that most of the Macedonian companies, as well as companies in the other countries in transition, are still developing, both concerning the production process and the number of employees, as well. It shows out that innovation plays a significant role in these companies, having on mind the necessity of its implementation in the contemporary working conditions and economic environment. It is an important instrument for their managers and a fundamental tool company growth.

**Chart 1. Profile of the respondent companies by industry sector (N=492)**

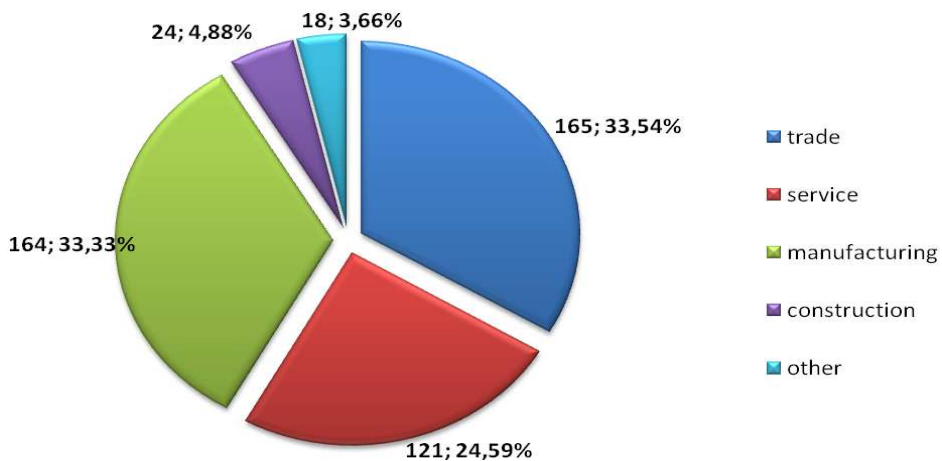
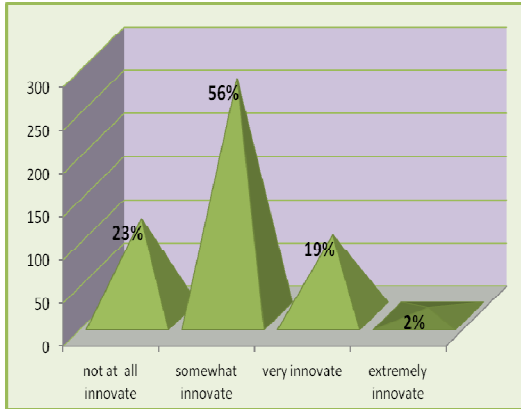


Chart 1 describes the industry sectors in which companies are active. The distribution of the sectors in the sample is similar to the distribution of the sectors in the Macedonian economy.

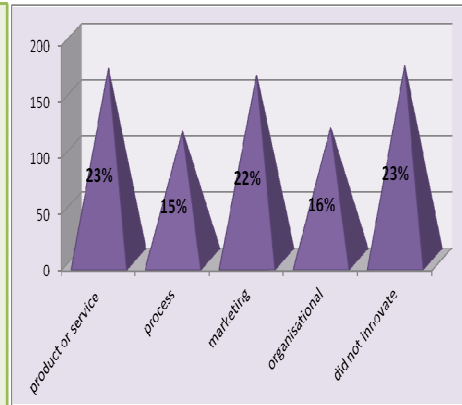
The companies in Macedonia consider that is somewhat innovative (55.89%) that means the companies in our country is still at the beginning of innovation process. They still didn't see the importance and usefulness of imposition innovation (Chart 2).



**Chart 2.- How innovative your company is?**



**Chart 3.- Did your company introduce any offour types of innovation**



This means that most of the companies, did not innovate, or if they innovate they will use product or service innovation (Chart 3). Companies make substantive product or service innovations, new or improved product/service with new features and functionalities.

For analyzed data was used SPSS program to perform data entry and analysis. The survey explored a number of areas relating to innovation and ICT. The questions explored the target markets of the business, the application and organization of information technology, current and future spending on ICT as well as general information about the organization such as turnover.

We use cross tabulation to see the interrelation between two variables, number of employees and how innovative your company is.

**Table 1. Cross tabulation**  
(Number of employees & How innovative your company is?)

		How innovative your company is?				Total
		not at all innovate	somewhat innovate	very innovate	extremely innovate	
Number of employees	micro <9	72	125	25	2	224
	small <49	31	91	35	5	162
	medium <249	8	50	25	3	86
	>250	2	8	9	0	19
	Total	113	274	94	10	491

For these two variables we use Chi-square test. In Table 2 we can see that value of Pearson Chi-Square is 42,103 and Asymp. Sig. (2-sided) is 0,000.

$p=0,000$

$\alpha=0,05$

$p<\alpha$

**Table 2. Chi-Square Tests**

<b>Chi-Square Tests</b>			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42,103 <sup>a</sup>	9	,000
Likelihood Ratio	42,588	9	,000
Linear-by-Linear Association	34,902	1	,000
N of Valid Cases	491		

That means that these two variables are depended. So company innovation depends of company size.

Also, the intention of the research was to identify what are the ways how the companies find opportunities for innovation. That is why we asked them what mechanisms their firms use to identify technological and non-technological innovation opportunities.

In Table 3 we can see how many companies answer this question. The table indicates 13 missing values that meaning those responses has none of the listed items.

**Table 3. Case Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Number of answers	479	97.4%	13	2.6%	492	100.0%

The respondents chose from 12 different items and multiple choices was allowed.

In Table 4 we can see the frequencies of all answers. The column N under represents the number of positive responses for each item. The percent of responses is the overall percentage. The percent of cases is the percentage for individual item.

**Table 4. Frequencies of the answers**

<b>What mechanisms does your firm use to identify technological and non-technological innovation opportunities?</b>	<b>Responses</b>	
	<b>N</b>	<b>Percent</b>
Internet	361	25.1%
Information from suppliers	222	15.4%
Customer advice	244	17.0%
Attendance at trade fairs	212	14.8%
Trade magazines	138	9.6%
Industry associations	40	2.8%
Consultants	79	5.5%
Technology networks	32	2.2%
Formal links with specific universities	33	2.3%
Formal links with research organisations	15	1.0%
Other please specify	4	0.3%
No specific process is used to identify innovation opportunities	57	4.0%
<b>Total</b>	<b>1437</b>	<b>100.0%</b>

25.1 percent of all respondents agree that the most important mechanism used by the company to identify technological and non-technological opportunities for innovation is the Internet. That is why ICT skills in general and Internet skills in particular play an important role for a company to sustain a competitive market position especially in industries where innovation is key to company success. The ICT skills of employee and company's management are strongly connected with the company's ability to innovate.

## **5. CONCLUSION**

Applying innovation is a complex and difficult task. Innovation which is roughly defined as the first introduction of an invention on the market has the central on providing competitive power to both firms and countries by increasing quality of

life and contributing into wealth of nations. Because of importance of innovation for both firms and countries, measurement of innovative activities is very important especially in industrialized countries. The scope of innovation changes from region to region but influence of ICT is everywhere evident. Today innovation in the ICT industry is most revolutionary. In this paper, is answer the questions of whether innovation and ICT are adequate for Macedonia as a developing country; if not what are the incompatibilities with widely used ones and what can be done to overcome these problems systematically.

The research suggests that ICT is an important predictor of innovativeness. The results from our survey indicate that companies in Macedonia think that somewhat innovate. In recent years political commitment in the policy framework is very important for advance in science, technology and innovation. Macedonia is investigated in terms of input indicators which are investment in R&D and human resources and output indicators of patents and utility models, scientific publications and high technology exports. As it is known R&D is a key element in knowledge-based economy. Therefore, indicators like R&D are used for measuring innovation in the company. 81.10 % of companies answer that don't have staff dedicated to in-house R&D. However, R&D is just a part of innovation and even in developed countries innovation is more important than R&D. Moreover, for developing countries it is more important to choose the problems cheaply instead of doing by sophisticated and expensive methods. There is also diffusion of knowledge and skills term of innovation which is discarded by R&D in developing countries.

Output indicators are examined beginning from patent indicators. Patens are easily accessed sources of information, but there are many discussions on them to use as innovation indicators especially for developing countries. For developing countries, strict patent protection is alleged to have negative effect since technology is learned by diffusion. Moreover, there is lack of public awareness in developing countries. It is also proved that there is positive correlation between patents and R&D personnel. As a result, it is recommended that patent data is given per R&D personnel in order for obtaining productivity. 92.7 % of companies in Macedonia never have granted a patent. That is with correlation with R&D staff in the companies in Macedonia.

The output indicator of high-technology exports is examined. It is alleged that high technology exports are just a choice to develop, and there are other ways for competitiveness for developing countries. If it is bound to be used medium and high technologies should be evaluated together.

The benefits of accepting this innovative way of working are enormous, both for companies and country. For companies, it does not mean just following modern

trends, but it rather means usage of real methods for making proper decisions on right time, at right place and with minimal costs, which mean increasing of the profitability and gaining greater competitiveness on the market. For country, presents a basis for creation successful growth that chooses optimal strategies for obtaining the best solutions and making optimal decisions.

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# PROTECTION OF INVESTORS AS A FACTOR OF COMPETITIVENESS OF ECONOMY - SERBIA VS WESTERN BALKANS COUNTRIES<sup>1</sup>

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## **Abstract**

*Effective investor protection acts as an incentive to the business environment of a country, contributing to the development of financial markets and improving the competitiveness of the economy as a whole. Investment security and greater inflow of capital into the national economy is largely dependent on the efficiency of corporate regulation and the quality of the institutional environment. A relevant factor in attracting investors by corporate responsible companies is self-regulation and voluntary adoption of good corporate governance practices.*

*The aim of the paper is to analyze the competitiveness of the Serbian economy and the countries in the region in terms of protecting the rights of investors. In the first part of the paper the authors analyze the protection of investors' rights in Serbia at the macro and micro levels, with special attention to the protection of the rights of minority shareholders. After identifying the key internal and external mechanisms of protection, the paper highlights the problems and challenges facing investors in Serbia. In order to identify the international competitive position of Serbia, in a special part of the paper, a comparative analysis of the level of protection of the rights of investors in the Western Balkans countries has been carried out.*

**Key words:** *investor protection, the competitiveness, Serbian economy, comparative analysis, Western Balkans countries*

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## **INTRODUCTION**

Investment security and inflow of capital into national economy is largely dependent on the quality of institutional environment which consists of all the institutions that create standards, policies and rules of the economic, legal, social and political nature. In addition to regulatory bodies and organizations, institutions are also defined as the formal and informal rules that govern human relations (North, D., 1990). High-quality institutional environment is an important driver of competitiveness of the national economy and a prerequisite for creating a business climate where companies generate contemporary competitiveness strategies. National economy is competitive if it is serviced by the companies that operate in accordance with the relevant legal and moral standards.

High-quality institutional environment acts as an incentive to attract potential investors. An effective legal protection of investors, which, along with the adoption of high-quality legal and professional regulation, also involves its effective application, acts as an incentive to investment and business environment of the country, contributing to the development of financial markets and improving the competitiveness of the economy as a whole. To strengthen the confidence of investors in the corporate sector, it is necessary to affirm the corporate governance and continuous education of managers. Investor rights observed at the corporate level are protected by improving corporate governance, whereby shareholders and managers are the key actors in the implementation of the principles of good corporate governance. A competent management that adheres to the ethical principles when interacting with company stakeholders, makes a positive impact on the investor confidence and in such a way both company and the economy become more competitive. Self-regulation and voluntary adherence to good corporate governance practices is a relevant factor in the process of attracting investors by corporately responsible companies.

## **MECHANISMS TO PROTECT THE RIGHTS OF INVESTORS**

Investors who feel protected enough from negligent and incompetent company management and have confidence in the laws and institutions can begin with the realization of planned investments. Realization of fundamental and other rights of the shareholders primarily depends on the quality of laws regulating company law and capital market. Basic shareholder rights should include the right to secure methods of ownership registration, convey or transfer shares, obtain relevant and material information on the corporation on a timely and regular basis, participate and vote in general shareholder meetings, elect and remove members of the board,

and share in the profits of the corporation (OECD, 2004, p. 33). Protection of investor rights can be provided at a macro and micro level.

The legal system of a country should follow the requirements related to the improvement of investor protection, and thus provide security and protection of the rights of shareholders and other stakeholders in companies at the macro level. Legal protection of investors implies defining the positions of shareholders in the company and in the capital market through the legislation and other regulations. Legislative and legal acts are designed to protect shareholders, if properly regulate jurisdictions and efficiency of the securities commission, the courts and other institutions. Institutions that protect the rights of investors are responsible for the good quality enforcement of regulations and standards, as well for the transparency of relevant information about company. Improving the efficiency of the public and corporate institutions leads to increased confidence of existing and potential investors, thereby improving the efficiency of the economy as a whole.

After numerous financial scandals that have damaged investors' confidence, the countries have implemented additional legislative interventions in the system of financial reporting. Novelties in legal and professional regulations include the adoption of values relating to the professionalism, ethics, transparency and collective responsibility of stakeholders of the company. The adoption of the Public Company Accounting Reform and Investor Protection Act (known as the Sarbanes-Oxley Act-SOA) aims to improve corporate reporting by prescribing strict penalties for frauds, increasing management accountability, imposing additional responsibilities of the audit committee and extending independence of auditors. The main contribution to the SOA is the establishment and regulation of functioning of the Public Company Accounting Oversight Board as a higher body for public supervision of the audit quality of companies whose securities are publicly traded. Innovated relevant EU directives also emphasize the importance of collective accountability of the members of administrative, management and supervisory bodies, as well as the relevance of organizing an effective system of public supervision over auditors and audit firms (Stevanović, N., 2011, p. 234).

Despite regulatory inconsistencies and omissions, by observance of fair business practices and the adoption of ethical codes of conduct, the company management can make decisions that do not compromise the interests of owners of capital, but rather make a positive impact on the company performance and meet the interests of all stakeholders. Company managers are professionally and morally responsible for their actions, decisions and overall business success before investors and other stakeholders, but due to the conflict of interest they may be prone to irresponsible management of capital entrusted by the owners. The differing natures of function performed by management and shareholders, depending on specific characteristics



of corporate legal entities, results in the fact that the managers have a more detailed knowledge of structure of the business and have access to more information as compared to the owners of capital. Great power in the process of management and decision-making, and often a fear of achieving poor business and financial performance, loss of bonuses and weakening of rating, may lead management to the unexpected business moves and decisions that deviate from the requirements of owners of capital (Stevanović, S. and Belopavlović, G., 2011, p. 79).

Often there are situations that company managers make decisions in accordance with professional judgment which allows them to exercise influence on the company performances, and hence on the quality of the presented information. Possibility of selection when classifying, evaluating and presenting information, opens the door for manipulative activities to the management without integrity, misleading the information users and leading them to draw wrong conclusions (Stevanović, S., 2013, p. 32). Inadequate sanctioning of perpetrators of frauds can stimulate the emergence of new manipulations, and hence it is important to insist on intolerance towards managers who were involved in financial frauds and to call on the responsible management of capital entrusted to them by the owners.

Conflict situations caused by the separation of ownership and management can be solved efficiently to some extent by using the high-quality accounting and auditing regulations, effective internal control system, internal and external audits, but also by efficient functioning of the board, and an adequate monitoring of management. External audit and supervision of auditors are important mechanisms for external monitoring of management, but monitoring of management can be carried out through controlling privileges of the management and restricting managerial decisions. The more corporate managers and owners of capital oversee each other and the more they are controlled, it is less likely that conflicts of interest in the business will occur (Van Horne, J. and Wachowicz, J., 2007, p. 5). Partner behavior can be expected from a competent and adequately motivated manager who tends to acquire and protect his own reputation. In addition to monitoring and belief in the integrity of management, there are mechanisms that further enhance investors' confidence in the company's management, such as partial ownership concentration, ability to take over the company due to its poor performance and mismanagement, possibility of initiating legal proceedings against the management in the event of non-compliance with defined duties.

Companies with a small number of majority owners easily resolve the potential conflict of interest with its management, provided that there is a greater possibility for abuse of control over a company to the detriment of minority shareholders. The presence of a controlling shareholder and weaknesses in the legal and regulatory framework may lead to the abuse of other shareholders in the company. Extraction

of direct private benefits, inappropriate related party transactions, systematic bias in business decisions and changes in the capital structure through special issuance of shares favouring the controlling shareholder are the examples of abuse actions in the interest of controlling shareholders. Due to unethical behavior the majority owners may work to detriment of minority shareholders, often in collaboration with management and external auditors.

Dealing with agency problem between majority - minority shareholders involves finding appropriate mechanisms to enable protection of the interests and rights of minority shareholders. A key role in protecting the rights of minority shareholders has a legal system of the country with high-quality and effective application of the regulations. The confidence of minority investors is enhanced when the legal system provides mechanisms for minority shareholders to bring lawsuits when they have reasonable grounds to believe that their rights have been violated (OECD, 2004, p. 40), which in turn implies a fair and efficient functioning of relevant institutions.

A clearly articulated duty of loyalty by board members to the company and to all shareholders is a key to protecting minority shareholders. Countries with a well developed corporate regulation, through mechanisms that protect the rights of minority shareholders, have the additional features of external control of management. The possibility of minority shareholders to require additional audits when in doubt regarding the objectivity of financial statements and auditor's report, results in the improvement of management control and reduction of potential conflicts, both between management - shareholders, and between majority and minority shareholders (Dragašević, M. and Lakićević, M., 2007, p. 234). An adequate influence of minority shareholders on the election of members of the board of directors through cumulative voting or through the right to nominate candidates, vested to the shareholders with a certain share in capital, is a characteristic of good corporate governance practices and should therefore be strived for. The position of minority owners of capital in a company may be further improved by electing representatives of minority shareholders, acquiring the preemptive right on newly issued shares and the rights to convene shareholders' general meeting.

By improving the rights of minority shareholders, it creates an effort to alleviate the problem that may arise due to conflicts of interest between minority and majority shareholders. The establishment of national association for the protection of interests of minority shareholders is a step towards improving their position, because only united they can increase their share in the companies' business plans and enhance protection of their own interests.

## PROTECTION OF INVESTORS IN WESTERN BALKANS COUNTRIES

Investors choose to invest in the companies that provide investment security and have an adequate investors' protection through transparency of the relevant information and effective supervision of management. By establishing governance structure which enforces the rights and accountabilities of the board members, management and shareholders, it ensures that all of them work in the best interests of the company and its owners. Good governance structure and governance process that is characterized by fairness, accountability and transparency, improve the system of decision-making and promote the prosperity of the company in the long run. The results of surveys conducted by the partner World Economic Forum - WEF show that Serbia, with scores of 3.8 in 2014 and 3.7 in the last four years, demonstrates that accountability of management towards investors and members of corporate boards is at a low level. Unlike countries where the investors and board members have an effective oversight over the work and decisions of a company's management, the assessments of effectiveness of corporate boards in other Western Balkans countries that were analyzed indicate that the level of management accountability is in a range of 4.1 in Montenegro up to 4.5 in Macedonia.

According to the World Bank methodology, lawyers and other legal professionals evaluate the level of investors' protection in the country through filling out the questionnaires of the International Finance Corporation. The level of investor protection is shown within the Doing Business reports in the form of indexes whose values range on a 0-10 (best) scale. The final value of the sub-indicators is a result of the average value of individual indexes that accompany extent of disclosure, extent of director liability and ease of shareholder suits. The level of investor protection in the Western Balkan countries is shown in table 1.

**Table 1. Investor Protection Index, Western Balkans countries, 2013.**

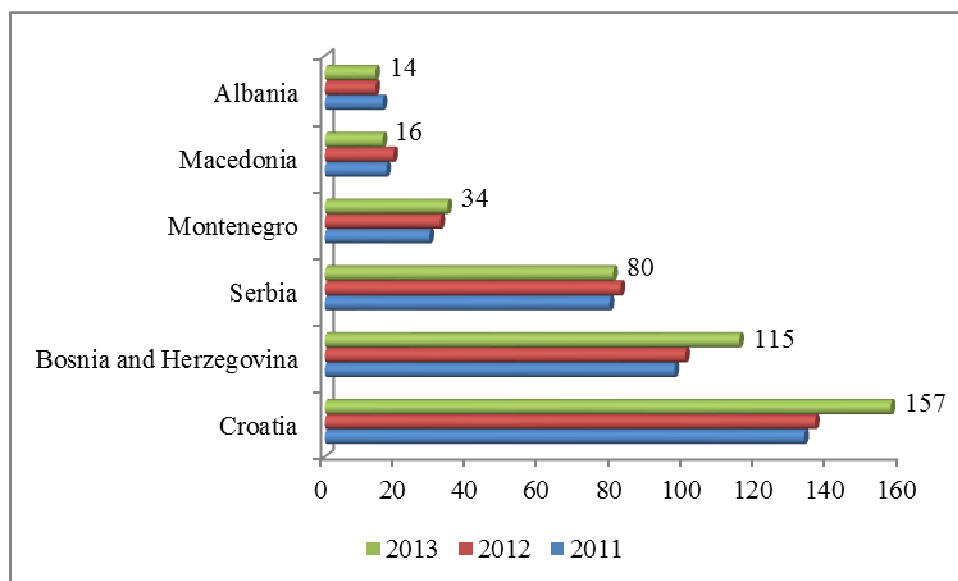
	Albania	Macedonia	Montenegro	Serbia	Bosnia and Herzegovina	Croatia
Protecting investors (rank of 189)	14	16	34	80	115	157
<i>Extent of disclosure</i>	7	9	5	7	3	1
<i>Extent of director liability</i>	9	8	8	6	6	5
<i>Ease of shareholder suits</i>	6	4	6	3	5	4
Strength of investor protection index (0-10)	7,3	7,0	6,3	5,3	4,7	3,3

Source: World Bank: *Doing Business 2014*

The survey results, presented in *Doing Business 2014*, show that investors are best protected in Albania (7.3) and Macedonia (7), followed by Montenegro and Serbia, whose indexes of investor protection are at 6.3 and 5.3 respectively. Index values of the above countries were unchanged in the last three years, in contrast to Bosnia and Herzegovina and Croatia which recorded a decline in protecting investors index in 2013 compared to the previous two years.

Through the analysis of the structure of the average score of investor protection in Serbia, it can be concluded that the highest number of points (7 out of a maximum of 10) was recorded in the area of disclosure of information and transparency. Duties of the board of directors, defined by the provisions of the Companies Law, are monitoring and setting of ethical frameworks for the business operations of a company, as well as providing conditions for disclosure of relevant information and transparency of its operations. One of the ways in which shareholders can enforce their rights is to be able to initiate legal and administrative proceedings against management and board members. Value of index which shows ease of shareholder suits in Serbia is the lowest and stands at 3, while the extent of director liability carrying an index of 6. The level of investor protection in Serbia is better scored than in Bosnia and Herzegovina, especially when it compares with Croatia in which case the World Bank respondents placed the greatest mistrust regarding transparency and disclosure of relevant information about companies. The ranking of Western Balkans countries on the basis of the value of Investor Protection Index is shown in the graph 1.

The relatively high values of the investor protection index, rank Albania and Macedonia among the top 20 countries in the World Bank list in 2013. Serbia's ranking has lowered from 79<sup>th</sup> position in 2011 out of 183 countries analyzed to 80<sup>th</sup> position in 2013 when the number of countries participants increased to 189. Non-transparency of the companies is the most responsible factor for the worst ranking of Croatia and Bosnia and Herzegovina, among Western Balkans countries in a three-year reporting period. In addition to the World Bank rankings, the experts from WEF also rank the competitiveness of the national economies in terms of investor protection on the basis of Investor Protection Index, which is shown in the *Doing Business* reports. Analyzing the WEF competitiveness list, Serbia is on a much better position than most other institutional factors. It is the same with other Western Balkans countries, except Croatia. Croatia has extremely low Investor Protection Index, which is lower than the Global Competitiveness Index and the score related to the pillar of competitiveness named Institutions.

**Graph 1. Strength of investor protection, ranks of Western Balkans countries**

Source: World Bank: *Doing Business*, 2012, 2013, 2014

The results of research conducted in order to analyze and evaluate the competitiveness of the Serbian economy show that surveyed entrepreneurs assess the investor protection on average at the level of 3.29 out of a maximum of 7 points, whereby 60% of respondents score the investor protection in Serbia with 3 and 4 (Djurićin, S. et al., 2013, p. 82).

Shareholders in a country whose corporate governance practice is underdeveloped, may seek protection of their rights in a satisfactory legal regulation. Underdeveloped corporate law, inability to attract professional management, difficult or unsuccessful securing of long-term capital, are only some of the problems that face companies in Serbia. According to the research conducted by the Serbian Chamber of Commerce and the Serbian Association of Managers, the average score of corporate governance relating to joint stock companies is 60.05%. Given that a good corporate governance practice is shown through the final ScoreCard result that is greater than 70%, the average score of 60.05% shows a poor state of corporate practice in the joint stock companies in Serbia. Space from 70% to 100% should be an incentive to the companies for the promotion and implementation of the higher principles of corporate governance.

Mechanisms for the protection of minority shareholders' rights in Serbia are primarily defined by the Companies Law, Capital Market Law and the Law on

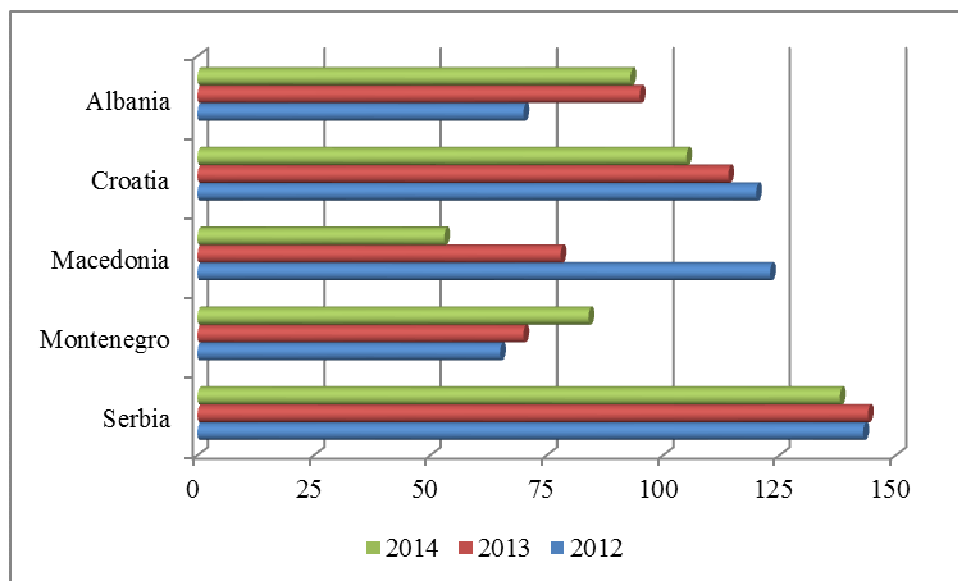
Takeover of Joint Stock Companies. The analysis of these laws, Directive 2007/36, Directive 2004/109 and Directive 2004/25 (Džulić, K. and Kuzman, T., 2012, p. 95) showed that the legislation is fully harmonized with the EU Directives in the field of protection of minority shareholders' rights, and certain provisions are even more detailed and rigorous. A good example is the Capital Market Law, whose main objective is the protection of investors and which sets more stringent requirements in terms of transparency and disclosure of information about public companies with respect to the related EU Directives. After considering regulatory solutions for the protection of shareholders under these laws, we can conclude that a degree of protection of minority shareholders is at a satisfactory level. Having in mind the adoption of the new laws that define the legal framework for the protection of minority shareholders in accordance with the directives of the European Union, it can be said that there is a formal protection in Serbia, but the low level of actual protection of the rights of minority shareholders may be a result of ineffective application of current legal regulations.

Since the voluntary acceptance of obligations and the principles of corporate governance in Serbia is at a minimal level, the minority shareholders can sought their rights in the legal system and relevant institutions. Privatization model carried out through the public auctions or tenders in which the minority packages were purchased in order to create a majority stake and exit from the stock market was not favorable to the shareholders with minority ownership stake in the company. This is confirmed by the fact that the trade in minority packages participated in the total turnover on the stock exchange with only 5-7%, while according to the analysis made by the Privatization Agency (2011), privatized companies with consolidated ownership structure in 2008 accounted for 86% of the total number of companies excluded from the stock exchange. The primary role of the Belgrade Stock Exchange as privatization mechanism, where after the formation of a controlling stake any further trade usually stops, thereby making this aspect of competitiveness even more unsatisfactory (Ristić, B. and Tanasković, S., 2012, p. 75).

The Securities Commission is responsible to organize, undertake and supervise the implementation of measures and sanctions that ensure a lawful, fair, regulated and efficient functioning of the regulated market, in order to prevent disruptions in the market and to protect investors. If minority shareholders believe that their rights have been violated, the role of the courts and the Securities Commission is to ensure the effective protection of ownership rights. Given the fact that Serbia has the lowest value of index for the protection of minority shareholders in 2012 and, according to The Global Competitiveness Report 2014-2015, is placed among the seven lowest-ranked countries, it can be said that the opinion of the Serbian business community is that the interests of minority shareholders are minimally

protected. The scores given by the top managers who were surveyed by the WEF partner in Serbia and other Western Balkans countries indicate the level of confidence of the business community in the quality of legislation and efficiency of relevant institutions in the field of protection of minority shareholders, and the graph 2 shows the competitive positions of the analyzed Western Balkans countries.

**Graph 2. Protection of minority shareholders' interests, ranks of Western Balkans countries**



Source: WEF: *The Global Competitiveness Report, 2012, 2013, 2014*

Analyzing individual scores given to the protection of interests of minority shareholders, Serbia falls into the group of countries where the rights of minority shareholders are minimally protected. However, in the last three years a positive trend was recorded in terms of assessing the degree of protection of minority shareholders, which is a small improvement of the position held by Serbia in the WEF list. Bosnia and Herzegovina was among the lowest-ranked countries in the Western Balkans in 2012 and 2013, which, due to lack of data, was not included in the latest Global Competitiveness Report. The business community in Macedonia year after year gives better scores to the level of protection of minority shareholders, unlike Montenegro whose rating was getting worse in the observed period. The ranking of Croatia is gradually improving, although the score 3.6 out of a maximum of 7 points remained unchanged in the last three years.

## CONCLUSION

An effective investor protection promotes financial market development and competitiveness of the national economy. Quality of the institutional environment in Serbia acts as a disincentive to attract potential investors, because the institutions are not able to ensure sufficiently safe investment and business environment. Weaknesses of institutional factors are reflected in an inefficient legal system, low level of transparency and accountability of public and corporate institutions. High-quality regulation plays a key role in protecting shareholders' rights in Serbia, but further work on its effective implementation and improvement of the legal system has to be done. The adoption of new legislation on companies and capital market has created a good regulatory framework for the protection of shareholders' rights. Effectiveness of the legal mechanisms for protection largely depends on the quality and efficiency of the judicial and other institutions that can provide effective protection to the owners of capital in the event of violation of their rights. A high-quality corporate governance framework should protect the rights of investors, and that is very difficult to achieve in countries with the underdeveloped corporate governance practice.

Institutional environment of the corporate governance in Serbia is characterized by low efficiency of corporate boards and extremely low level of protection of minority shareholders. Comparative analysis of the selected factors of competitiveness in the Western Balkans countries shows that in Serbia the accountability of management to investors and members of corporate boards is at a low level. The more efficient oversight of investors and board members over the work and decisions of the company management was noted in other Western Balkans countries subjected to analysis. The level of confidence of the business community in the quality of legislation and efficiency of relevant institutions in the field of protection of minority shareholders in Serbia is extremely low, placing Serbia among the seven lowest-ranked countries in the WEF list. The business community in Macedonia year after year gives better scores for the level of protection of minority shareholders, the ranking of Croatia is gradually improving, and the ranking of Montenegro was getting worse in the observed period.

The results of research conducted by the experts of the World Bank and International Finance Corporation show that the level of investor protection in Serbia remained unchanged during the last three years, as well as the ranking of Serbia on World Bank list which does not record large fluctuations. Possibility of shareholders to initiate legal and administrative proceedings against management and board members has been evaluated as the lowest parameter of the investor protection index. The lowest value of Ease of shareholder suits Index observed among Western Balkans countries may point to a lack of the effective investor



protection provided by institutions that do not respond adequately in the event of violation of fundamental rights of the investors. Non-transparency of the companies is the main factor responsible for inferior rank of Croatia and Bosnia and Herzegovina among Balkans countries in a three-year reporting period. Improvement of the effective legal protection and corporate governance mechanisms is necessary to strengthen the confidence of investors and business partners, in order to avoid withdrawal or redirection of investments to the economies with more favorable business and investment climate.

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# SERBIA'S TRADE WITHIN CEFTA SINCE THE OUTBREAK OF THE 2008 CRISIS<sup>1</sup>

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## *Abstract*

*This paper aims to analyse recent trends in commodity trade between Serbia and other members of the Central European Free Trade Area (CEFTA). Particular emphasis is put on the changes that occurred in the aftermath of the 2008 crisis, which affected Serbia pretty adversely. The structure and changes in commodity trade between Serbia and other CEFTA members have not been excessively analysed in the existing literature. Therefore, our intention was to thoroughly examine the changes in the dynamics and pattern of such trade, in terms of the total commodity trade, by key product groups, and also major tendencies related to individual partners from CEFTA. We found not only that the relative significance of intra-CEFTA trade for Serbia has been decreasing since the outbreak of the crisis, but also that the values of both exports and imports (denominated in US\$) with CEFTA decreased in real terms over the 2008-2013 period.*

**Keywords:** CEFTA, Serbia, export, import, commodity trade.

**JEL classification:** F140, F150

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## **1. INTRODUCTION**

The regional integration of the Western Balkan countries and especially strengthening of mutual trade relations has become an important topic, particularly in the view of the European Union integration process. The Western Balkan countries succeed to deepen cooperation practically at all levels over the past few years, primarily as a result of conclusion of the Central European Free Trade Agreement (CEFTA) in 2006. By enhancing trade liberalization, CEFTA has contributed greatly to the increase in export and import of products and services, to growth in competitiveness and opening up of new opportunities for further development of trade relations. CEFTA, among other things, became a sort of a backbone for better preparation of the Western Balkans (WB) for the European Union (EU) accession.

Investigation of various aspects of regional integration in the WB, with particular attention paid to the CEFTA 2006 issues, is the centerpiece of a number of studies. In line with the dynamics of the EU accession process, as well as willingness to analyze effects of the global financial crisis, more attention has been paid to the economic development and trade relationships between members of the CEFTA 2006 group.

Generally, two types of contradictory opinions arise related to the results achieved after CEFTA 2006 came into effect. Some authors are convinced that CEFTA 2006 fulfilled the objectives defined at the time of its creation and contributed to the significant growth of trade (Delevic, 2011; Tempera, 2011). On the other hand, others consider that neither the potential in the region has been fully utilized, nor CEFTA 2006 has reached its full effect on regional trade by now (Pere, 2008; Kikerkova, 2009; Mojsoska-Blazevski& Petreski, 2010). However, both groups of authors agree that CEFTA 2006 represents a significant step forward for deepening regional integration process, fostering cross-border trade cooperation and creating better conditions in the process of approaching the EU.

When it comes to the investigation of trade relations and trade tendencies, a large number of the papers are rather descriptive. Quantitative analyses evaluating the potential of CEFTA 2006 for trade are represented only in several studies: by Bussiere et al. (2005), Krizmanic (2007); Pere (2008); Kikerkova (2009); Mojsoska-Blazevski & Petreski (2010), Handjiski et al. (2010).

Even fewer academic papers are focused on the evaluation of trade relations between Serbia and CEFTA 2006. The analysis of broad aspects of CEFTA's implications on the Serbian economy is discussed, for example, by Todorovic (2011) or Nikolic (2011). The existing analysis in most cases encompasses the

evaluation of only certain trade related issues. Zenic-Zeljko (2011), for instance, concentrates on the analysis of influence of the CEFTA 2006 Agreement on Serbian trade of industrial goods in the region. The trade in agricultural products between Serbia and rest of CEFTA members is the main topic of the Kuzman's (2014) monograph. In addition, some details related to trade cooperation between Serbia and CEFTA have been represented within the studies of trade relations of CEFTA as whole (Pere, 2008; Bartlett, 2008; Kathuira, 2008; Delevic, 2011; etc.).

Serbia joined CEFTA on 19 December 2006, and thus gained access to the markets of other countries in the region. The increase of mutual trade with other participants of CEFTA occurred over the first two years, but after the global financial crisis escalated, a constant decline in the share of CEFTA in Serbian trade has been recorded. In order to evaluate impact of the crisis on trade between Serbia and CEFTA, this paper will focus on the analysis of dynamics, as well as changes in the structure of commodity trade.

The paper is structured as follows. In the first part, a brief overview of the key milestones of the WB trade integration process is presented, particularly those that led to the establishing of CEFTA 2006. Afterwards, commodity trade between Serbia and partner countries from CEFTA is examined, both the general tendencies, as well as the composition of trade, and significance of individual CEFTA countries. Finally, we summarize the main findings.

## **2 CEFTA AND REGIONAL INTEGRATION OF THE WESTERN BALKAN COUNTRIES: KEY MILESTONES**

The regional integration of the WB countries and especially strengthening of mutual trade relations has become an important topic, particularly in the view of the European Union integration process. The regional integration has been a very complicated and long-term process, which started in 1999, as a result of the signing of the Stability Pact for South Eastern Europe (SEE) (Baranenko & Milivojevic, 2012). The Stability Pact was primarily intended to stabilize the situation after the escalation of war conflicts, and also to enhance democracy, human rights and economy in these countries. At the same time, the World Bank (in cooperation with the EU) proposed a two-phase approach to the regional trade integration. The first phase was a set of bilateral free trade agreements between the countries of the region and the EU, and the second phase was creation of the Free Trade Area on the territory of the WB region (Bartlett, 2008, p. 26). By establishing the Stabilization and Association Process (SAP) for the WB in 2000, the EU undertook the next step in the regional integration process. The SAP was designed to foster political and economic stabilisation of the region, to promote regional cooperation, with the aim of eventual EU membership (European Commission, 2005). The main

premise of the implementation of the SAP was the conclusion of the Stabilisation and Association Agreement (SAA), which represented a contractual relationship between the EU and each Western Balkan country, entailing mutual rights and obligations (European Commission, 2005, p. 4). All of the Western Balkan countries signed SAAs: Croatia and FYROM in 2001, Albania in 2006, Montenegro in 2007 and Bosnia and Herzegovina in 2008. Serbia signed the SAA on 29 April 2008, as well as the Interim Agreement on Trade and Trade-related Issues. The Interim Trade Agreement between the EU and Serbia came into force in February 2010, and in January 2011 the SAA was ratified by the European Parliament.

Initial step in the regional trade integration were bilateral Free Trade Agreements (FTAs) among the WB countries, they were based on the reduction or elimination of the tariffs, quotas and preferential politics for the products, and aimed to help to enforce the process of trade integration. All WB countries signed FTAs with each other by 2006 (see Table 1).

**Table 1. Matrix of Free Trade Agreements in the Western Balkan Region**

	Albania	Macedonia	Serbia and Montenegro	Bosnia and Herzegovina	Croatia
Albania		2002	2004	2004	2003
Macedonia			2006	2002	2002
Serbia and Montenegro				2002	2004
Bosnia and Herzegovina					2005
Croatia					

Source: Pere, 2008

The main characteristic of FTAs was that they were bilateral and were not the same for all the WB countries. As a consequence, the prospects of their unique extension throughout the region entailed a lot of problems (Pere, 2008, p. 170). By the end of 2004, it was concluded in the report of the Stability Pact that a multilateral free trade agreement would increase the economic efficiency of the liberalization process<sup>4</sup>. Later on, in December 2006, the system of bilateral FTAs was eventually replaced by a single free trade agreement through the simple extension of the existing CEFTA Agreement<sup>5</sup>.

<sup>4</sup> CEFTA official website: <http://www.cefta.int>. Accessed: 28 August 2014.

<sup>5</sup> Ibid.

CEFTA was initially signed by Poland, Czechoslovakia and Hungary on 21 December 1992 and came into force in 1 March 1993, after ratification in all countries (Council of Europe, 1998). The basic idea behind the creation of CEFTA was the gradual establishment of a free trade area, deepening and acceleration of economic cooperation between signatory countries, fostering of trade liberalization, as well as their preparation to membership in the European Union (Council of Europe, 1998).

Due to the successful development of the CEFTA in the first years of its existence, other countries also have showed the keen interest in its accession. Namely, the CEFTA was gradually enlarged to Slovenia (1996), Romania (1997), Bulgaria (1999) and Croatia (2003). The CEFTA enlargement had a positive result for all signatory countries. Market expansion contributed to trade liberalization and intensified mutual trade relations. Among other things, the enlargement also enhanced the development of cooperation in other areas, as well as helped to improve trade balances in some countries.

After CEFTA showed itself as a successful platform on the path to the EU membership, the European Commission in 2006 officially supported the initiative of its extension to the SEE. In line with that initiative, on 1 July 2007 six new members: Albania, Bosnia and Hercegovina, Montenegro, Moldavia, Serbia and UNMIK joined CEFTA.

CEFTA 2006 is generally based on principles defined by the original CEFTA Agreement. In addition new fields are covered: trade in services, investments, public procurements and intellectual property rights. In other words, the main objectives of the Agreement are designed in order to: *“expand trade in goods and services and foster investment by means of fair, stable and predictable rules, eliminate barriers to trade between the Parties, provide appropriate protection of intellectual property rights in accordance with international standards and harmonize provisions on modern trade policy issues such as competition rules and state aid”* (CEFTA, 2006). The Agreement also incorporates clear and effective procedures for dispute settlement and facilitates the gradual establishment of the EU-WB zone of diagonal cumulation of origin (CEFTA, 2006). Three CEFTA membership criteria were determined: the association with the World Trade Organization, signing of FTAs between all CEFTA members and the ratification of the EU Association Agreement. Economy of each affiliate state is determined by these membership terms and must be open to the other CEFTA states, as well as to the rest of the world, (Tempera, 2011).

According to surveys of some authors (Willenberg, 2009; Handijski et al, 2010; Tempera, 2011), after ratification of the CEFTA 2006 Agreement a slight progress

was made, which was manifested as total export and import increase in several signatory countries. However, despite certain positive tendencies, the growth rate was lower than expected. The main weaknesses that negatively influenced the development of trade relations were low capacities of signatory countries and lack of competitiveness of their industrial production, as well as permanent presence of the large number of tariff, non-tariff and technical barriers, inefficient and extensive paperwork, complicated administrative procedures and the lack of involvement of political forces (Božić-Miljković, 2007, Willenberg 2009). On the other hand, the global financial crisis, along with other factors, represented another essential problem that has had negative impact on the development of trade relations within CEFTA 2006 and between the WB countries and the EU.

Modest results have been achieved since the Agreement came into force, but CEFTA undoubtedly in the long run can ensure a sufficient basis for the acceleration of trade relations, intensification of inflow of foreign direct investments and the providing of the conditions for increased competition and employment (Božić-Miljković, 2007, p. 87). Besides, CEFTA, being one of the key elements for the acceleration of the transition processes, and the EU accession process, can provide the necessary background for better preparation of the WB countries to overcome obstacles and challenges of the common EU market.

### **3 SERBIA'S COMMODITY TRADE WITHIN CEFTA**

#### **3.1 Explanatory remarks**

In this section, the main tendencies in trade between Serbia and the partners from CEFTA are analysed. We observe the 2007-2013 period, and use publicly provided data of the Statistical Office of the Republic of Serbia. Given that there were no data on trade with UNMIK/Kosovo, it was excluded from the analysis; Croatia, on the other hand, is considered the member of CEFTA for the entire observed period, although its membership ceased once it acceded to the EU in July 2013.

We use trade data denominated in US\$ terms, collected from the online database of the Serbian Statistical Office. In order to deflate data, to make them comparable over time, we use the Statistical Office's data on unit value indices in foreign trade for total commodity exports and imports, and also by individual SITC sectors. The use of unit value indices for deflating trade data is widely practised, despite certain deficiencies (as pointed out in the IMF's Manual, 2009), and vast availability is one of its key advantages. Particularly problematic is their use at highly aggregated data, as is the case in this paper; however, the fact that the unit value indices are the only indicators of price changes in foreign trade publicly provided by Serbia's

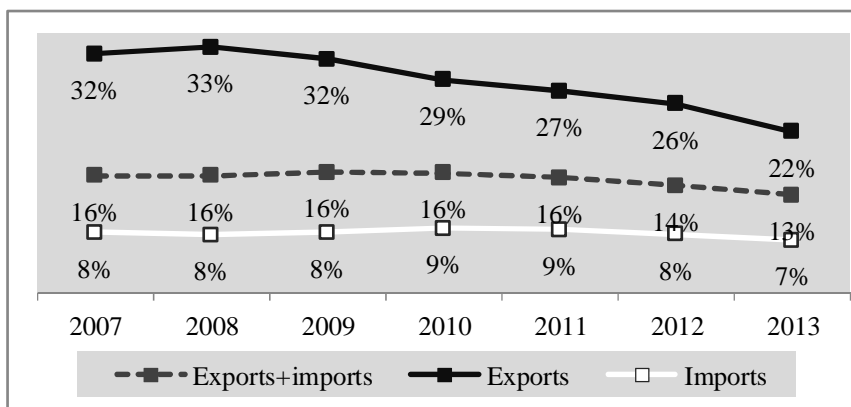


Statistical Office, and also that they are weighted by quantities, in order to make them more reliable, was the reason we used them for deflating trade data.

### 3.2 General tendencies

Countries from the CEFTA region are important trade partners of Serbia. In 2013 they constituted around 13% of the total value of Serbia's commodity trade. However, the relative importance of the CEFTA region has been declining since the outbreak of the global financial crisis in 2008 (Fig. 1). While the shares of CEFTA in both Serbia's imports and the total value of commodity trade have been fairly constant until 2011, and started to decline only as of 2012, the region's share in Serbian exports declined in 2009, and continued to sink ever since. In 2008 a third of Serbia's commodity exports were sold within the CEFTA region, while in 2013 this portion was 50% lower.

**Figure 1. Share of CEFTA in Serbia's commodity trade**

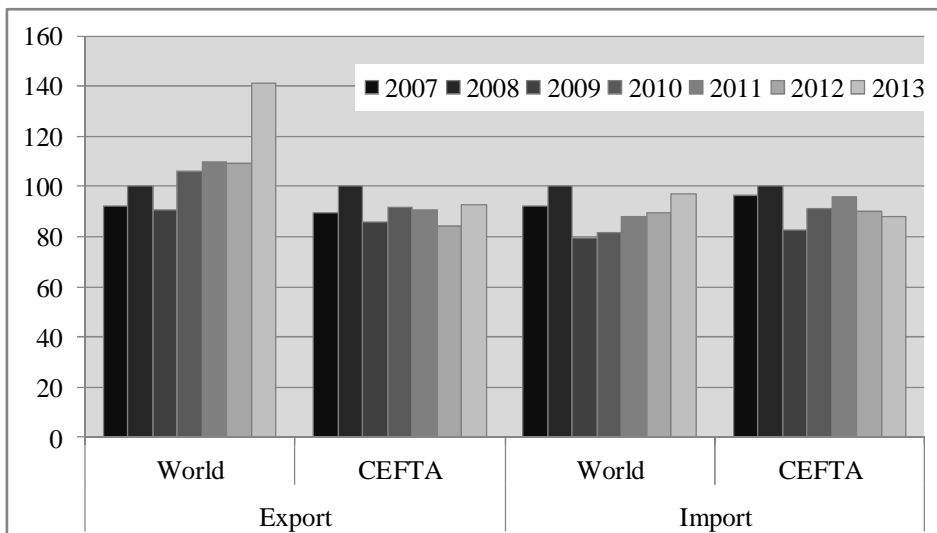


*Source: Own calculations based on data from the Serbian Statistical Office (Online database on external trade).*

The decline in the share of CEFTA in Serbia's commodity trade over the previous couple of years has occurred because exports to non-CEFTA markets have grown much faster than Serbia's exports within the region. In fact, according to our calculations, both exports and imports with the partners from CEFTA decreased in real terms in 2013 in relation to 2008; at the same time, total exports increased, while total imports declined, but less prominently than in the case of CEFTA imports alone. Figure 2 illustrates such tendencies. As a consequence of the crisis that occurred in 2008, both total and CEFTA exports shrank in 2009 - according to our calculations, exports to the two markets decreased by around 10 and 14% in real terms, respectively. Total exports quickly regained momentum, so that already

in 2010 they surpassed, in real terms, the 2008 level, and continued to grow afterwards (with a slight drawback in 2012). Particularly strong growth was recorded in 2013, when total exports were more than 40% higher, in constant prices, than in 2008. Exports to CEFTA, on the other hand, exhibited ups and downs during the observed period, but remained well below the threshold reached in 2008. Both world and CEFTA imports plunged in 2009 in relation to 2008 by around 20% in real terms. Imports from both markets began to pick up later on. However, world imports grew faster, and in 2013 nearly reached the 2008 level (expressed in constant prices), while CEFTA imports again declined in 2012 and 2013, resting at around 10% below the 2008 level, in real terms.

**Figure 2. Indices of real changes in Serbia's commodity export and import with the world and with CEFTA, 2008=100**



*Source: Own calculations based on data from the Serbian Statistical Office (Online database on external trade and Statistical release ST21: Indices of average prices of external trade of Serbia – various issues).*

Serbia has recorded surplus in commodity trade with the CEFTA region, but it remained to be, in real terms, below the threshold achieved in 2008. A rise in exports in 2013 contributed to a more substantial increase in trade surplus as well, so it nearly reached the pre-crisis level.

### 3.3 Tendencies by SITC product groups

Diminishing relative importance of the partners from CEFTA in Serbia's total commodity exports has been translated at the product level too. In the case of most SITC sectors portion of Serbia's exports destined for the CEFTA market has been steadily decreasing since 2008. On the importing side, however, CEFTA's shares in the commodity imports at the level of product groups generally stagnate, or very slightly decrease over time.

Table 2 provides an insight into these tendencies. The portion of total exports sold in CEFTA markets dropped by 11 percentage points (pp) between 2008 and 2013. Among the SITC sectors in only one case (SITC 4) share of CEFTA in total exports relatively increased. In all other cases relative importance of CEFTA in exports decreased or at best fluctuated. CEFTA's relative importance in exports particularly aggravated in the cases of Beverages and tobacco (SITC 1) and Crude materials (SITC 2), where it decreased by around 25 pp, and in the cases of Mineral fuels (SITC 3) and Machinery and transport equipment (SITC 7), where a 20 pp decline was recorded. On the import side, no such stark changes in CEFTA's relative importance have been recorded, except in the case of Beverages and tobacco (SITC 1), where the share of goods imported from CEFTA decreased by 28 pp.

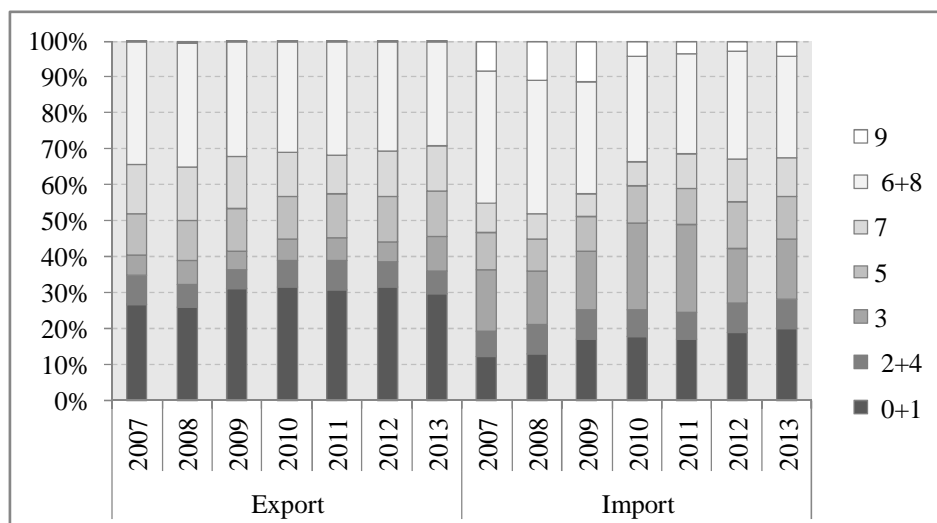
**Table 2. Share of trade with CEFTA in Serbia's total exports and imports, by SITC sectors, in %**

	Exports		Imports	
	2008	2013	2008	2013
0 Food and live animals	49	36	22	20
1 Beverages and tobacco	85	61	54	30
2 Crude materials, inedible, except fuels	41	16	17	20
3 Mineral fuels, lubricants and related materials	63	43	6	7
4 Animal and vegetable oils, fats and waxes	36	52	7	5
5 Chemicals and related products	37	32	7	6
6 Manufactured goods classified chiefly by material	22	18	16	10
7 Machinery and transport equipment	29	9	3	4
8 Miscellaneous manufactured articles	29	21	6	7
9 Commodities and transactions not elsewhere classified	17	4	4	4
TOTAL	33	22	8	8

*Source: Own calculations based on data from the Serbian Statistical Office (Online database on external trade).*

When it comes to the composition of goods traded with the partners from CEFTA, agrifood products (SITC 0+1) and manufactured goods other than chemicals and machinery (SITC 6+8) dominate on the exporting side, with the shares of around 30% each in 2013 (Fig. 3). Analysis at the two-digit SITC level reveals that the CEFTA exports of agrifood products are highly concentrated: in 2013 half of it was made up of only two product groups - cereals and cereal preparations (SITC 04) and beverages (SITC 11)<sup>6</sup>. Composition of manufactured exports to CEFTA (SITC 6, 7 and 8), on the other hand, was far more diverse, the most important products being miscellaneous manufactured goods n.e.s. (mainly products made of plastics and printed matter), various products of base metals, electrical equipment (mainly for distribution of electricity), steel and paper products.

**Figure 3. Composition of Serbian exports and imports with CEFTA, by SITC sectors, 2007-2013**



Source: Own calculations based on data from the Serbian Statistical Office (Online database on external trade)

Note: 0+1 Food, beverages and tobacco, 2+4 Raw materials, except fuels, 3 Energy, 5 - Chemicals and related products, n.e.s., 7 - Machinery and transport equipment, 8 - Other manufactured goods, 9 - Commodities and transactions not classified elsewhere

As regards imports, they seem to be somewhat more evenly dispersed across different product groups. Various manufactured goods (SITC 6+8) prevail in the

<sup>6</sup> These two product groups were in fact the dominant products exported to CEFTA in 2013: cereals and cereal preparation had a share as high as 9% in the total value of CEFTA exports, while the share of beverages stood at 6%.

structure of goods imported from CEFTA, with a share of 28% in 2013. Food, beverages and tobacco (SITC 0+1) and energy products (SITC 3) are the second and third in line, with the corresponding shares of 20% and 17%. When focusing on the two-digit SITC level, we can observe that the product groups that most substantially affected the structure of imports from CEFTA were electric current and steel, which constituted around 9% of total imports each, but also electrical equipment, fruits, non-metallic mineral products (mainly cement and glassware) and pharmaceuticals.

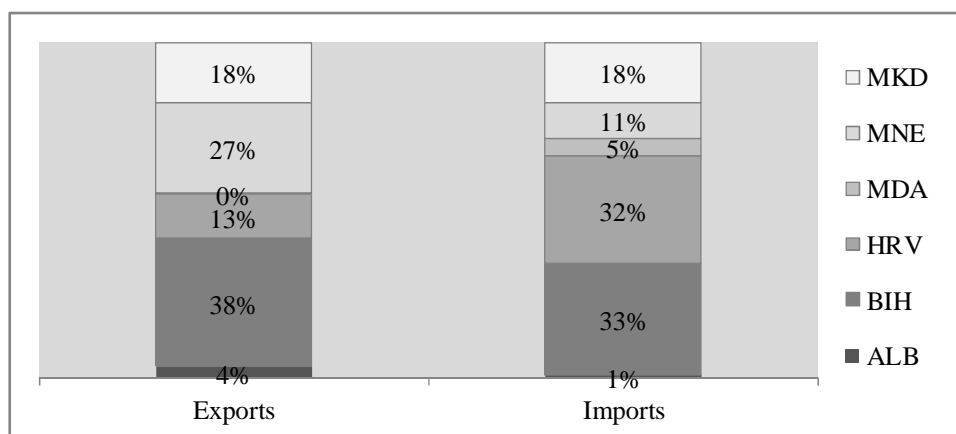
The composition of Serbia's commodity trade with CEFTA did not change substantially over the previous years, since trade evolved around the same product groups, as evidenced in Figure 3. The same general tendency holds for both exports and imports: the share of agrifood products (SITC 0+1) was on an increase, while the share of manufactured goods other than chemicals and machinery (SITC 6+8) decreased over time. Other product groups exhibited generally stable shares in exports during the observed period; on the import side share of machinery (SITC 7) increased, while certain fluctuations could be observed in the case of energy products (SITC 3).

At the two-digit SITC level, the changes in the shares of certain product groups in trade with CEFTA that occurred over the 2008-2013 period were not particularly striking, and usually included changes of up to 2 pp. Steel and iron (SITC 67) were an exception in that regard. They were quite severely affected by the crisis: their share in Serbia's commodity exports to CEFTA declined by more than 3 pp over the observed period, while the share in imports plummeted by striking 9 pp. Another exception on the exporting side were metalliferous ores and metal scrap, whose share declined, while among the imported goods changes higher than 2 pp referred to coal and other non-classified goods (SITC 99), whose shares decreased, and electric current and electrical machinery, whose shares in imports increased between 2008 and 2013.

### **3.4 Tendencies by individual CEFTA members**

Serbia's main partner within CEFTA is Bosnia and Herzegovina, with highest share in both exports and imports – in 2013 the shares stood at 38% and 33%, respectively (Fig 4). Macedonian shares in exports and imports are quite balanced, while Croatia is more important on the import, and Montenegro on the export side. Trade with Albania and Moldova is of minor importance for Serbia. Nevertheless, Moldova, and also Croatia, are the only CEFTA members with whom Serbia records trade deficit.

**Figure 4. Composition of Serbia's trade with individual CEFTA members in 2013**



Source: Own calculations based on data from the Serbian Statistical Office (Online database on external trade).

Abbreviations: ALB Albania, BIH Bosnia and Herzegovina, HRV Croatia, MDA Moldova, MNE Montenegro, MKD Macedonia.

Changes in the relative importance of individual partners from CEFTA that occurred after 2008 were not remarkable. The most notable change is a decrease in the share of Montenegro in Serbia's exports to CEFTA – by as much as 10 pp, while substantial increases in the shares of Macedonia in exports and Moldova in imports were recorded as well<sup>7</sup>.

Analysis by the SITC sectors reveals that Bosnia and Herzegovina does not only have a majority stake in Serbia's total exports to CEFTA, but also in the case of nearly all SITC sectors as well. In 2013 the only exception were energy products (SITC 3), which were evenly distributed among Bosnia and Herzegovina, Macedonia and Montenegro. Montenegro, being another major market, has a stake of around 20% or more of CEFTA exports in the case of all SITC sectors except crude materials (SITC 2). Imports, on the other hand, are much more concentrated across various product groups. In 2013 there were several cases when around 50% or more of Serbia's imports of particular goods from CEFTA originated from one country: raw materials and energy products were imported from Bosnia and Herzegovina, chemicals and miscellaneous manufactured articles (SITC 8) from Croatia, beverages and tobacco from Macedonia and machinery from Moldova.

<sup>7</sup> They amounted to 5 pp and 4 pp, respectively.

In relation to 2008, shares of individual countries in Serbia's trade with CEFTA across SITC sectors changed much more substantially in the case of imports than in the case of exports. On the export side, the general tendency is that shares of Montenegro across most of the SITC sectors have decreased, while, at the same time, shares of Macedonia have been on a rise. As for the imports, there were more fluctuations of shares of individual countries across different product groups. Most substantial changes include the following: in the case of food products, share of Macedonia decreased, while the share of Croatia increased; in the case of beverages and tobacco relative importance of Macedonia was on a rise while Montenegrin diminished; as for energy products, Montenegro gained importance while Croatia lost it; Moldova becoming a major supplier of machinery from the CEFTA region meant that the relative positions of Bosnia and Herzegovina and Croatia worsened; and, finally, one can observe that a substantial decline in imports of metal products from CEFTA resulted in a decreased importance of Montenegro as a supplier of commodities classified by material (SITC 6).

#### **4 CONCLUDING REMARKS**

Participation in the CEFTA 2006 Agreement has been a precondition for Serbia and other WB countries to negotiate the EU accession, but it was also meant to foster regional trade relations. According to the analysis conducted in this paper, this expectation failed in the case of Serbia, at least up to 2013. Although Serbia manages to achieve surplus in commodity trade with CEFTA, the relative importance of this region in the structure of Serbian trade has been declining since 2008. This was due to the fact that Serbia's exports to the non-CEFTA markets have grown much faster than exports to CEFTA. In fact, it seems that neither Serbia's exports nor imports with CEFTA managed to recover to the 2008 levels in real terms (we used trade values denominated in US\$ terms, so the observed tendencies may be affected by inter-currency fluctuations as well). Diminishing relative importance of the partners from CEFTA in Serbia's total commodity exports has been translated at the product level too. Namely, in the case of most of the SITC sectors, portion of Serbia's exports destined for the CEFTA market has been steadily decreasing since 2008. CEFTA's shares in the commodity imports at the level of SITC sectors generally stagnate, or very slightly decrease over time.

Serbia's main partner from CEFTA has been Bosnia and Herzegovina, with the shares above 30% in the cases of both exports and imports. Macedonian shares in exports and imports are quite balanced, while Croatia is more important on the import, and Montenegro on the export side. Trade with Albania and Moldova is of minor importance for Serbia. Nevertheless, Moldova, and also Croatia, are the only CEFTA members with whom Serbia records trade deficit.

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## REGIONAL INNOVATION SYSTEM DETERMINANTS IN CROATIA

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### **Abstract**

*According to the Innovation Union Scoreboard from 2014 (EC, 2014b) metrics, Croatia is a moderate innovator along with several other new EU members. The latest IUS indicators for Croatia show the slowing of innovation activity due to prolonged recession circumstances and point to the risk of regressing into the modest innovator group. So far innovation process determinants in Croatia have been researched on the national level alone (Radas and Božić, 2009). Given the fact that indicators of innovation activity have regressed in the Age of Austerity, a detailed assessment of innovation determinants on the regional level provides an additional insight into interrelatedness of the innovation processes and performance. Using NUTS 2 level classification that was valid up to 2013, we found statistically significant differences in innovation performance among three Croatian regions by using analysis of variance (ANOVA) on a sample of 3.404 innovative firms in the period 2006-2008 and 3.390 innovative firms in the period 2008-2010. The innovation performance of Northwest Croatia is superior across various types of innovation. These findings can be explained with Northwest Croatia's technological structure of industries that is more technology- and knowledge-intensive than in the other two regions, thus contributing to the more competitive international position of firms. Within-firm factors were also found important, attributing more to regions with larger firms and higher number of employees with university degree. The paper aims at providing relevant research findings for the configuration of national innovation system and for national innovation policy.*

**Keywords:** regional innovation system, Community innovation survey data, innovative firms, innovation performance, analysis of variance (ANOVA)

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## 1. INTRODUCTION

There has been a growing awareness about regional innovation performance in the last twenty years. The main reasons lie in the fact that the knowledge accumulation consisting of knowledge creation and knowledge diffusion, is also perceived as a regional phenomenon (Evangelista, et al. 2001). Recent European Union (EU) knowledge economy agenda (EU 2020) reflects this point of view in that it sees a new role for innovation. It is perceived as a facilitator of “inclusive” and ‘sustainable’ growth, contrary to the previous agenda where the emphasis was on “smart” growth alone (cf. Lazonick, Mazzucato, 2013: 1093). Following this context, institutions’ development and their (in)formal interactions with other institutions and/or companies on the regional level may be considered a prerequisite for efficient firm innovation performance. The systemic approach is therefore valid both at the national and at the regional level, as clearly reflected and refined in a definition of Regional Innovation System (RIS) by Doloreux (2004: in EC, 2014a)) where RIS “is a set of interacting private and public interests, formal institutions, and other organisations that function according to organisational and institutional arrangements and relationships conducive to the generation, use and dissemination of knowledge”.

Acknowledging the fact that the regional institutional setup and policy in Croatia are still not present *per se*, we follow the uncritical approach, that does not differentiate the between the type of RIS, but considers every regional innovation system as RIS regardless of whether some constituent elements are missing. To the best of our knowledge, there has been no research on what role RIS have played in innovation output in Croatia. Assessment of innovation determinants on the regional level may contribute to a better understanding of the impact of the spatial and the economic dimension such as within-firm differences and between firms’ determinants on innovation activity. Using NUTS 2 level classification that was valid up to 2013, we can differentiate among innovation output in North-West (NW) Croatia, Central and Eastern (CE) Croatia and Adriatic Croatia. Our hypotheses are focused on the interplay between regional innovation performance and innovation dimensions. The goal is to recognise which systemic dimensions can be associated with the regional innovation performance.

Our main hypothesis is based on the “structural” approach: innovation performance of regions with higher shares of knowledge- and technology-intensive industry structures will be relatively more dynamic in the phase of economic boom as, but also in the phase of economic downturn due to a competitive edge that allows an international perspective and less reliance on domestic economy. Hence, we expect differences in regional innovation output to become more visible during recession

period due to the differences in the technological and knowledge level of industrial structures.

Centrality hypothesis: Given the lack of regional innovation infrastructure, institutional dimension of regions appears irrelevant for the innovation performance of firms. Yet, centrality of NW region due to the presence of the capital city that hosts national institutional infrastructure provides comparative advantages (pro-innovation environment due to more qualified workforce, more competitive environment for firms, availability of suppliers) should result in more dynamic innovation performance in NW Croatia.

To this end, we use analysis of variance (ANOVA) on a large sample of firm-level innovation data across regions. This allows us to capture both development and economic innovation determinants on the regional level.

The purpose of research in this paper is to set an integrative approach to RIS in Croatia, to examine the relations between the national innovation system (NIS) and RIS as well as to learn what have been the differentiating factors of regional innovation performance in Croatia. The paper aims at providing relevant research findings for the configuration of national innovation policy in a systematic perspective.

## **2. CONCEPTUAL FRAMEWORK**

Two avenues of researches have been emerging conceptually in the last twenty years. The first group of literature was focused on analysis of regional innovation determinants and their influence on innovation output. Theoretical foundation of this group of literature, stretching from Schumpeter (1934) to the new growth theory (e.g. Romer 1990; Grossman and Helpman, 1994; Aghion and Howitt, 1998), argues that innovations lead to the increase in firms' productivity. New growth theorists argue that knowledge produced by individuals firms in turn upgrades competitiveness of the industry and enables growth of the national economy (Grossman and Helpman, 1994). Following this logic, whereby firms outperform their counterparts in terms of innovations and influence the competitiveness of industries and the national economy could be applied to the subnational (regional) level. The second group of literature is focused on the system of innovation logic (e.g. Edquist, 2004; Cooke, 2004). Authors within this group analyse specific territorial models of innovation combining spatial agglomeration, intensive and informal knowledge flows and networking, with a focus on the optimal innovative practice (Carricazeaux and Gashet, 2006). The general indications, drawn from the recent theoretical and empirical literature in

accordance with the latter approach, are that the process of technological accumulation takes place at local or regional level, even in the era of globalisation, and that technological spillovers tend to be highly concentrated at the geographical level.

At the same time knowledge creation and knowledge diffusion within specific region require strong interaction among the stakeholders (firms and institutions) which facilitate development of RIS. These propositions explain why regions have become fundamental units of analysis in the cost/benefit evaluation of the EU economic integration and in the studies which examine the process of economic convergence (or divergence) in Europe. There are two types of measurement of RIS (EC, 2014a: 76): the linear approach that builds an innovation system on a structure (such as Regional Innovation Scoreboard) and the dynamic approach that has as a goal to observe the dynamic capacities of innovation system.

The sectoral structure of a regional economy and its effect on innovation activity may be observed through these concepts. Through the structural approach, the structure of innovation activities, their complexity and R&D in a region will come as a result of the manufacturing and service sector specialisation/diversification. A region with presence of a technology-intensive or knowledge-intensive structure (i.e. advanced regions) will have a better chance at improving its competitiveness. It seems that core regions and peripheral (non-core) regions present a suitable typology for analysis (McCann, Ortega-Argilés, 2013). In this context, the core regions should be characterised by a productive system based on medium-high and high-tech industrial sectors with strong reliance on innovation activities. On the other hand, less advanced regions are based on low-tech industries combined with low knowledge-intensive service sector. Following this approach, regional innovation progress and performance come as a result of sectoral structure changes.

The empirical studies which examined regional characteristics focused on the existence of RIS (Evangelista et al., 2001) and analysed specific innovation determinants within national borders. Moreover, a comparative analysis between Western European mega-region and Eastern European mega-region verified the existence of specific innovation patterns in performance among Eastern European countries that were based on low technology and medium-low technology (Heidenreich, 2009). In the case of Spain and UK, comparative analysis by Mate-Sanchez-Val and Harris (2014) emphasised the role of firm development stage in innovation performance. Firms in Spain lagged behind the UK counterparts in capturing benefits from R&D activities. Additionally, linkages with international markets have proven more important for the UK companies.

### **3. REGIONAL INNOVATION SYSTEM – EMPIRICAL FINDINGS**

Croatia's national innovation system (NIS) development has been extensively researched and could thus represent a starting point in considering the setup of RIS in Croatia. Strong and weak elements of the innovation system found at the national level are also likely to be found at the regional level. On the contrary, the regional level analysis can shed more light on the innovation output/performance dynamics seen at the national level. Innovation Union Scoreboard 2014 (EC, 2014b) revealed that Croatia's innovative position relative to the other EU members has deteriorated. Although Croatia remained within the moderate innovator group, the country runs a risk of regressing into the modest innovator group since 2011, when its rate of innovation activity began to slow down. Poor innovative performance of the country can be associated with the 2008-2014 recession period, implying that the Croatian innovative capacity is strongly dependant on national economic trends. This certainly raises some questions as to whether there is a functional NIS in place, and if there is one, if it is appropriately set up? Institutional support needs of innovative firms in a transition economy may be different than in a mature market economy. Another issue to consider is that the legal and institutional environment in Croatia has been exposed to continual changes in the last 20 years, both in the light of the economic transition and well as in the light of the EU enlargement. Yet some key reforms that could have relieved firms' fiscal and legal burden have not been carried out, including the public sector reform. These types of changes require a lot of adaptation practices in businesses, and innovation planning may become more difficult and costly in an environment that is continually legally and institutionally changing.

The sectoral structure within region could be relevant for the innovation capacity of Croatian regions. As it appears that RIS in Croatia have not emerged as a result of a systemic approach, the innovation capacity may strongly depend on the sectoral structure of the regional economy. Rondé and Hussler (2005) found that French innovation system was more regional than sectoral and innovation was more likely to occur within neighbouring industries in regions, as opposed to the innovations within the same industry in different regions. That is why we presume that, given the lack of institutional support, there will be reliance on internal innovation strengths (within firm) or supplier-to-buyer cooperation as a source of innovation while there will be lack of university-firms type of cooperation. Import-export activity and foreign direct investment (FDI) can also be seen as a source of innovation in the former context, as was corroborated in Hashi and Stojčić's research (2013): knowledge spillovers generated through international trade play an important role in innovation activities.

That is why we include indicators of trade activity in this paper and expect that regions that are more open to trade to have better innovation output results. Innovation performance will also depend on the sectoral structure and development level of regions, as this is reflected in GDP per capita level and net wages. The Northwest (NW) Croatia's development and trade indicators such as export and import per capita indicators are outstanding compared to the other two regions. The Adriatic Croatia is a runner-up region, and Central and Eastern (CE) Croatia's trade indicators are at the lowest level both in 2006 and in 2010 (table 1). These indicators will enable us to understand the development of RIS elements and their relationship to innovation output across regions and question where the asserted prepositions can be applied to Croatian regions. A shift in the sectoral structure is most pronounced in NW Croatia – a 3.3% and 0.3% loss in industry and agriculture share to the rising market and public services share (3.6% and 0.8% increase respectively). The trends are comparable in the other two regions, but the magnitude of the sectoral shift is not as wide as in NW Croatia. Another distinction is the disproportionate increase in the public services share to market service share in the other two regions compared to NW Croatia. The dynamic of regional income and regional trade indicators in 2010 compared to 2006 is quite similar both in NW Croatia and in Adriatic Croatia – roughly above 16% rise in monthly earnings and in the regional GDP in EUR, above 15% increase in GDP per capita in EUR, above 8% increase in export per capita in EUR and the reverse trend in import per capita in EUR – decrease in the rough range between 11-13.5%. CE Croatia, according to its development indicators, significantly lags behind the development dynamic with its income per capita increasing by less than half the rate of the more advanced regions in the observed period. Export per capita increase, on the other hand, is comparable to the other two regions.

**Table 1. Selected economic data within the statistical regions in 2006 and 2010**

	2006			2010			2010/2006		
	NW Croatia	CE Croatia	Adriatic Croatia	NW Croatia	CE Croatia	Adriatic Croatia	NW Croatia	CE Croatia	Adriatic Croatia
	1			2					
Shares of persons employed in legal entities across sectors (%)							(2-1)		
Agriculture	1.1	5.8	1.9	0.8	5.7	1.6	-0.3	-0.1	-0.3
Industry	33.6	36.9	28.6	30.3	36.1	28.2	-3.3	-0.8	-0.4
Services	65.3	57.3	69.5	68.9	58.2	70.2	3.6	0.9	0.7
Public	21.9	28.3	24.2	22.7	30.0	25.5	0.8	1.7	1.3

Average monthly paid off net earnings, in EUR*							% change (2/1)		
	667	556	611	783	653	712	17,5	17,5	16,5
GDP, in million EUR									
	18.397	8.333	12.372	21.336	8.608	14.497	16,0	3,3	17,2
GDP per capita, in EUR									
	11.037	6.340	8.480	12.738	6.746	9.875	15,4	6,4	16,5
Export per capita, in EUR									
	2.651	1.172	1.513	2.878	1.250	1.638	8,6	6,6	8,2
Import per capita, in EUR									
	7.357	1.098	2.115	6.537	1.021	1.831	-11,2	-7,0	-13,4

\*Aggregated across counties using country shares in regional employment as weights.

Source: Authors' calculations using Croatian Bureau of Statistics (CBS; a, b, c) data.

#### 4. METHODOLOGICAL FRAMEWORK

Our methodological approach uses micro-data from statistical regions based on Community innovation survey (CIS). The periods under observation are 2006-2008 and 2008-2010. We additionally use the relevant qualitative data from the Croatian Bureau of Statistics (CBS) to provide an in-depth view to RIS in Croatia. As to what unit of observation is relevant for RIS, for European countries NUTS 2 level (EC, 2014a, PRO INNO Europe, 2009) seems appropriate in capturing the regional dimension of innovation systems. Using NUTS 3 level data in the Croatian case would not make any sense because in the case of Croatia, lower levels of aggregation would make it impossible to capture the institutional dimensional of the innovation systems as many counties are territories with smaller cities and institutions of local importance.

Croatia is a small country that was up to 2013 constituted of 21 NUTS 3 level (counties) and of three NUTS 2 level non-administrative units in the period under observation<sup>3</sup>. The three NUTS 2 level regions up to 2013 were NW Croatia

<sup>3</sup> From the year 2013, NUTS 2 level in Croatia consists of two regions. Former Northwest Croatia and former Central and East Croatia constitute of a new region - Continental Croatia whereas Adriatic Croatia remains unchanged. Since our analysis includes periods 2004-2006 and 2008-2010, we analyse the statistical regions valid under the relevant periods.



constituted of six counties including the capital city county<sup>4</sup>, CE Croatia<sup>5</sup> constituted of eight counties and Adriatic Croatia constituted of seven counties<sup>6</sup>. The numbers of companies in both analysed periods are comparable: 3.404 companies in the period 2006-2008 and 3.390 in the period 2008-2010. Almost half of companies are located in NW Croatia - 47.5% in 2006-2008 and 49% in 2008-2010, followed by companies in the Adriatic Croatia and in CE Croatia.

**Table 2. Regional distribution of companies from the CIS sample in the analysed periods**

Statistical region	2006-2008			2008-2010		
	NW Croatia	CE Croatia	Adriatic Croatia	NW Croatia	CE Croatia	Adriatic Croatia
Number of companies	1.617	829	958	1.660	763	967
Total	3.404			3.390		

*Source: Authors' calculation based on the CBS dataset.*

Following NIS approach (e.g. EC, 2014b; Evangelista et al., 2001), we analyse variables that describe the technological structure of the innovative firms, human resources, innovation performance and effects of innovation activities in three statistical regions. By doing so, crucial dimensions of innovation performance within the statistical regions are included in the analysis. Regarding this, following groups of variables are analysed: *Industrial structure variables*, *Innovation input variables*, *Innovation output variables*, as well *Systems' performance variables*. *Firms' effect* was represented via variable *Productivity*. Within the first group of variables, industries' structures capable of innovating are analysed, and then followed by groups of variables which explain innovative performance. Finally, the systems' performance group of variables explain various public mechanisms for financing innovation and channels of information used by the firms to generate and commercialise their knowledge. "The hampering factors variables" measure the

<sup>4</sup> Northwest Croatia consists of the following counties: City of Zagreb, County of Zagreb, County of Krapina-Zagorje, County of Varaždin, County of Koprivnica-Križevci and County of Međimurje.

<sup>5</sup> Central and East Croatia consists of the following counties: County of Sisak-Moslavina, County of Karlovac, County of Bjelovar-Bilogora, County of Virovitica-Posravina, County of Požega-Slavonija, County of Slavonski Brod-Posavina, County of Osijek-Baranja and County of Vukovar-Sirmium.

<sup>6</sup> Adriatic Croatia consists of the following counties: County of Primorje-Gorski Kotar, County of Lika-Senj, County of Zadar, County of Šibenik-Knin, County of Split-Dalmatia, County of Istria and County of Dubrovnik-Neretva.

share of firms that found some factors hampering for the firms' innovative performance. Variables that are used to this purpose are financial resources, technologies, information as well human resources<sup>7</sup>.

When statistics in the period 2008-2010 are compared to the period 2006-2008 the following changes are obvious across all three regions: downsizing of the number of employees in the companies, decline of average amount of investments in R&D and a decline in the share of innovative firms. As these trends are recorded across all regions, it is clear the innovation processes were sensitive to the unfavourable economic circumstances across the country. These observations are parallel with lower intensity of using various sources<sup>8</sup> as a part of the firms' innovative performance. In terms of structural differences, the number of firms within the knowledge-intensive industries has increased, possibly as a result of lesser innovative activity in other industries. It is interesting that the share of firms that perceive the cost factor as a hampering factor rises throughout the observed period: during the period 2008-2010, cost factor is perceived more frequently within the firms (in the range 55-61%) as highly important hampering factor to their innovation activities, than in the period 2006-2008 (in the range of 50-60%). On the other hand, the knowledge factor is perceived in a lesser share of firms as a hampering factor in the latter period (in the range of 39-45%), while the share of firms that perceive the market factor as a hampering factor remains relatively stable, at roughly around 40% in all three regions.

On average, firms in NW Croatia are more productive and larger compared to firms in CE Croatia, and Adriatic Croatia (Table 3). On average, these firms have more employees with university degree. Moreover, share of innovative firms is higher in NW Croatia than in other statistical regions in both periods, amounting to over 50% of the sample and roughly 10 percentage points more than in the other two regions in the 2008-2010 period. When the technological structure of industries among regions is considered, differences are marked. The share of firms in medium and high technology-intensive industries as well as the share of firms in knowledge-intensive industries is the highest in NW Croatia. This contrasts the amount of in-house R&D and the acquisition of machinery, equipment and software and external knowledge<sup>9</sup> in Adriatic Croatia, well surpassing NW Croatia during the 2008-2010 period. This favourable innovation input position in Adriatic Croatia is puzzling as the input rise does not seem to be associated with better innovative performance of firms in the observed period; to the contrary, a

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<sup>7</sup> Since the CIS survey omitted the hampering factors in 2006 – 2008 dataset, we use CJS datasets for the period 2004-2006.

<sup>8</sup> Internal sources, Market sources and Institutional sources.

<sup>9</sup> The external knowledge category includes patents, know-how and licence.

worsening of performance is recorded in all performance variables. However, a pronounced change in the technological structure of industries in Adriatic Croatia is seen in the increase of share of firms in knowledge-intensive industries, from 9.6% in the 2006-2010 period to 11.5% percent in the 2008-2010 period. This indicator perhaps confirms that firms in knowledge-intensive industries in Adriatic Croatia have persisted the recession due to their competitive edge that allows international trade orientation. At the same time, this type of change is also noted in CE Croatia with 2.7 percentage points increase in the share of firms in knowledge-intensive industries. On the innovative input side, there has only been an increase in-house R&D. The level of all the other categories of innovation input in this region has decreased, indicating that innovative firms have relied on internal inputs alone and avoided additional costs related to innovation. A notable difference between CE Croatia and the other two regions is the prevalent share of firms in low-technology industry that has remained stable throughout the both periods, above 26%. Another distinctive comparative difference that can be associated with the share of low-technology industry is the strong share of agricultural activity and manufacturing in this region (table 2). Given the lack of land reform and the lack of traditional industry restructuring, the progress of the technological structure of industries in this region has largely stalled. The other two regions, NW Croatia and Adriatic Croatia, both have more pronounced services sector shares (in the range of 65-70%), rising consecutively in both periods, while this share remains below 60% in CE Croatia). A bulk of this sector has received foreign direct investment (FDI), and when observed regionally, most of FDI has flown into the NW Croatia, notably the capital city. These sectoral structures of regions are directly linked to the technological-intensity of firms and to the innovative firms: innovative firms more frequently appear among the more technology intensive industries i.e. the manufacturing sector and the service sector.

**Table 3. Regional innovation system variables in the period 2006-08 and 2008-10**

Innovation dimension and its variables	2006-2008 Regions			2008-2010 Regions		
	NW Croatia	CE Croatia	Adriatic Croatia	NW Croatia	CE Croatia	Adriatic Croatia
<b>1. Industrial structure dimension, variables:</b>						
Percentage of firms in low technology intensive industry	19.3%	26.1%	13.9%	18.4%	27.1%	14.5%
Percentage of firms in medium low technology intensive industry	12.7%	13.9%	14%	12.2%	13.5%	15.1%

Innovation dimension and its variables	2006-2008 Regions			2008-2010 Regions		
	NW Croatia	CE Croatia	Adria- tic Croatia	NW Croatia	CE Croatia	Adriatic Croatia
Percentage of firms in medium high technology intensive industry	7.4%	5.7%	7.8%	7.0%	5.0%	4.1%
Percentage of firms in high technology intensive industry	2%	0.7%	1%	2.0%	0.9%	0.6%
Percentage of firms in knowledge intensive service industry	17.4%	4.6%	9.6%	19.2%	7.3%	11.5%
Percentage of firms in low knowledge intensive service industry	23%	19.1%	29.8%	23.3%	18.1%	29.4%
<b>1.1. Firm characteristics, variables:</b>						
Firm size	168.5	94.9	106.4	148.4	93.2	97.2
Employees with university degree	-	-	-	2.2	1.51	1.98
<b>2. Innovation input dimension, variables:</b>						
In-house R&D (Include capital expenditures on buildings and equipment specifically for R&D)/employees)	1349	166.8	278.3	752.6	375.9	833.9
Purchase of external R&D/employee	412.8	55.3	50.9	124.4	29	90.4
Acquisition of machinery, equipment, and software	2752.5	1688.3	1179.2	1161.1	1425.8	1204.8
Acquisition of external knowledge (licence, patent know-how)	287.3	75.6	85.5	94.12	53.1	102.7
<b>3. Innovation performance dimension, variables:</b>						
Percentage of innovative firms in the region	51.6%	43.2%	44.7%	50.2%	40.4%	40.2%
Percentage of firms which introduced product (good or service) innovation	28.5%	23.3%	20.3%	26.8%	21.1%	17.4%
Percentage of firms which introduced process innovation	34.6%	31.1%	30.6%	30.9%	26.1%	25.6%

Innovation dimension and its variables	2006-2008 Regions			2008-2010 Regions		
	NW Croatia	CE Croatia	Adria- tic Croatia	NW Croatia	CE Croatia	Adriatic Croatia
Percentage of firms which introduced organisational innovation	34.6%	24.5%	26.7%	29.7%	20.0%	23.9%
Percentage of firms which introduced marketing innovation	29.4%	25.6%	24.2%	28.2%	22.0%	21.4%
Percentage of total turnover from significantly improved products introduced new to market/new to firm	32.1%	35.5%	35%	28.8%	31.8%	33.4%
<b>4. Firms' effects dimension, variables:</b>						
Productivity=Revenues/emp <sub>i</sub> (i=2008,2010)	902.3	455.8	571.7	126054.5	84885.37	74975.4
<b>5. System's performance dimension, variables:</b>						
<b>5.1. Hampering factors</b>						
Cost factors	54.1%	59.8%	50.2%	60%	60.3%	55.0%
Knowledge factors	47.3%	51.4%	44.4%	42.3%	44.7%	39.2%
Market factors	39.3%	41.3%	36.2%	40.8%	39.3%	37.1%
Other reasons not to innovate	21%	21.6%	25%	23.9%	22.7%	25.7%
<b>5.2. Factors</b>						
Internal sources	32%	25.8%	25.3%	31.1%	23.6%	19.7%
Market sources	36%	31.6%	30.3%	34.5%	26.9%	25.2%
Institutional sources	13.5%	12.6%	8.8 %	7.8%	5.2%	4.2%
<b>5.3. Public financial support</b>						
Financial support from Local and regional authorities	3.7%	8.1%	5.8%	5.4%	5.4%	4.2%
Financial support from National authorities	22.2%	29.6%	21.2%	24.6%	30.4%	17.6%

Source: Authors' calculation based on the CIS dataset (CBS).

An interesting point in the analysis may be raised about the possible cultural and sociological regional differences that may also be noted in innovative firms. Regardless of the fact that recession circumstances have had negative consequences to the economic activity across all three regions alike, the share of firms in the Adriatic Croatia perceiving hampering factors important for its

innovative activities is comparatively lower. This relative optimism is marked in few percentage points lesser share in the perception of all possible constraints - constraints regarding financing, human resources and regarding information about technology. The difference in the perception of this region may also be rooted in the optimism based on the international tourist activity that has remained successful throughout the recession period. To the contrary, firms in NW Croatia more frequently perceive market factors as hampering for its innovation activities, projects or their decision to innovate. These firms also more frequently perceive various other types of hindering factors: knowledge internal sources (31.1%) market sources (34.5%) as well institutional sources (7.8%).

Regarding financing of innovation, differences between firms' share in receiving financial support from national authorities and from regional and local authorities are leveraged towards the national level. This is quite indicative of the reliance of firms on the central government and its financing mechanisms in planning innovation activity across all the regions, and in the least advanced region - CE Croatia this is most pronounced (above 30% in the 2008-2010 period compared to 17.6% in Adriatic Croatia). The share of firms that receive the financial support from the regional and local public level is similarly low in all three regions (roughly at 5%). Not surprisingly, it appears that the wider role of regional and local government in innovation policy has clearly not been defined and recognised. Another important issue is the unlocked potential of the University&science and business type of cooperation. This has been an unrecognised innovation factor that could help spur innovation activity in Croatian firms. Cooperation that once existed in the pre-transition period vanished throughout the transition period due to diminishing applicative capacities of the public research sector and to the deteriorating competitiveness of the Croatian manufacturing. Thus, it is not surprising that only 4-8% of firms view sources from Universities, Government and public research institutes as important for innovation activity. New concepts in public management of university and science sector have not been envisaging and sufficiently providing favourable possibilities for University&science and business cooperation development.

## **5. EMPIRICAL RESULTS**

Our methodological choice in assessing differences in innovation dimensions among three regions is ANOVA. In the earlier step, we provided various dimensions of the national innovation system along with the associated variables based on a large sample of innovative firms for two periods: 2006-2008 and 2008-2010. These data represent innovation performance of firms and their interaction with the institutional and economic environment (i.e. system performance

variables, table 3). We further use these data in ANOVA analysis to check whether differences between variables in regions are statistically significant for each period. ANOVA assesses the existence of regional specifics in innovation, while controlling for the presence of fixed sectoral effects.

ANOVA results are shown in Table 4. There is a statistically significant difference in the percentage of innovative firms in the regions in both periods under observation. Within this innovation dimension, three sub-categories were also statistically significant across regions: percentage of firms that introduced product (good or service), percentage of firms that introduced process innovation and percentage of firms which introduced marketing innovation. This finding supports the expectation that there are differences in innovation activity and performance among the three Croatian regions and supports NUTS 2 level as the choice of geographical level of observation even in the case of a small economy such as Croatia.

Differences among the statistical regions appear within the industrial structure dimension across all variables, except for *the Percentage of firms in medium-high technology intensive industries* which points to the mid-term sectoral stability of this technological group of firms. In the earlier period, from 2006-2008, there have not been any statistically significant differences in the *medium-low technology group* either, nonetheless, in the 2008-2010 period, differences in this group became statistically significant between regions. While this technology group has slightly decreased its share in NW Croatia, it has gained more share in Adriatic Croatia. This change supports the view that the structures have diverged even more during the recession period and the systemic differences have grown larger.

Both the finding on statistically significant differences in innovation output across regions and the finding on the diverging technological structure is supportive of the “structural approach hypothesis” that we set up in this paper. Differences in regional innovation output have remained pronounced during recession period. Innovation performance of regions with higher shares of knowledge- and technology-intensive industry structures (NW Croatia) has remained more dynamic in the phase of economic boom reflected in widening the gap between shares of innovative firms in NW Croatia and CE & Adriatic Croatia. Apart from the technological structure of industries within NW Croatia, an important finding of the analysis is that within-firm differences matter. Those are firm-size (number of employees) and the number of university degree employees per innovative firm. Given this fact, we can substantiate our second hypothesis that NW region with these indicators’ values surpassing those of CE Croatia and Adriatic Croatia has generated “centrality” advantages (pro-innovation environment, e.g. highly

qualified labour pool, presence of institutions) to be appropriated through firms in the region. The result is more dynamic innovation activity in NW Croatia.

On the other hand, differences among the statistical regions in terms of innovation input are not statistically significant. These findings could be explained through the interrelatedness of different innovation dimensions. Interrelatedness of the industries' technological structure and the innovation performance dimension appears to reflect the low level of innovativeness in Croatia – overall innovation results are better for a technologically more advanced region. On the other hand, the innovation input variables that are associated with more knowledge-intensive industries in the empirical literature, are not significantly different. This could also be explained by the fact that Croatia's rate of firm entry is substantially below what would be predicted by its income level, thus confirming the lack of creative destruction process in Croatian economy (Iootty et al., 2014: 8). Overall, this finding could explain Croatia's (42%) lagging behind the EU-27 average (53%) in the share of innovative enterprises<sup>10</sup>.

Comparing the empirical results in the analysed periods, the innovation output variables appear more frequently statistically significant than the innovation input variables. This leads to the conclusion that commercialisation of innovation activities is the key difference among firms in the three regions. The alternative, that is perceiving innovation as a part of the firms' strategy would be obvious in the case of significantly different innovation inputs.

The perception of firms about within-firm hindering factors (cost factors) and about the external-hindering sources (market sources and institutional sources) differ between regions. In observing the interrelatedness of the industries' technological structure variables and the statistically significant systems performance variables, it may be noted that the share of firms perceiving the costs as hampering factor has increased disproportionately across regions – the range of increase was larger in the technologically more advanced NW Croatia and in Adriatic Croatia. Quite the same happened with the perception of importance of market sources and the institutional sources: the share of firms that found market sources (supplier, competition, etc.) important for innovation activity has fallen in all three regions, but more notably in CE Croatia and in Adriatic Croatia. In the most advanced region, NW Croatia, the share of firms perceiving market sources as important for innovation activity, decreased only slightly. The share of firms perceiving institutions (Universities&science) as important sources for innovation

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<sup>10</sup>According to OECD (2005), innovative firms are defined as enterprises that engaged in an innovative activity during the period under review, regardless of whether the activity resulted in the implementation of an innovation.



activity has fallen by a half in all regions and remained the highest in NW Croatia. Apart from technological level of firms, this may also be explained by the fact that firms in NW Croatia are faced with stronger competition, where more intense use of various types of informal and formal innovative cooperation is required.

A final point can be made is about national vs. regional&local authority financial support for innovative firms. Firstly, in the period 2006-2008 we see a statistically significant difference among regions in the share of firms receiving regional&local authority financial support – the highest share is for firms in CE Croatia, the least innovative region at 8.1%, compared to 3.7% in NW Croatia and 5.8% in Adriatic Croatia. The differences are lost in the 2008-2010 and the shares of regional&local financial support seem to level out across regions. This certainly partly may be attributed to the worsening fiscal position of most regional and local authorities in the midst of recession. Share of firms that have received financial support from the national authorities remains statistically significant in both periods. Interestingly, the highest share of financial support was given to innovative firms in the least innovative region, CE Croatia. As shown in Table 1, firms from CE Croatia are less oriented towards international markets compared to firms from NW and Adriatic Croatia. This would make them more vulnerable to the national economic circumstances and more apt for public financial support (subsidies and similar). Regarding the surprising fact on public financing being prevalently high in firms in CE Croatia, we presume that companies within the more innovative NW Croatia accomplish more formal and informal type-of-cooperation with local and national institutions responsible for promoting R&D and innovation policy than the other two regions, in particular due to its central position.

**Table 4. ANOVA results – differences in RIS variables among statistical regions in 2006-08 and 2008-10 periods**

Variables	2006 -2008		2008 -2010	
	F –value	Probability	F –value	Probability
<b>1. Industrial structure variables</b>				
Percentage of firms in low technology intensive industry	21.3	0.00**	15.00	0.00**
Percentage of firms in medium low technology intensive industry	0.58	0.58	22.95	0.00**
Percentage of firms in medium high technology intensive industry	1.80	0.16	2.19	0.11
Percentage of firms in high technology intensive industry	4.13	0.02**	5.33	0.00**
Percentage of firms in knowledge intensive service industry	47.75	0.00**	4.99	0.00**

Variables	2006 -2008		2008 -2010	
	F –value	Probability	F –value	Probability
Percentage of firms in low knowledge intensive service industry	15.12	0.00**	35.21	0.00**
<b>1.1. Firm characteristics variables</b>				
Firm size	8.32	0.00**	6.76	0.00**
Employees with university degree	-	-	42.42	0.00**
<b>2. Innovation input variables</b>				
In-house R&D (Include capital expenditures on buildings and equipment specifically for R&D)/employees	2.22	0.10	15.38	0.00**
Purchase of external R&D/employee	3.36	0.03**	1.36	0.26
Acquisition of machinery, equipment, and software	3.94	0.02**	2.56	0.08
Acquisition of external knowledge (licence, patent know-how)	1.76	0.17	0.38	0.68
<b>3. Innovation performance variables</b>				
Percentage of innovative firms in the region	10.22	0.00**	15.91	0.00**
Percentage of firms which introduced product (good or service) innovation	11.56	0.00**	16.41	0.00**
Percentage of firms which introduced process innovation	2.73	0.07	5.39	0.00**
Percentage of firms which introduced organisational Innovation	16.88	0.00**	14.17	0.00**
Percentage of firms which introduced marketing Innovation	4.75	0.01**	9.89	0.00**
Percentage of total turnover from significantly improved products introduced new to market/new to firm	1.19	0.31	1.81	0.16
<b>4. Firms' effects variables</b>				
Productivity=revenues10/emp10	31.55	0.00**	7.59	0.00**
<b>5. System's performance variables</b>				
<b>5.1. Hampering factors</b>				
Cost factors	7.49	0.00**	3.68	0.03**
Knowledge factors	4.07	0.02**	2.74	0.06
Market factors	2.36	0.09	1.71	0.18
Other reasons not to innovate	2.73	0.07	1.17	0.31
<b>5.2. Factors</b>				

Variables	2006 -2008		2008 -2010	
	F –value	Probability	F –value	Probability
Internal sources	8.73	0.00**	1.26	0.28
Market sources	5.16	0.01**	15.14	0.00**
Institutional sources	6.58	0.00**	7.59	0.00**
<b>5.3. Public financing</b>				
Financial support from Local and regional authorities	4.08	0.02**	0.31	0.74
Financial support from National authorities	3.91	0.02**	5.98	0.00**

*\*\*Statistical significance below 5%.*

*Source: Authors' calculation based on the CBS dataset.*

## 6. CONCLUSIONS

The purpose of this paper was to establish whether differences in the micro-data on innovation activity of firms among three Croatian regions in the period 2006-2008 and 2008-2010 are statistically significant. The region with a central position within the country is Northwest (NW) Croatia, with the capital city and rather competitive business environment. Additionally, the national institutional infrastructure is situated in this region and NW Croatia is the most advanced innovative region. A runner-up region is Adriatic Croatia, with its sectoral structure being rather similar to NW Croatia – prevalence of the market services sector, roughly around 70% and a declining manufacturing sector at roughly 30% in 2010. The least innovative region is CE Croatia, with a rather dissimilar sectoral structure of its economy and less international trade orientation than the other two regions. In this region, the market services sector was at 58% and the manufacturing industry at 36% percent in 2010, and the most distinctive feature is the agricultural sector at almost 6% in 2010 (compared to 0.8% in NW Croatia and 1.6% in Adriatic Croatia in 2010).

Using ANOVA on a sample of approximately 3.400 innovative firms in the three Croatian regions, we find that there are statistically significant differences in innovation performance among the three regions. Not surprisingly, the NW region's innovation performance is superior across various types of innovation. When this is considered together with the industries' technological structure in the region, interrelatedness appears. NW Croatia is specific for higher shares of firms in technology-intensive and knowledge-intensive industries; therefore, more competitive position may be appropriated in the international markets, as is reflected in the favourable trade indicators of this region. The ANOVA results have shown that differences in within-firm factors such as firm-size and the number of

employees with university degree between regions are statistically significant. This brings us again to NW Croatia, that apart from having the centrality advantage, also hosts firms that are on average larger and have more university-degree-employees, factors that contribute to more innovation capacities. And this is again reflected in its superior innovation performance. Adriatic Croatia had led in innovation input figures such as in-house R&D, and regional differences in this indicator were found statistically significant using ANOVA for the period 2008-2010. However, we do not see advancement in innovation performance in this period for Adriatic Croatia. To the contrary, Adriatic Croatia, along with the other two regions, has regressed during the recession period and the innovation ranking of three regions remained the same.

Furtheron, the industries technological structure may be linked to the lack of statistically significant differences in innovation inputs other than in-house R&D. We find that a logical proposition to this finding may be seen through the concept of technological complexity of innovation: innovation input variables that were not found significantly different are all associated with more knowledge-intensive industries, also poorly represented across Croatia, apart from NW Croatia. The empirical results have shown statistically significant differences in shares of innovative firms receiving financial support from national authorities in 2008-2010. The highest share is recorded in the least innovative region – CE Croatia, while the difference in the share of firms receiving regional&local financial support has, after being statistically significant in 2006-2008 period, levelled out across regions in 2008-2010 period. A point that can be made about this fact is that the role of regional&local level of government has yet not been clearly defined within the national innovation policy or with the regional innovation system concept.

Data on the perception of innovation-hampering factors were quite revealing about the possible cultural and sociological differences among regions, with Adriatic Croatia innovative firms being somewhat more optimistic than the firms in the other two regions. The difference in the share of firms perceiving costs as a hampering factor was found statistically significant. This has been recognized as the innovation-hampering factor in the highest share of firms across all the regions, but the range of increase in the share of firms that found it hampering between periods was larger in the technologically more advanced NW Croatia and in Adriatic Croatia. Also, the share of innovative firms that found market sources (supplier, competition, etc.) important for innovation activity has fallen in all three regions, but more notably in CE Croatia and in Adriatic Croatia. In the runner up region, NW Croatia, the share of innovative firms perceiving market sources as important for innovation activity decreased only slightly and this clearly reflects the international nature of NW Croatia's regional economy.

The differences in the share of innovative firms perceiving institutions (Universities&science) as important sources for innovation activity, also found statistically significant, was halved in all regions and still remained the highest in NW Croatia. Apart from technological level of firms, this may also be explained by the fact that firms in NW Croatia are faced with stronger competition, where more intense use of various types of informal and formal innovative cooperation is required. Overall, this type of cooperation is considered important by a small share of innovative firms indicating the unlocked potential of this type of cooperative relationship.

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CBS (c) - The Croatian Bureau of Statistics: First release 4.2.2.

### APPENDIX

**Table 5. List of Variables**

Inrtot	Amount of expenditure on research and development (in EUR) divided by the number of employees;
Innoyesno	Dummy variable; 1 if firm was innovative in the past 3 years, followed with revenue increase less than 10% per year and increase of employees less than 5% per year;
EU market	Dummy variable; 1 if firm sold goods in EU, EFTA or EU candidate countries markets in the past 3 years
Other market	Dummy variable; 1 if firm in the past 3 years sold goods in other markets
Part of national group	Dummy variable, 1 if firm is a part of group with headquarters in Croatia
Part of international group	Dummy variable, 1 if firm is a part of group with headquarters abroad
Cost factors	Dummy variable; 1 if firm perceives the lack of funds, finance from sources outside the enterprise and high costs of innovation as highly important factors hampering its innovation activities, projects or decision to innovate
Knowledge factors	Dummy variable; 1 if firm perceives the lack of qualified personnel, information on technology or markets or difficulties in finding cooperation partners for innovation as highly important factors hampering its innovation

	activities, projects or decision to innovate
Market factors	Dummy variable; 1 if firm perceives the domination over market by established enterprises or the uncertainty of demand for innovation goods and services as highly important factors hampering its innovation activities, projects or decision to innovate
Other reasons not to innovate	Dummy variable; 1 if firm perceives a lack of need to innovate due to prior innovations or low demand for innovations as highly important factors hampering its innovation activities, projects or decision to innovate
Internal sources	Dummy variable; 1 if sources from within the enterprise or enterprise group are perceived as highly important
Market sources	Dummy variable; 1 if sources from suppliers of equipment, materials, etc., from clients or customers, from competitors and other enterprises of same industry, from consultants, commercial labs or private R&D institutes are perceived as highly important and of medium-high importance
Institutional sources	Dummy variable; 1 sources from Universities or other higher education institutes, Government or public research institutes, perceived as highly important and of medium-high importance
Medium-high technology industry	Dummy variable; 1 if firm operates in medium-high technology industry within manufacturing sector
Medium-low technology intensive industry	Dummy variable; 1 if firm operates in medium-low technology industry within manufacturing sector
Low-intensive technology industry	Dummy variable; 1 if firm operates in low-intensive technology industry within manufacturing sector
Knowledge-intensive service sector	Dummy variable; 1 if firm operates in knowledge-intensive sector within service sector
Financial support - local or regional authorities	Dummy variable; 1 if firm has received any public financial support for innovation activities from local and regional authorities in the period 2008 – 2010
Financial support - national authority	Dummy variable; 1 if firm has received any public financial support for innovation activities from national authorities in the period 2008 - 2010
Employees with university degree	Percent of employees in 2010 with a university degree, 0: 0%, 1:1% to 4%, 2: 5% to 9%, 3: 10% to 24%, 4: 25% to 49%, 5: 50% to 74%, 6: 75% to 100%.



# THE IMPACT OF THE GLOBAL CRISIS ON FISCAL IMBALANCE AND LOCAL ECONOMIC DEVELOPMENT IN CROATIA

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Sunčana SLIJEPČEVIĆ<sup>1</sup>

## *Abstract*

*The paper discusses the impact of the financial crisis on fiscal stance and local economic development in Croatia. The literature shows that the financial crisis deteriorate the fiscal position of local government more in those countries which have lower level of decentralisation due to the fact that the government in the time of recession use the most of available financial resources to improve economic situation at the national level. In addition, local governments with higher level of fiscal autonomy more easily use resources to retain jobs and encourage investments. In Croatia the level of fiscal decentralisation is lower than in the most of European Union countries. The paper analyses the impact of the financial crises on the size and structure of the local government budget. It shows that the financial crises contributed to deepening the fiscal imbalance in local government finances in Croatia. The large number of local government units even before recession did not have enough financial resources to provide basic public functions to their citizens. Financial crisis further deepen the financial gap and lead to postponement of investment projects. Paper also analyses the regional councillors' attitudes in the time of recession towards the priority areas for stimulating recovery and local economic development.*

**Key words:** *Local government units, local economic development, economic crisis, fiscal capacities.*

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## **1. INTRODUCTION**

The recession that began in 2007 in U.S. or the Great Recession has been considered as the worst economic downturn since the Great Depression of the 1930's (Levine et al., 2013). The impact of financial sector turmoil on real activity has become increasingly evident affecting other advanced economies, emerging markets, and low-income countries (IMF, 2009). Levine et al. (2013) foresee that the countries will feel the consequences of this recession for ten years in total. Looking in general, the most of the literature shows that during recession local government revenues plunge because central government cutting decisions affect local government (Gordon, 2012, Levine et al., 2013). Local government revenue sharing is considered to be among the first things to be cut at the central government level. Also, reductions in grants from central to local government are noticed (Gordon, 2012). Except effects of cutback budgeting decisions, local governments will feel the lagged direct effects due to the change in property values. Usually, there are two or three years lag between home prices and property tax. Therefore, it could be expected that changes in property values are going to be fully visible in revenues from property taxes in local government budget with the several years lag. Because of that central government finances are rebounding quicker than local finances.

The World Bank (2014) noticed that the impact of the global economic downturn has been felt across all regions of the world, with varying fiscal impact across regions. The global financial crisis has spread rapidly since the fall of 2008, leading to a global downturn of uncertain severity and duration. The severity of recession on different local governments depends on the differences in the local government units' revenues structure between countries. However, the most of the analysis conducted so far has been focused on the analysis of implication financial crisis on national economies and its fiscal implications, while less attention has been given to the impact on local governments.

The purpose of this paper is to examine the impact of recession in Croatia on the size and structure of the local government budget. It should answer the question how much local government revenues decline during the recession. This paper will show that the recession significantly deteriorate the fiscal position of local government units. It shows that the financial crises deepen the fiscal imbalance in local government finances in Croatia. The paper also analyse the fiscal capacity of local government units in Croatia. It shows that the level of fiscal capacity of local government units was very low in all counties, except in the City of Zagreb. The specific attention is paid on the role of grants and answering the question did grants

from central government helped local government to offset losses? At the end, paper analyses the regional councillors' attitudes in the time of recession towards the priority areas for stimulating recovery and local economic development.

The paper consists of four parts. After the first introductory part, follows a deep analysis of local government units' budget. The fiscal stance of local government units is analysed in the pre-recession year and recession period. In the third part of the paper, the regional councillors' attitudes toward local economic development goals and priorities are examined. This part of the analysis is based on the survey conducted during the 2013. The paper ends with a main conclusions.

## **2. LOCAL GOVERNMENT FINANCES AND RECESSION**

Republic of Croatia has a two tier system of sub-national government<sup>2</sup>. Local self-government units are municipalities and cities/towns, and regional self-government units are counties. Republic of Croatia is divided into a total of 576 local and regional self-government units. There are a total of 555 local self-government units (429 municipalities and 126 cities and towns), 20 regional self-government units, i.e. counties and the City of Zagreb which has, as the country's capital, a special status of both city and county.

The literature shows that the financial crisis deteriorate the fiscal position of local government more in countries which have lower level of decentralisation due to the fact that the government in the time of recession use the most of available financial resources to improve economic situation at the national level (Roitman, 2009). The process of decentralization in Croatia started in 2001 and had an impact of the stance of local government units' finances.<sup>3</sup> Municipalities and towns perform tasks of local significance, which directly address the needs of citizens and which are not assigned to state bodies by the Constitution or by the law. Big cities (cities with more than 35,000 inhabitants) and county centers deal with responsibilities, local tasks and services of local importance which directly address the citizens needs, including maintenance of public roads, issuance of construction and location permits and other documents concerning construction, implementation of physical planning documents and other activities. Counties in their self-governing scope of authority are responsible to perform activities which have regional

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<sup>2</sup> The establishment of the current local self-government system started in 1992 with the adoption of the basic legislative framework, while the system was fully established in 1993 upon entry into force of laws governing territorial organisation, self-government scope, electoral system and mode of financing local self-government.

<sup>3</sup> More about decentralization process in Croatia can be found in Jurlina Alibegović et al. (2013).

importance. Cities with more than 35,000 inhabitants may be also responsible for functions which otherwise fall within the competence of counties, as long as they ensure the necessary conditions for performance of these services. Division of responsibilities are described in the next table.

**Table 1. Distribution of responsibilities**

Municipalities and cities	Counties
Housing and community amenities	Education
Housing and community planning	Health
Municipal infrastructure	Housing and community planning
Social protection	Economic development
Primary health care	Transport and transport infrastructure
Preschool and primary school education	Maintenance of public roads
Culture and sport	Planning and development of a network of educational, health , social and cultural institutions
Consumer protection	Issuance of building and location permits, other documents related to the construction and implementation of spatial planning documents
Environmental protection	Other responsibilities defined by law
Fire-protection service	
Local transport	
Other responsibilities defined by law	
+ Big cities	
Maintenance of public roads	
Issuance of building and location permits, other documents related to the construction and implementation of spatial documents	

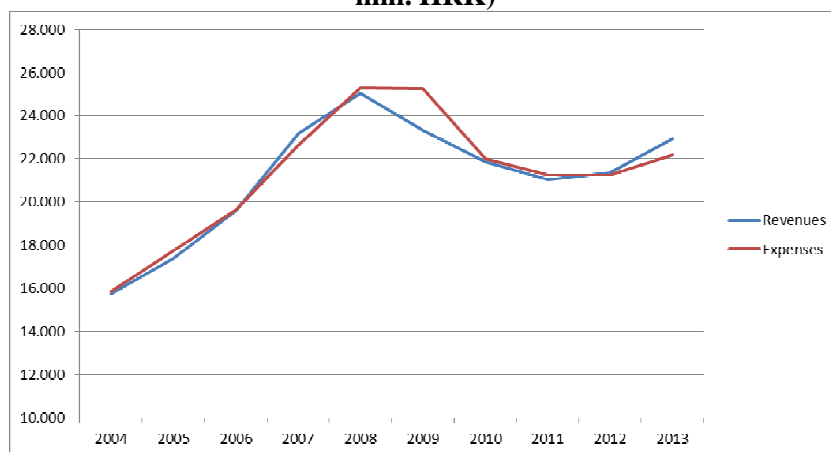
*Source: Ministry of Public Administration.*

This part of the paper analyses what happened to local revenues and expenses, fiscal capacities of local government units, fiscal autonomy and fiscal imbalance since the start of recession. The recession in Croatia began in the third quarter of 2008. Thus the year 2008 is in the analysis considered to be pre-recession year and the period 2009-2013 period affected by recession (further in paper called recession period).

Municipalities, cities and counties use their budget revenues to finance their self-government activities according to the Act on the Financing of Local and Regional Self-Government Units which defines types of revenues, their distribution and rates, and the limits of the rates within which units can prescribe them. The new responsibilities led to the increase of revenues of local government unit and the gradual increase could be observed until the 2008. In general, the consequences of

crisis and recession have impacted the local government unit's fiscal stance at all levels (figure 1). The total revenues and expenses of sub-national government in Croatia sharply declined in the period 2008-2012 (-14.8 and -16.0% respectively; table 2). Slight increase has been recorded in 2013. However, this positive trend can largely be attributed to the recovery of the City of Zagreb. Without City of Zagreb, total sub-national revenues were 11.2 percent lower in 2013 than in 2008.

**Figure 1. Revenues and expenses of sub-national governments in Croatia (in mill. HRK)**



Source: Ministry of Finance.

The situation differs greatly from one level of sub-national units to another. The municipalities' budget has been hit mostly by the recession, followed by cities. The data about structure of total sub-national revenues in table 3 clearly shows that the largest part of revenues has been allocated to the cities (69% in 2013), while municipalities and counties have share 15 and 16% in total revenues respectively in 2013.

**Table 2. Change in the recession period**

	Change 2012/2008, %	Change 2013/2008, %
Counties, revenues	-5,2	1,6
Counties, expenses	-8,6	-0,2
Cities, revenues	-15,2	-8,2
Cities, expenses	-16,5	-13,9
Municipalities, revenues	-21,3	-17,6
Municipalities, expenses	-20,2	-16,2
Total sub-national government revenues	-14,8	-8,4
Total sub-national government expenses	-16,0	-12,3

Source: authors calculation based on the Ministry of Finance data.

**Table 3. Structure of sub-national government revenues, in %**

	2008	2009	2010	2011	2012	2013
Counties	14,4	15,4	15,6	16,2	16,0	16,0
Cities	69,1	68,8	68,2	68,0	68,7	69,2
Municipalities	16,5	15,8	16,2	15,9	15,3	14,9

Source: authors calculation based on the Ministry of Finance data.

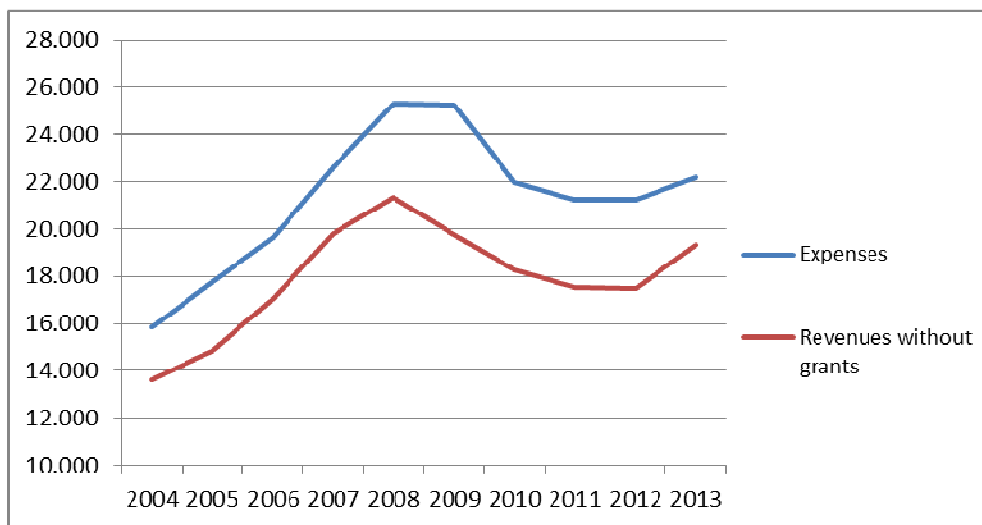
Reaction of local government finances on recession is visible on the figure 2 and 3. Local government expenses declined in 2010, while revenues decreased immediately in 2009 deepening the spread between revenues and expenses in the first year hit by recession. In the structure of revenues dominant are tax revenues which drop yet in 2010<sup>4</sup>.

Grants are, after tax revenues, the second most important source of total local government units' revenues. There are several grants categories in Croatia. Grants are current or capital transfers to local unit budgets from foreign governments, international organisations and other general government units. The total amount of grants also includes a part of the personal income tax obtained as an equalisation grant from the State Budget for decentralised functions, as well as grant revenues from the state budget allocated to the counties, cities and municipalities which belongs to the first and second category of special state concern<sup>5</sup>. Between 2008 and 2013 total grants declined 2.6 percent. However, such a share of grants in total revenues increased between 2008 to 2012 (from 14.7 to 18.0 percent) and then decreased again in 2013 (15.6 percent). It has to be stressed that the major part of received grants are in the form of current and capital grants, as well as equalization transfers for decentralized functions. This means that revenue from additional share of income tax is not sufficient to cover costs of decentralized functions. Also, it has to be noticed that the structure of received grants changed in the recession period. While in the pre-recession period between 30 and 50 percent of total grants was received through equalization transfers for decentralized functions, in the recession period this share decreased to maximally 25 percent.

<sup>4</sup> The total local government tax revenues recovered in 2013 to the amount achieved in 2008.

<sup>5</sup> Counties, municipalities and cities of the first and second category of areas of special state concern which meet the criteria for the calculation and allocation of grants receive grants from the State Budget. The grants' identification, allocation and use is defined by the Act on the Execution of the State Budget for the respective years (Ministry of Finance, 2012).

**Figure 2. Spread between local revenues (without grant) and expenses (in mill. HRK)**



*Source: authors calculation based on the Ministry of Finance data.*

Also, the figure 2 shows the increasing spread between revenues without grants and expenses in the recession period. The local government tax revenues show a -17.0 percent decrease in 2008-2012 and -8.3 percent in 2008-2013. The trend already noticed in the international literature, can be noticed in Croatia too. The revenues from property taxes decrease the most compared to the pre-recession year (2008). The total revenues from property taxes of all local government units were in 2013 -19.9 percent lower than in 2008 and weakened mostly the cities and municipalities budget.

On the other hand, local government also conduct actions to reduce expenses. The total local government expenses decreased 12.3 percent in the 2008-2013. Quite contrary to expectation, while total local government expenses decreased, expenses for employees in local government units increased 10.9 percent in the 2008-2013. On average, the rise in expenses for employees is characteristic for local government units in all counties.

The structure of expenses according to functional classification changed in the recession period. A closer look at the change in local government expenses during the recession shows that the expenses for general public services, housing and community amenities (mostly for community development and other expenses) and culture were the items which were mostly decreased.

**Table 4. Structure of total local government expenses, in %**

	2008	2009	2010	2011	2012	2013
General public services	21.0	18.1	18.7	18.6	18.0	18.5
Defence	0.0	0.0	0.0	0.0	0.0	0.0
Public order and safety	2.8	2.7	3.0	3.0	3.0	2.9
Economic affairs	13.6	15.9	14.3	15.2	15.2	16.6
Environmental protection	4.1	4.2	3.8	3.9	3.1	4.2
Housing and community amenities	21.2	19.4	17.0	17.2	19.3	16.3
Health	2.9	2.7	3.4	3.1	3.2	3.3
Recreation, culture and religion	12.0	12.7	13.0	12.6	11.9	11.7
Education	16.9	18.2	19.8	19.2	19.5	20.2
Social protection	5.4	6.1	7.0	7.2	6.7	6.5
TOTAL EXPENSES	100.0	100.0	100.0	100.0	100.0	100.0

*Source: authors calculation based on the Ministry of Finance data.*

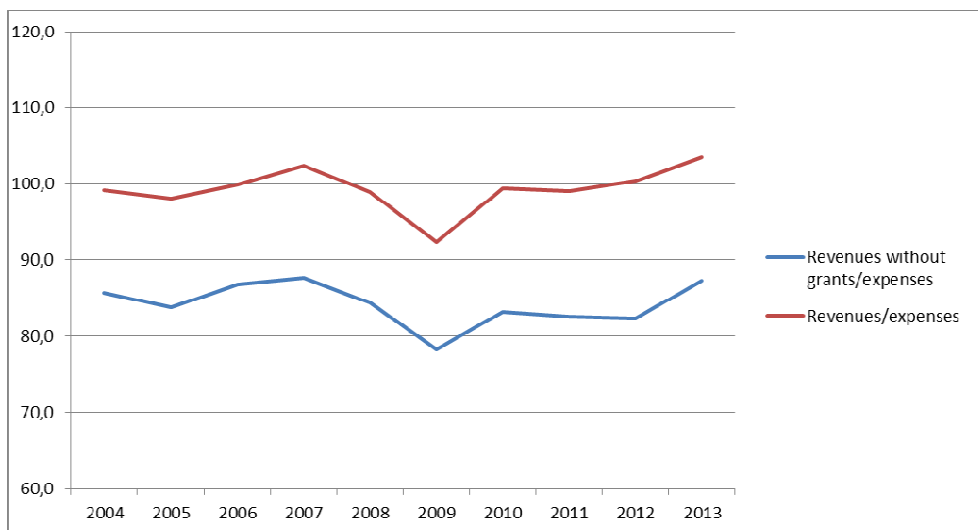
Analysis conducted so far shows that local government units have more integrity in cutting expenses than in raising revenues. This is partly expected since they have very limited possibilities to raise revenues. This is also confirmed by Jurina Alibegović et al. (2013) which stress that local government units in Croatia can influence only the tax on the use of public surfaces and partially the nontax revenues that the local government units stipulate as special purpose revenues through special regulations. Municipalities, towns, and counties can independently control the rate for certain types of revenues, but within the limits prescribed by the central state. One of the frequently used indicators of local government fiscal power in the literature is the share of local government taxes in the total tax revenues (Blöchliger i King, 2006). Due to the fact that local government units in Croatia have low discretion to independently control the tax rates and tax base, this indicator would not give precise information about Croatian local government fiscal powers. However, insight into the structure of budget shows that more than half (65.1 percent in 2013) of the total revenue in the local government units' budgets consists of revenues on which local government units cannot influence (revenues from the income tax which is shared tax revenue, and grants). Local government revenues which are under central state influence more rapidly decrease in the recession period than local government own resources. However, as the local government units in Croatia have very low fiscal autonomy, the possibilities to raise revenues are limited during recession. Thus, local government units in Croatia are in recession period more oriented toward cutting expenses.



Analysis of individual local government budgetary data shows that cities recovered their fiscal stance more quickly than counties and municipalities. To compare the strength of City of Zagreb with other local government units, it has to be noticed that City of Zagreb budget is larger than those of other 20 counties or all municipalities together.

Local government units' fiscal imbalance (FI) can be measured as the difference between local government revenues without grants and total expenses (FI1) or as the difference between total revenues and total expenditures (FI2). The data about fiscal imbalance show that financial crisis contributed to creation of financial gap in local government finances in Croatia (table 5 and figure 3). Indicator FI 1 shows that all counties had larger financial imbalance in recession period than in the previous 5-year period. The situation in looking better when including grants in the analysis. 38 percent of local government units improved fiscal stance compared to the pre-recession period.

**Figure 3. Fiscal imbalance, in %**



*Source: authors calculation based on the Ministry of Finance data.*

**Table 5. Fiscal imbalance in local government units**

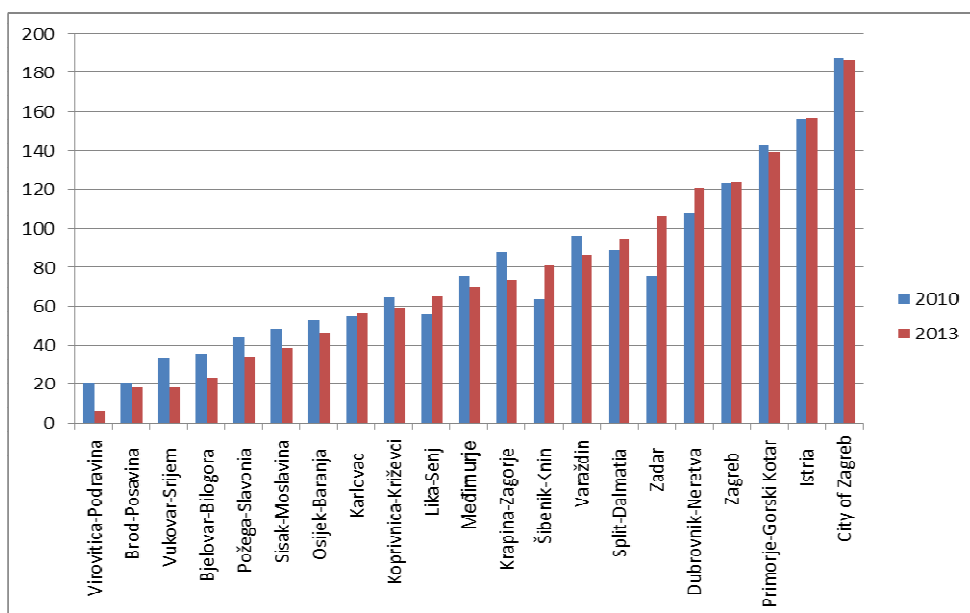
Local government units in	<i>FI 1 p.c., 2013</i>	<i>FI 2 p.c., 2013</i>	<i>Difference FI 1 p.c. average 2004-2008 i 2009-2013</i>	<i>Difference FI 2 p.c. average 2004-2008 i 2009-2014</i>
Virovitica-Podravina County	-1.475	26	-378	94
Brod-Posavina County	-1.025	-32	-342	-66
Vukovar-Srijem County	-1.183	-63	-240	-47
Bjelovar-Bilogorje County	-1.078	21	-239	-47
Požega-Slavonija County	-1.693	-262	-721	-15
Sisak-Moslavina County	-1.288	-322	-213	-74
Osijek-Baranja County	-1.232	-236	-290	-78
Karlovac County	-1.095	51	-209	44
Koprivnica-Križevci County	-1.228	-93	-198	38
Lika-Senj County	-1.732	185	-254	-75
Međimurje County	-583	207	-211	-48
Krapina-Zagorje County	-942	62	-55	76
Šibenik-Knin County	-1.153	123	-241	116
Varaždin County	-973	135	-304	-53
Split-Dalmatia County	-561	176	-328	-213
Zadar County	-988	89	-59	61
Dubrovnik-Neretva County	-1.662	-229	-487	-166
Zagreb County	-566	156	-208	-93
Primorje-Gorski Kotar County	-790	35	-318	-155
Istria County	-851	213	-112	-120
<i>City of Zagreb</i>	780	853	-153	25
<i>Republic of Croatia (without City of Zagreb)</i>	-983	25	-262	-71
<i>Republic of Croatia</i>	-658	177	-238	-53

*Source: authors calculation based on the Ministry of Finance data.*

The analysis showed that financial crisis contributed to deepening the fiscal imbalance at local government level in Croatia. Fiscal capacity can be defined as the potential ability of the government in the region or in the city (municipality) to raise revenues from their own resources in order to pay for a standardised basket of public goods and services (Snah, 1997; Martinez-Vasquez and Boex, 1997). Fiscal capacity measured by total revenues without grants per capita decreased from HRK 4,089 in 2009 to 3,304 in 2011. Looking on average, such a capacity covers only 68 percent of total expenditures. Such a fiscal capacity does not enable counties to finance development projects. In addition, the gap between the most developed and

less developed local government units measured with local government development index increased. The ratio between the largest and smallest values of local government units development index increased from 9.1 in 2010 to 33.5 in 2013 (figure 4) deepening the development gap between counties.

**Figure 4. Local government development index**



Source: Ministry of Regional Development and EU Funds.

### 3. SURVEY

#### 3.1. Methodology for Surveying Regional Councillors' Attitude Toward Local Economic Development

Regional assemblies in Croatia have a large scope of responsibilities and with their decisions they could support local development. They execute the budget and take decisions and adopt other general acts regulating the issues in the self-governmental scope of activities of the county as well as decisions on the county tax rates and other county-bound revenues under the law, decisions concerning the contracts on cooperation with local self-government and administration units. In addition, regional assemblies address the issues to secure an even economic and social development of towns and municipalities encompassed by the county and of the county as a whole, as well as other issues of common interest to the towns,

municipalities and the county as a whole; they establish public institutions, companies and other legal persons to conduct economic, social and other operations of interest to the county, etc.

Examining the members of regional assemblies opinion about local economic development was based on survey conducted among members of regional assemblies<sup>6</sup> in Croatia during 2013. The questionnaire was developed in two steps. In the first step the larger international questionnaire for councillors at regional level was developed by the group of researchers as the part of the project “Policy Making at the Second Tier of Local Government in Europe: What is happening in Provinces, Counties, Départements and Landkreise in the on-going re-scaling of statehood?”<sup>7</sup>. In the second step, based on relevant researches (World Bank, 2004 ), additional questions necessary to get insight in their opinion about priorities and measures that has to be conducted to foster local economic development in the time of recession were formulated.

The survey covered the whole territory of the Republic of Croatia. However, 345 members of regional assemblies from 20 Croatian counties answer the questionnaire, which represents 95.2 percent of counties. The sample characteristics by counties are shown in Table 6 and 7.

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<sup>6</sup>Local representative bodies are regional assemblies and the Zagreb City Assembly, as well as the municipal and city councils (Budgetary Act).

<sup>7</sup> A group of scholars, including also the authors of this paper, has developed a comprehensive survey consisting of around 270 questions, aimed at enabling the researchers involved in the survey to analyze the position of the second tier of local government in European countries from a comparative perspective. The survey has been conducted in Belgium, Croatia, the Czech Republic, England, France, Germany, Greece, Hungary, Italy, Norway, Poland, Romania, Spain and Sweden since 2012 and has not yet been completed. Such a survey should fulfill the knowledge gap about the attitudes of councilors, political executives and leading bureaucrats at the second level of local government about a number of different questions, such as their notion of democracy, attitudes toward public participation, different administrative reforms, local councilors' social background and political career etc. The original international survey has been expanded by further questions added only to the Croatian survey in order to more deeply analyze councilors' attitudes toward a local economic development in Croatia.

**Table 6. Survey sample by counties in Croatia, n=345**

	n	%
<b>Adriatic Croatia</b>	<b>107</b>	<b>31.0</b>
Lika-Senj County	30	8.7
Šibenik-Knin County	2	0.6
Split-Dalmatia County	6	1.7
Zadar County	13	3.8
Dubrovnik-Neretva County	26	7.5
Primorje-Gorski Kotar County	17	4.9
Istria County	13	3.8
<b>Continental Croatia</b>	<b>238</b>	<b>69.0</b>
Virovitica-Podravina County	18	5.2
Brod-Posavina County	7	2.0
Vukovar-Srijem County	36	10.4
Bjelovar-Bilogorje County	8	2.3
Požega-Slavonija County	16	4.6
Sisak-Moslavina County	24	7.0
Osijek-Baranja County	20	5.8
Karlovac County	22	6.4
Koprivnica-Križevci County	17	4.9
Međimurje County	22	6.4
Krapina-Zagorje County	23	6.7
Varaždin County	12	3.5
Zagreb County	13	3.8
<b>Total</b>	<b>345</b>	<b>100</b>

Source: author.

**Table 7. Sample characteristics**

	Sample characteristics
Share of analyzed counties in the total number of counties in Croatia	95.2 %
Share of councilors – respondents in the total number of local councilors at the regional level	36.9 %
Gender structure of local councilors – respondents	Female: 23.5 % Male: 71.3 % Not answered: 5.2%
Structure of local councilors – respondents according to the education level	Elementary school: 0.9% Secondary school: 37.4 % University or higher education: 57.7 % Not answered: 4.0 %

Source: Authors' analysis.

In order to better understand the purpose of the questions, the theoretical background is explained in this part of the paper. Local economic development “started being practiced in the early 1970s as local governments recognized they had a role to play in enhancing the economic viability of their communities. By actively examining their economic base and understanding obstacles to growth and investment and by undertaking strategically planned programs and projects to remove obstacles and facilitate private sector development, communities sought to grow their economic and employment base” (Swiburn, 2006). According to World Bank (2014) the main purpose of local economic development is to build up the economic capacity of a local area to improve its economic future and the quality of life. World Bank stress that in optimal circumstances local economic development should be undertaken in the cooperation between public, business and nongovernmental sector partners to create better conditions for economic growth and job creation. In this paper the regional councillors attitudes towards local economic development using World Bank approach are analysed. According to this approach local government can respond to local economic development needs and challenges by:

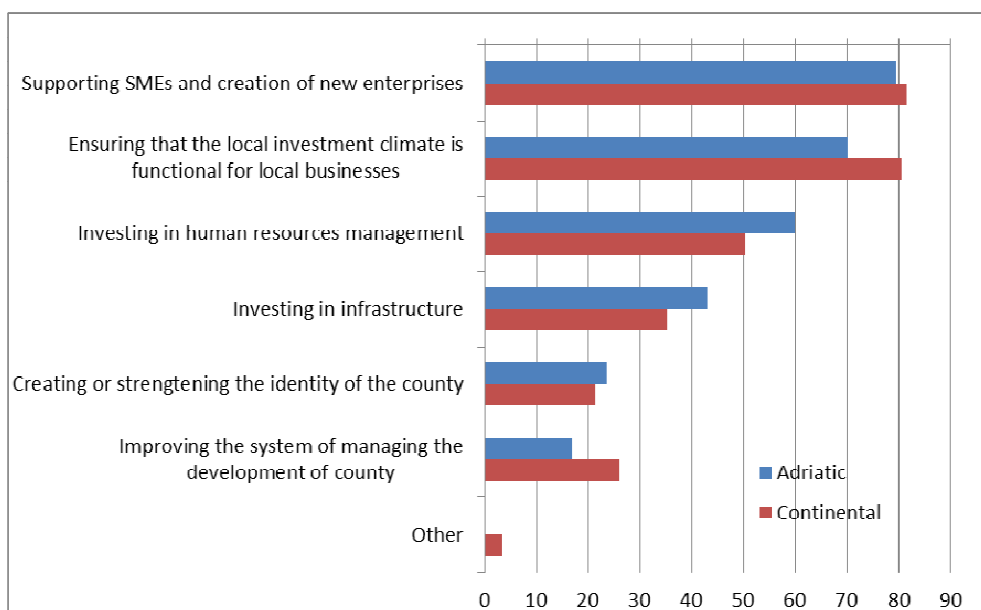
- Ensuring that the local investment climate is functional for local businesses;
- Supporting small and medium sized enterprises;
- Encouraging the formation of new enterprises;
- Attracting external investment (nationally and internationally);
- Investing in physical (hard) infrastructure;
- Investing in soft infrastructure (educational and workforce development, institutional support systems and regulatory issues);
- Supporting the growth of particular clusters of businesses;
- Targeting particular parts of the city for regeneration or growth (areas based initiatives);
- Supporting informal and newly emerging businesses;
- Targeting certain disadvantaged groups.

Therefore, the questions about local economic development are divided into three categories. In the first question, regional councillors are asked about the main strategic goals to foster local economic development. In the second and the third questions, regional councillors were asked to identify three most important priorities and three measures that need to be conducted to achieve goals of local economic development in their county.

### 3.2. Survey Results on Regional Councillors Attitudes Towards Local Economic Development

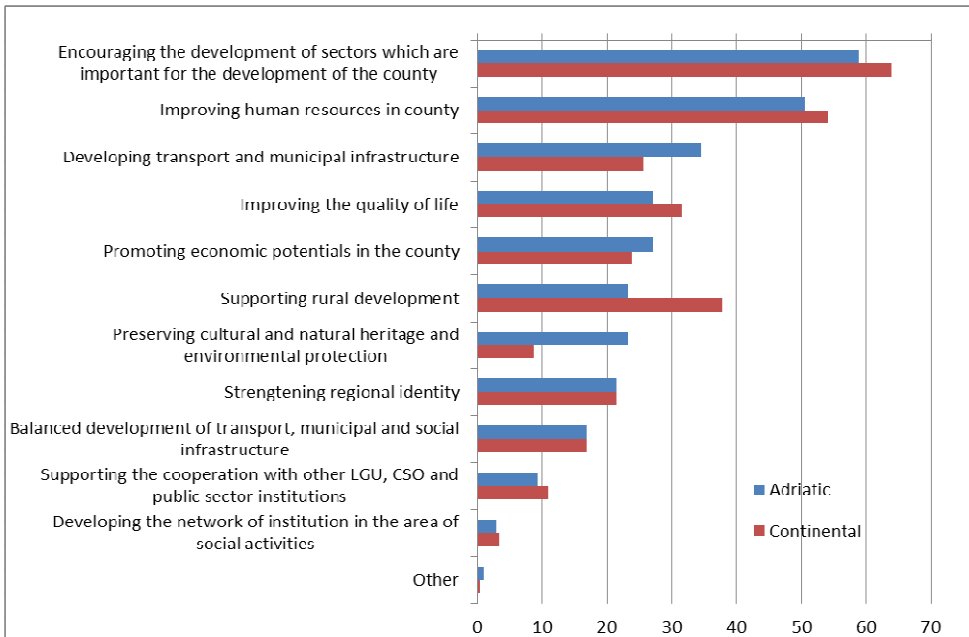
The results of the survey shows that the most of the regional councillors find that supporting SMEs and creation of new enterprises (80.9 percent), as well as to ensure that the local investment climate is functional for local business (77.3 percent) should be main strategic goal in the county which needs to be fulfilled to improve local economic development in their county. In addition, more than half of regional councillors (53.3 percent) find that for local economic development it is necessary to invest in human resources management. Distribution of answers according to statistical division of Croatia to NUTS level 2 is presented on next figure.

**Figure 5. Regional councillors attitudes towards strategic goals**



*Source: Authors' analysis.*

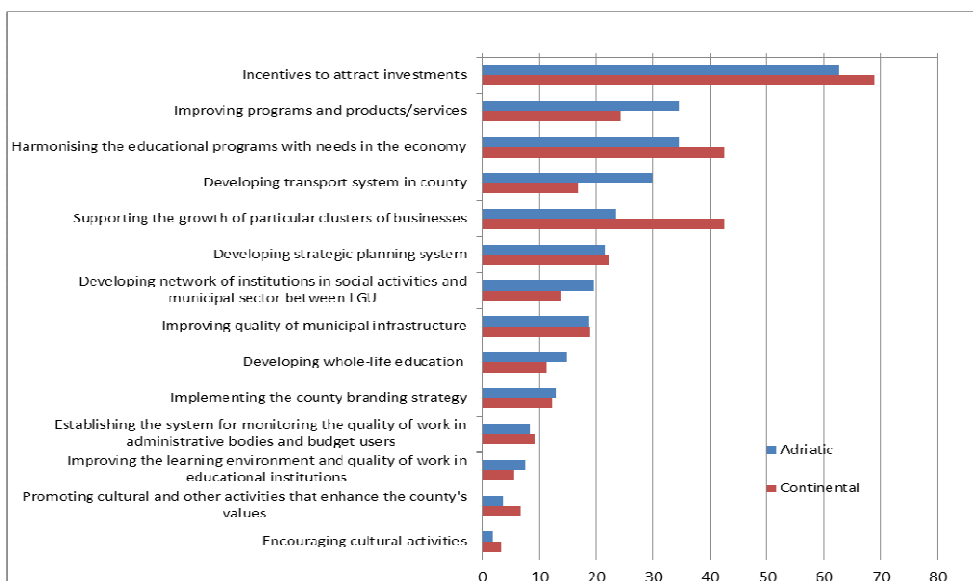
When asked about main strategic priorities for improvement of local economic development, half of the respondents stated that to encourage the development of sectors which are important for development of the county and to improve human resources in county are two main strategic priorities. To support rural development, improve the quality of life or to develop transport and municipal infrastructure in the county is important priority for one third of the respondents.

**Figure 6. Regional councillors attitudes towards strategic priorities**

Source: Authors' analysis.

On average, over half of the regional councillors (67 percent) agreed about importance of incentives to attract investment for local economic development in the county. 40 percent of respondents stated that among most important measures for local economic development is to harmonise educational program with needs of the economy. 36.5 percent of local councillors at regional level find that it is necessary to support the growth of particular clusters of business to foster regional development.



**Figure 7. Regional councillors attitudes towards measures**

Source: Authors' analysis.

The results of the survey show that there is a strong consensus about main strategic goals which should be achieved to foster local economic development in the time of recession. Research by Jurlina Alibegović and Slijepčević (2012) stated that the budget does not incorporate any aspects of strategic planning, which is necessary to achieve local and regional development. They show that there are many similarities among the counties in setting strategic goals and defining measures for the accomplishment of strategic priorities, but that credibility of local government budget is very low and should be improved. Besides fiscal constraints, large difference between planned and realised budget is additional barrier for investments.

#### 4. CONCLUSION

The main purpose of this paper was to analyse whether local government units in Croatia have enough potential to financially support local economic development. Thus, the impact of global crisis and recession on fiscal imbalance and local economic development was analysed. The results of the analysis of local government budget showed that recession had significant impact on local government revenues and expenses. However, while revenues decreased immediately in the first year of recession, expenses fall with one year time lag. In 2013, fiscal stances of local government units start recovering. The analysis also

showed that recession has a negative impact on the fiscal capacity of local government units which was even before recession at the very low level. The difference between individual local government units fiscal capacity deepened further. The large number of local government units even before recession did not have enough resources to finance basic public functions and their responsibilities with their own resources. Recession further deepened the financial imbalance and the difference in the level of development between counties. The City of Zagreb has a dominant position and was the only one with surplus in 2013 measured as the difference between revenues without grants and expenses. In Croatia there is a large number of very small local government units with very low fiscal capacity and very high fiscal imbalance. To improve the local development it would be necessary to change territorial organization of country and in the short-term to improve the level of cooperation between different sub-national government units.

The results of the survey identify the main policies which the sub-national government should use, according to regional councillors' opinion, to encourage local and regional development in Croatia. According to regional councillors' opinion three main strategic goals which would improve level of local development in Croatia are supporting SMEs and creation of new enterprises, ensuring that the local investment climate is functional for local business and increase investment in human resources management.

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## **CONDITIONALITY AND FINANCIAL ASSISTANCE FOR NON – EMU MEMBERS OF THE EUROPEAN UNION: MANAGING MACROECONOMIC CRISES IN NON – EURO AREA COUNTRIES**

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The views expressed in this paper are those of the author and do not necessarily reflect the views of the Institute of Economics Zagreb.

### ***Abstract***

*The aim of this research was to analyze financial assistance mechanisms of the European Union for non – EMU members. We would like to emphasize the crucial role of OMT and LTRO ECB programmes for maintaining the stability of the national financial systems in the Euro zone, as well Target2 system. But, non – euro area countries are not eligible to use any of these new ECB facilities and Target2 balances. This could imply certain level of inconsistency in designing exit strategy with EU conditionality for non – EMU members. BoPF facility has to be reformed, making it an efficient financial assistance instrument of the EU for future crises management.*

**Key words:** *European economic governance, conditionality, European Semester, financial assistance for non – EMU economies, ECB, Target2*

**JEL classification:** E60, E61, F30, F33, F36, F42

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## **INTRODUCTION: MANAGING THE CRISIS IN THE NON – EMU ECONOMIES**

Non – area members of the European Union has full monetary independence, but large capital inflows and excessive credit expansion, accompanied with capital market deregulation, in the period 2000 – 2008 led to unstable economic structures and inherent financial instability, that are prone to symmetric and asymmetric demand shocks. Unstable economies are fragile to various external shocks, such as sudden stop or credit crunch on international capital markets, increasing contagion risk within EU, but this instability is also the main cause of cross – border banks' deleveraging. Banks' deleveraging had put additional deflationary pressures on national economies, deepening financial crisis and recession and limiting policy options for counter-cyclical, exit strategies. Our conclusion is that EU has to implement new financial assistance facilities for non – EMU countries, with greater flexibility and ex - ante economic conditionality, in order to reduce contagion risk in EU and to increase financial system stability, not only in non – euro area economies, but in the European Union as an economic integration.

### **1. MACROECONOMIC CONDITIONALITY**

Financial assistance imposed by the international financial organizations is extend upon fulfilling certain macroeconomic criteria, ex- ante or/and ex - post. IMF has developed conditionality as a primary instrument for macroeconomic policy design and policy monitoring. EU has developed conditionality as an instrument of economic policy coordination, as mechanisms for coordination of national economic policies and crisis resolution instruments.

#### **1.1. IMF conditionality**

IMF conditionality is an instrument of lending policy of the IMF, where lending conditions serves to insure that country will implement economic reforms and that it will be able to repay to the Fund used resources. IMF guidelines for conditionality (IMF, 2014b and 2014d) established the principle that primary responsibility for the economic policy supported by the IMF facilities lies with the member's authorities, i.e. IMF intended to foster greater flexibility in conditionality and higher degree of national ownership, but without weakening conditionality. New IMF lending facilities are based on conditions that are without ex – post conditionality, because there is an ex- ante conditionality which aims to ensure the eligibility of member country for such IMF lending programs due to their strong macroeconomic fundamentals. There are three lending instruments (see more in, e.g.: IMF, 2014a): (1) flexible credit line – FCL; (2) precautionary and liquidity

line – PLL and (3) rapid financing instrument – RFI. But within current macroeconomic developments after 2008 crisis, monetary policy framework is gaining more importance, and many economies are evolving toward more flexible operational targets and more forward – looking policies. This was the reason for monetary conditionality framework that was introduced by the IMF (2014b). But, in accordance with latest reports (Griffiths and Todoulos, 2014) IMF is going backwards in conditionality – increasing the number of structural conditions and remaining heavily engaged in highly sensitive and political policy areas. But, we have to emphasize, that EU conditionality and crisis mechanisms are more important for EU economies, than the conditionality of the IMF, and that there are efforts among the EU countries, EMU and non-EMU members of the EU, to rely more on EU financing facilities than on IMF facilities.

## 1.2. EU conditionality

EU conditionality under the EU's financial framework for 2014 – 2020 is intended to guarantee conditionality in the allocation of EU funds. This is the Common Strategic Framework (CSF). The core elements of the CSF are so called „partnership contracts“, which will be launched for the first time under the Multiannual Financial Framework (MFF) for 2014 – 2020. Common Strategic Framework (CSF) is intended to guarantee conditionality in the allocation of funds for 2014 to 2020. The aim of macroeconomic conditionality is to align the allocated funds from the CSF funds with the monitoring of the economic policy in the EU and the euro zone. But, in our working paper, „EU conditionality“ refers only on macroeconomic conditionality. This is the main scope of our research. EU conditionality has been implemented through various policy instruments: (1) excessive deficit procedures and macroeconomic imbalance procedures, including „two pack“; (2) balance-of-payments assistance facility; (3) the European Financial Stabilization Mechanism (EFSM); or, (4) the European Stability Mechanism (ESM). EU macroeconomic conditionality is also determined with (5) Fiscal Compact and (5) EU Banking union mechanisms (there are „two pillars“: (a) Single Supervisory Mechanism - SSM and (b) Single Resolution Mechanism - SRM, including bail – in mechanism in bank resolution strategies). Economic policy coordination mechanisms of the EU are supported with the new (unconventional) monetary policy instruments of the European central bank (ECB). Heinen (2014a) argues that, as it is currently constituted, conditionality under the CSF is only partially suitable for enhancing conditions for growth. There are three instruments used: (1) ex-ante conditionality; (2) macroeconomic conditionality, and (3) the performance reserve. There is a prevailing consensus that CSF conditionality could be better linked to the European Stability Mechanism (ESM), the Fiscal Compact and future instruments of economic policy coordination. For our research, the most important is macroeconomic conditionality, which has to

align use of CSF funds with the monitoring of economic policy in the EU and the euro zone. EU conditionality also secures certain level of flexibility, in particular under MIP procedure implementation and certain provisions of Fiscal Compact, but EU conditionality could be augmented with additional structural measures for non – euro area EU members (de-financialization, de-euroization, enhancing greater exchange rate flexibility and review - based monetary conditionality framework as an option for countries with evolving monetary policy regimes). Basically, reform program and EU/IMF conditionality are interlinked, but cross-conditionality, under which the use of the EU financial assistance would be directly subjected to the rules or decisions of the other institutions (for instance, IMF), is prohibited. This is the rationale why EU conditionality and crisis mechanisms are more important for EU economies, than the conditionality of the IMF. But, macroeconomic conditionality has to be related to EU/EMU policy coordination mechanisms, that are introduced by the Stability and Growth Pact and its revisions (excessive deficit procedure), as well by the Six pack and other instruments of policy coordination and crisis management (ESM, EU banking union, balance of payments assistance, etc.). What is the current status of EU and Croatia in terms of economic policy coordination and macroeconomic conditionality? First, under the CSF framework 2014 - 2020, Croatia has not concluded partnership agreement with EU. Second, Fiscal Compact is not accepted by Croatia and, third, there is no political decision on joining to the EU banking union, in particular to the first pillar of banking union (Single Supervisory Mechanism - SSM, designing ECB as supranational institution for cross - border banks' supervision, controlling systemic financial risks in EU member countries). There is also a lack of contingency planning by the authorities, in particular by the monetary authorities. This contingency planning can lay a basis for analytical research in advance for the crisis program, as an instrument of ex – ante conditionality for EU (IMF) rescue package. Risk analysis for crisis program must include in-depth examination of debt sustainability assessment, because Croatia has very high levels of external and public debts.

## **2. EUROPEAN SEMESTER/ SIX PACK AND MACROECONOMIC CONDITIONALITY**

Following the euro zone crisis, financial stability in EU periphery becomes an issue of concern. Pre-crisis reliance of huge capital inflows and accumulated external debt created a systemic risk in non-euro area of European Union as well in weak economies of EMU area (Torbjorn et al, 2010). Euro zone area members were hit by systemic debt crisis. When the financial crisis revealed weaknesses in EMU governance, EU responded in December 2011 with new prevention and crisis resolution governance structure and counter-cyclical policies, so called *Six Packs*:

A new surveillance procedure for the prevention and correction of macroeconomic imbalances, the so called *Macroeconomic Imbalance Procedure* (MIP) built around two-step approach (Sanchis i Marco, 2014 and Gros and Giovannini, 2014). The first step is an alert mechanism consisting in a scoreboard with early warning indicators put in place by the European Commission to focus on risks; in a second step, a more in- depth analysis (EC, 2014c) is undertaken in those countries identifies in *Alert Mechanism Report* (AMR). The MIP scorecard consists of eleven indicators and indicative thresholds, that are signaling device of emergence of macroeconomic imbalances in early stages (see e.g., European Commission, (2012b), (2012c) and (2013c) for MIP scorecard methodology). The scoreboard currently consists of the following indicators and indicative thresholds:

#### External imbalances and competitiveness

- three - year average of the current account balance in percent of GDP, with indicative thresholds of + 6 % of GDP and -4 % of GDP;
- net international investment position (NIIP) in percentage of GDP, with an indicative threshold of – 35 % of GDP, the NIP shows the difference between country's external financial assets and its external financial liabilities;
- five - years percentage change of export market shares measured in values, with an indicative threshold of – 6 %;
- three – years percentage change in nominal unit labor cost (ULC), with an indicative thresholds of + 9 % for euro – area members and +12 % for non – euro area countries;
- three – year percentage change of the real effective exchange rate (REER) based on HICP deflators, relative to 41 other industrial countries, with an indicative thresholds of +/- 5 % for euro – area countries and +/- 11 % for non – euro area countries, respectively;

#### Internal imbalances

- private sector debt (consolidated) in percent of GDP, with an indicative threshold of 133 %;
- private sector credit flow as a percentage of GDP, with an indicative threshold of 15 %;
- year – on – year changes in deflated house prices, with an indicative threshold of 6 %;
- public sector debt in percentage of GDP, with an indicative threshold of 60 %;
- three – year average of the unemployment rate, with an indicative threshold of 10 %;



- Year – on – year percentage change in total financial liabilities of the financial sector, with an indicative threshold of 16, 5 %.

Croatia is experiencing excessive macroeconomic imbalances, which require specific monitoring and strong policy action. In particular, there are vulnerabilities arising from external liabilities, dynamics of deleveraging process and fast – increasing public debt and fiscal deficit, accompanied with declining output. Croatia is currently under MIP 2014 procedure and we present short summary of these reports to analyze economic impacts of global and euro zone crisis in both national economies (see e.g., European Commission, (2014b) for full MIP report for Croatia). In the MIP scorecard for Croatia, a number of indicators are above the indicative thresholds, namely the NIIP, losses in export market shares and unemployment rate. These indicators (NIIP, external indebtedness and private sector debt) support our view of inappropriate capital account management in the pre-crisis period (Radošević, 2014), which was the main element of the development strategy based on financial deregulation. The share of non-performing loans (NPLs) increased significantly, reflecting prolonged recession in Croatia and deflationary pressures (Radošević and Vidaković, 2014). Deleveraging pressures weigh on the prospects for an economic recovery, while deflationary pressures could lead to economic depression. At the same time, due to recession and lack of any growth, tax base has been contracting and public debt to GDP is increasing. European Commission started Excessive Deficit Procedure (EDP) for Croatia in order to achieve considerable fiscal consolidation in the medium term. Unemployment rate has increased substantially.

Put it in a nutshell, Croatia has a close to minus 90 percent of GDP net international investment position (NIIP), which is largely comprised of external debt and is much larger than the 35 percent threshold in the Macroeconomic Imbalance Procedure (MIP). Therefore, Croatia's trade balance should shift to a sizable surplus in order to ensure external debt sustainability. As non – EMU member of the EU, Croatia could use real exchange rate depreciation which could foster the development of tradable sector and improve overall economic growth. Therefore, major adjustments still lies ahead, while fiscal consolidation and wage deflation policy during the cycle downturn could aggravate prolonged recession in Croatia. This is also one of the major challenges in the euro zone – the symmetric adjustment of the intra – euro area competitiveness divergences and external imbalances (on flaws in EC policy recommendations within the European Semester framework, see e.g. Darvas and Vihriala, 2013 and on Post – Keynesian/Kaleckian approach to resolving the external imbalances across the euro area countries, see e.g. Hein, 2012). For non – euro area EU members, monetary strategies and exchange rate regimes are highly important instruments of adjustment policies. This is rationale why we think that “traditional” EU conditionality should include

monetary policy framework conditionality, based on the principles similar to the IMF monetary policy conditionality.

### **3. BALANCE-OF-PAYMENTS FINANCIAL ASSISTANCE MECHANISMS FOR NON – EMU MEMBERS**

Focus of our research has been on the various European Union rescue mechanisms for non-EMU member countries. During financial crisis in the eurozone, relatively little attention has been paid to a specific rescue mechanisms that are older than euro – area crisis mechanisms, because they were designed for the financial support of the members of the European Exchange Rate System, prior to euro introduction and establishment of the ECB. Legal basis for such rescue mechanism was the Treaty of Rome (1957), the founding treaty of European Economic Community and regulation of the European Council (see, European Council, 2002). It is the Balance-of-Payments- Facility (BoPF), medium – term financial assistance mechanism for non – euro member states that face difficulties accessing international financial markets to satisfy debt obligations denominated in foreign currency and maintain stable exchange rates (EC, 2014a). Balance-of-payments crises could be triggered for various reasons: macroeconomic imbalances, external and/or internal imbalances; financial crises, triggered with the bank runs after asset bubbles burst; deflationary crises and rapid deleveraging process accompanied with capital flight; credit crunch and inappropriate exchange rate targets, etc. Currently, there is a discussion on whether the instruments of the BoPF may be insufficient for future crises. EC has put legislative proposals (see more in: Heinen, 2014b) to align the BoPF with ESM mechanisms and recent changes to the Stability and Growth Pact (SGP), so called Six-pack and Two-pack reforms. There are three areas of BoPF improvements: (1) existing loan instruments of the BoPF should be complemented with credit lines; (2) facility should be aligned with the recently established economic surveillance framework and economic policy coordination mechanisms of the EU; (3) the process of BoPF approval was linked with EU conditionality, because loan approval was made conditional upon so called Macroeconomic Adjustment Programme, which comprises the terms and conditions of economic conditionality.

#### **3.1. The evolving role of the BoP financial assistance in European Union**

The first instruments of mutual balance-of-payments financial assistance to EU countries were developed in early 1970s, with upgrading the BoP crisis mechanisms in order to support mutual EU monetary arrangements and future monetary union:

- 1) Short – Term Monetary Support (STMS) and Medium – Term Financial Assistance (MTFA) were introduced in 1970. and 1971., respectively. These instruments were designed for multilateral EU financial assistance for balance-of-payments crises and speculative attacks on currency pegs or/and fixed exchange rate regimes of the EU members. STMS was administered by the central banks, while MTFA was based on Council decision and linked to EU conditionality.
- 2) The Community Loans Mechanism (CLM) was established in 1975, as a loan instrument backed by the Community budget and this loan instrument had also the element of economic conditionality by the EU.

Under these BoPF instruments there was also possibility for joint financial arrangements with IMF, as IMF had established its loan facilities and financial arrangements for the purpose of preventing or resolving balance-of-payments crises and to maintain exchange rate stability. IMF conditionality was attached to their financial arrangements, but the main principle in both cases was that cross-conditionality was prohibited by the IMF and EU. In 1988, EC has merged two crisis mechanisms, i.e. MTFA and CLM were merged into the Balance-of-Payments Facility. The significant changes in importance of BoPF was made following the introduction of euro in 1999 and after EU eastern enlargement 2004 – 2007, in terms of eligibility of EU countries for BoPF financial assistance and in level of ceiling for the facility. Eastern enlargement was strong incentive for new approach in designing BoPF facility within enlarged EU, making it much more important for the economic stability of the European Union and incomplete European Monetary Union, aiming for better macroeconomic policies coordination within the European Union. Intervention power of the instrument was increased by higher ceiling for the facility to EUR 50 bn, in summer of 2009 which is also the current level of BoPF facility (EC, 2014a). Today there are ten non-EMU states that are eligible for financial assistance (Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Lithuania, Poland, Romania, Sweden and United Kingdom). Six countries has not determined yet when they will join the European Monetary Union, but they accepted their obligation to do after transition period, when nominal and real convergence has to be successfully achieved (Bulgaria, Croatia, Czech Republic, Hungary, Poland and Romania). United Kingdom and Denmark made official Opt-out, while Sweden claimed Opt-out. Lithuania aims to enter to EMU as of January 1st, 2015, and aims to become the full fledged member of EMU. Funding of BoPF is based on the bonds issued at the request of the EC (collateralised by the EU budget), but borrowing and lending operations are managed by the ECB. AAA loan rates obtained by the EU on international financial markets at the moment of fund-raising are passed on to the member states in need without adding any additional margin. They are among the most favourable interest rates available globally. Besides BoPF, there are other financial assistance

facilities and guarantee programs that are backed by EU budget. But, financial terms and conditions of the BoP financial assistance arrangements by the EU should be viewed also within the macroeconomic conditionality mechanisms.

**Table 1. Multilateral financial support for governments in Europe in perspective**

	<b>EU (BoPF and EFSM)</b>	<b>EFSF</b>	<b>ESM</b>
Shareholders	EU-28	EA-17	EA-18
Lending limit (outstanding)	BoP; EUR 50 bn (13.4 bn); EFSM; EUR 60 bn (46.4 bn)	EUR 440 bn (176 bn)	EUR 500 bn (50.3 bn)
Legal Basis	Treaty on the Functioning of the European Union provides the legal basis for BoPF and EFSM as funding facilities. No separate legal entities.	Treaty under international Public Law; private company (Societe Anonyme) incorporated under Luxembourg Law.	Treaty under international Public Law; international multilateral lending institution.
Mandate	Provide financial assistance to countries in financial and economic difficulty in order to promote economic and social integration of the member states.	Provide financial assistance to euro area member states in difficulties in order to safeguard financial stability in Europe.	Provide financial assistance to euro area member states in difficulties in order to safeguard financial stability in Europe.
Guarantor	EU general budget with the obligation of member states to jointly and severally back possible extra funds to meet the EU's legal obligations.	Explicit, irrevocable and unconditional guarantee of the members; "several" liability except for member states within a programme that have temporarily "stepped out".	Share capital comprising of paid-in capital and callable capital. Explicit, irrevocable and unconditional obligation to pay the share of callable capital, on demand from the Managing Director. "Several" liability.
Guarantees and callable/paid-in capital	EU Budget for 2014; EUR 136 bn in payments, EUR 143 bn in commitments.	EUR 726 bn in overall guarantees (bond issuance backed by up to 165 % over guarantees).	Callable Capital: EUR 620 bn. Paid-in Capital: EUR 80 bn.
Credit ranking	De facto preferred creditor	Pari passu	Preferred Creditor, but junior to the IMF / pari passu for the Spanish Bank Recapitalization.

EFSF was fully operational from June 2010 until June 2013, but has stopped all new financing. It will, however, maintain the previous operations with Greece, Portugal and Ireland until all loans have been paid back. The ESM has taken over all new lending.

*Source: European Commission (based on Heinen, 2014b)*

### **3.2. The future changes of the BoPF facility**

BoPF facility could be considered as a relatively efficient instrument for balance-of-payments financial assistance for non-EMU members of the EU facing global crisis and external adjustment pressures. The assessment of the task forces shows that BoPF together with IMF facilities was able to stabilise non-EMU economies, but BoPF facility has to be improved in the near future. The assessment on behalf of the European Commission on the success of economic conditionality is mixed. Since June 2012 there has been an ongoing debate on a possible reform of the BoPF. There are several basic elements of the BoPF that have to be reformed in accordance with discussions within the respective task forces and European Commission (see more in, Heinen, 2014b):

- Existing loan instruments should be complemented by credit lines, that are more flexible instruments with various level of economic conditionality. There are several major policy reforms: (a) flexible credit lines with ex-ante, „soft conditionality“ (A Precautionary Conditioned Credit Line, PCCL) or credit lines with review-based economic conditionality (Enhanced Conditions Credit Line, ECCL).
- Economic conditionality should be integrated into EU surveillance framework, in particular Two Pack regulations, and the process of granting the assistance is streamlined. Reform measures has to be monitored by the Commission, ECB and European financial supervisory authorities (ESAs).
- Ceiling for BoPF lending should be raised and there is a controversy on bank recapitalisation within financial assistance framework (credit line for the indirect recapitalisation of financial institutions via the sovereign budget, i.e. national recapitalisation scheme with bail-in mechanism, before applying for the BoPF and ESM, if and when non-EMU country agrees on voluntary ESM opt-in under SRM).

It is beyond the scope of our research to analyse in more details proposed changes of BoPF, because the new European Commission will have to continue work on this, in coordination with ECB and ESM. But, as we can see it, there is ongoing discussion on flexibility of BOPF instrument and economic conditionality, which has to be integrated within EU policy coordination and crisis resolution mechanisms. The reform proposal provides for similar credit line instruments that

can be also found under the IMF facilities introduced after 2008 crisis (for instance, Flexible Credit line, FCL) and under the reformed EFSF and ESM regime. EMU members of the EU are in much better position in case of balance-of-payments crises, because they can resort at Target 2 system for providing emergency liquidity, in comparison with non-EMU members of the EU that are eligible only for BoPF financial assistance. Target 2 balances are special kind of automatic financial assistance mechanism, without ceiling and with no EU conditionality. Some monetary economists describe the Target 2 system as a „secret bailout of EMU periphery“. In addition, ECB facilities are also at the disposal for central banks in EMU countries, because ECB in 2011 started to act as a full fledged lender-of-last resort (LoLR) introducing various refinancing facilities (ECB, 2014; Claeys, 2014), without economic conditionality, i.e. OMT (outright monetary transactions, basically, it is a monetization of fiscal deficits) and LTRO/T-LTRO facilities (longer – term refinancing operations and targeted – LTRO), while ECB is currently preparing a new monetary framework for expansionary monetary policy („quantitative easing“, QE) in eurozone. In the same time, non-EMU members are eligible only for BoPF facility, which is limited and approved under high degree of economic conditionality integrated with Macroeconomic Imbalances Procedure. Major challenges for the BoPF reform are: volume and funding of facility; effectiveness of conditionality and role of the IMF and central banks of non-EMU members. The consensus will be hardly achieved on proposed reforms of BoPF facility, because there are vested interests between EMU and non-EMU countries and conceptual conflicts between various EU institutions.

#### **4. CONCLUSION AND POLICY CHALLENGES: TOWARDS EFFECTIVE CRISIS MECHANISMS FOR NON – EMU ECONOMIES**

The European Commission has published results of its „in-depth review“ (IDR) in the context of MIP (EC, 2014c). The EC has recognised the existence of excessive imbalances that requires strong and comprehensive policy measures to undertake significant adjustments. Excessive macroeconomic imbalances in Croatia have to be addressed with comprehensive reforms, under EU economic surveillance framework. The absence of common central bank for non-EMU countries and limited scope of BoPF, means that IMF financial assistance would be still needed in the future crises. But, there are current efforts to streamline the ESM and BoPF facilities with lesser involvement of the IMF in the future assistance for EMU countries, which could encourage similar attempts for future programs under the BoPF for non-EMU countries. PCCL with ex – ante EU economic conditionality and ECCL with EU review – based conditionality that are integrated with EU macroeconomic surveillance framework could provide flexible policy instruments for non-EMU countries in case of balance-of-payments and financial crises. In

addition, non-EMU countries could voluntary opt-in ESM, which provides for a voluntary opt-in by non-EMU countries into the ESM (European Stability Mechanism), including eligibility for purpose of direct bank recapitalisation. This is a better option, than intergovernmental fund, co-founded by the IMF nad funded on contribution payments by the non-EMU countries, as was proposed by the European parliament (see more on proposals for BoPF reforms in, Heinen, 2014b). Non-EMU mebers could also enter into SSM, the first pillar of the EU banking union, aiming to prevent systemic financial crises due to „regulatory capture“. Balance-of-payments adjustment facilities for EMU countries (European central bank's OMT programme and Target2 system) are more flexible than BoPF facility for non-EMU countries. For instance, Target 2 automatically extends payments credits to central banks in countries where payments deficits are causing an outflow of commercial bank reserves. Net outflows from private commercial banks in given country are matched by credits to that country's central bank, with the credits extended collectively by central banks elsewhere in the euro area. What is important, there are no provisions for settling Target2 balances between central banks and no restrictions on the size of balances. But, it is necessary to say that risk of Eurosystem from cross-border imbalances is limited by the collateral posted in refinancing operations by the central banks and ECB. This means that EMU members relied on EU institutions or ECB and IMF facilities, but they also benefited from payments credits provided through the Target2 system (Higgins and Klitgaard, 2014; Claeys, 2014). Such option does not exists for non-EMU countries, although macroeconomic instability in non-EMU periphery could cause certian level of macroeconomic instability (contagion risk in incomplete monetary union) in the European Union as a whole. And, last but not the least, we suggest that „traditional“ EU conditionality (within existing EU economic surveillance framework and MIP procedure) should include monetary policy framework conditionality, based on the principles similar to the IMF monetary policy conditionality, because non – EMU members have greater flexibility for external adjustment (using exchange rate policy as policy instrument for improving international competitiveness) in comparison with EMU members of the EU.

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# ROLE OF INSURANCE COMPANY AS INSTITUCIONAL INVESTITORS<sup>1</sup>

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Mladenka BALABAN

## **Abstract**

*Insurance company as institutional investor is very important participant in financial market, especially in Capital Market. They have very important role in contribution to make stronger competition on financial market, stimulating financial innovation, to make stronger corporative governance, to affect in integration in market, on supporting to regulative. In European financial market insurance company are the largest institutional investor with e 8,5 trn. of assets under management as of 31 December 2012. Structure of these assets in 2011 was: 64% government or high-rated corporate bonds and 15% were equities. Investment strategies and asset allocations depend on: prudential regulation, taxation, collateral rules for derivatives. On other hand, investment is core to the provision of insurance products: protection products, life products with investment features, annuities and other products, products with profit-sharing provisions. Aim of this work is to show how insurance companies make their investment strategy and how they make investment decision. This work wants to prove that a range of regulatory developments have the potential to create framework conditions that affect insurers' ability to continue providing long-term funding to the economy.*

**Key words:** *insurance company, investors, asset, strategy, financial market, regulatory.*

## **INTRODUCTION**

The financial market is the environment in which to create and transform financial claims, and realize the supply and demand for financial instruments. It is a special institutional mechanism at the basis there are financial institutions that provide the performance of its functions and its effectiveness.

Financial institutions are the main participants in the trade financial instruments. Their main role is to mediate between the provider and user of accumulation. This

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they perform their function by collecting reservoir through their own credit financial instruments and perform its routing credit or purchase of financial instruments borrower. Financial intermediaries are divided into:

1. Traditional institutions (banks, savings banks, etc..)
2. Institutional investors (insurance companies, pension funds, financial companies, endowments, etc..)
3. Collective investors (investment companies, mutual funds, broker-dealer institutions and stockbrokers).

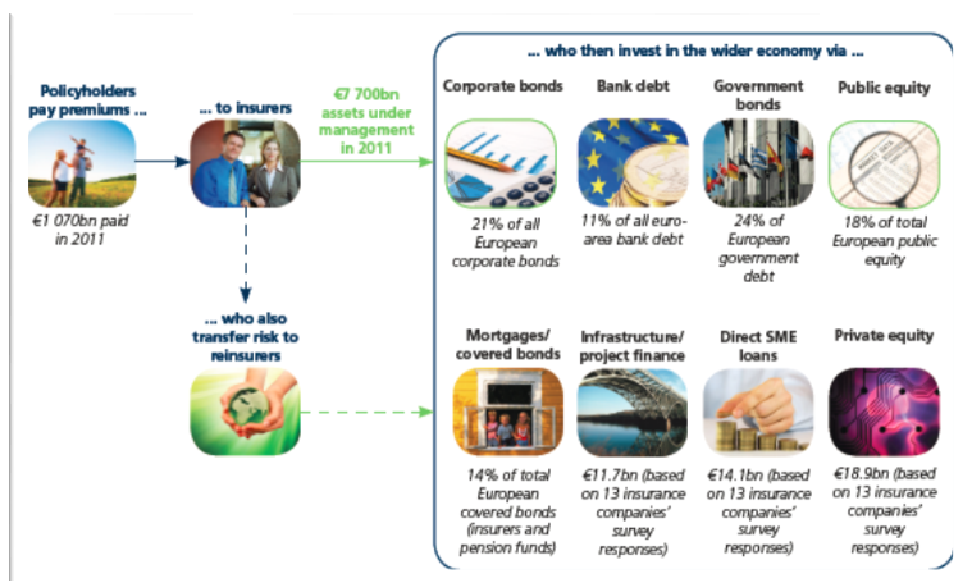
As institutional investitures, insurance companies are very important participants in the financial market, especially in the capital market. They have a very important role as they contribute to the strengthening of competition in the financial market, stimulate financial innovation, strengthen corporate governance, contribute to increase market integrity, pressure for modernizing market infrastructure, encourage the development of regulations, which primarily stems from their long-term business horizon.

The importance that the insurance companies have on the capital markets, investment principles that are applied, and the sources of funds available to it will be suggested below. Modern financial markets are characterized by internationalization, globalization and deregulation, and the emergence of new institutions and instruments. Standard banking institutions are increasingly giving way to institutional investors, whose role in the financial market is becoming increasingly important.

Due to increased risk of devastating natural disasters and terrorism, which is now the dominant influence on the insurance sector, in the global market there is integration of insurance companies in the form of acquisitions and mergers. This leads to the formation of market giants who have huge resources expressed in billions of euros. Thus, they become key players in the global capital markets and have a huge impact on price movements within these markets.

The importance of insurance companies, as well as one of the most important institutional investors, is the fact that in the United States by assets in front of them, only commercial banks. Also, the enormous importance of the insurance companies in the financial market indicates the fact that the investments of insurance companies in the capital market in the United States amounted to \$ 5.343 billion in 2004 (of which \$ 4.160 billion of waste in investments of life insurance companies).

**Picture 1. Insurers' investments in the wider economy**



Sources: "Insurance companies and the financial crisis", OECD, March 2010; Bank for International Settlements; EIOPA; Eurostat; Economist Intelligence Unit; ECBC; Insurance Europe and Oliver Wyman analysis

Importance of the activities of insurance companies carries out the activities in the financial markets, reflected in the following:

- 1) Insurance provides financial stability and reduce uncertainty through indemnity all those who have suffered loss. In this way it reduces the effect of mass bankruptcies that could have catastrophic consequences on production, employment, state tax revenues, and the state of an economy in general.
- 2) Voluntary pension insurance as one of the most important types of insurance in terms of investments of these funds on financial markets provides security for future pensioners that their retirement based on their payments be paid out monthly is stable until the end of their lives.
- 3) Growing of small amounts of money collected in the form of premiums, insurance companies are able to finance large investment projects and thus positively affect the economic growth of the country.
- 4) Insurance provides effective risk management and transforming evaluating risk. when investing, insurance companies thoroughly investigate the creditworthiness

of the borrower, which allows other investors in the market to obtain information about the characteristics of other firms in the environment when making investment decisions.

5) Conducting international trade between partners who are not sufficiently familiar with is often conditioned by the existence of certain types of insurance. Thus ensuring encourages the development of international trade.

6) Granting discounts in premiums, and preventive measures to protect against fire, injury at work, etc., insurance companies affect the prevention and reduction of losses of the insured or of society as a whole.

## 1. PRINCIPLES OF INVESTMENT INSURANCE COMPANY

Since the primary function you have homeowners insurance, which refers to the protection of the insured, they have to allocate a sufficient amount of reserves based on actuarial estimates. Another requirement for the protection of policyholders and their timely compensation in the form of payment of compensation or payment of the sum insured is the security and profitability of reserves.

During the placement of available funds, insurance companies must seek to make a profit at least equal the average interest rate earned on the capital market. Placements of insurance companies can be implemented in one of the following categories:

- 1) Real estate or the granting of mortgages and other loans,
- 2) Purchase of securities
- 3) Deposit funds with banks and other financial institutions.

Each investment of insurance company based on two basic principles:

- 1) Providing a high level of protection against the risk of its insured,
- 2) Achieving the highest possible return on invested funds.

**Table 1. Division of assets of insurance companies according to the degree of risk**

Conditionally risk-weighted assets	Banking deposits State Bonds Long-term bonds of state companies
Risk assets	Corporate and municipal bonds
High risk assets	Stocks, corporate bonds without rating Financial derivatives

To these two conditions have been satisfied, developed the three principles on which the investment policy of the insurer:

- 1) The principle of security,
- 2) The principle of profitability and
- 3) Principle of liquidity.

The specificity of the position that insurance companies take the financial market, is reflected in the requirement that they must fulfill. This requirement is an obligation to policyholders, which is a timely, must comply and which determines the structure of the portfolio of insurance companies.

Therefore, when making investment decisions in the types of assets will qualify for the funds, portfolio managers must take into account the safety of those investments. If the insurance companies own the remaining funds invested in high-risk assets would be uncertainty about the fulfillment of their basic functions, and that the payment of compensation to the insured amount. For this reason, insurance companies have to sell their assets primarily in low risk assets. This primarily applies to companies engaged in life insurance, since it is long-lasting quality sources of funds to qualify for long-term needs and to align the maturity structure of funds from the placement of assets and liabilities of insurance companies.<sup>2</sup>

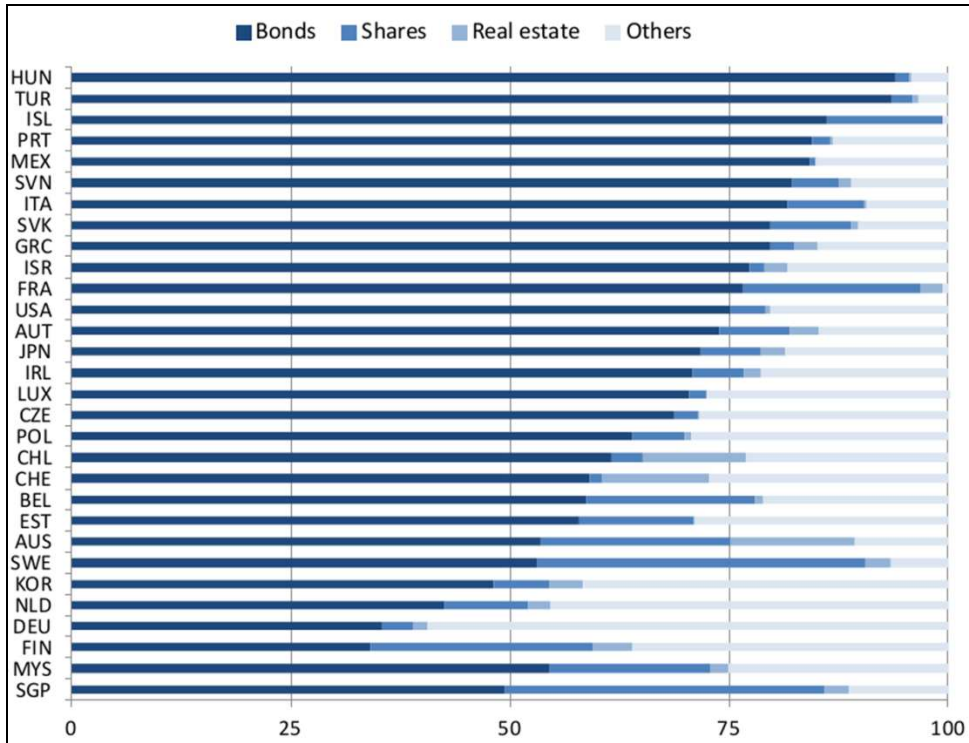
To ensure the solvency of insurance companies, precisely for this reason it is necessary for the state to determine what types of assets in which a percentage of the insurance companies can invest their funds.

Growth of premium and accumulation of funds on the basis of life insurance products has led to the fact that insurance companies are the biggest institutional investor in Europe. At this point the data drain for the year 2012, where it can be observed that the Insurance Companies occupy 51% of the finance market as the largest investor.

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<sup>2</sup> Kočović J. Šulejić P: Insurance, Economic faculty, Belgrade 2006, p.391.

**Graphic 1. Structure of investment portfolio of life Insurance Company in the OECD countries**



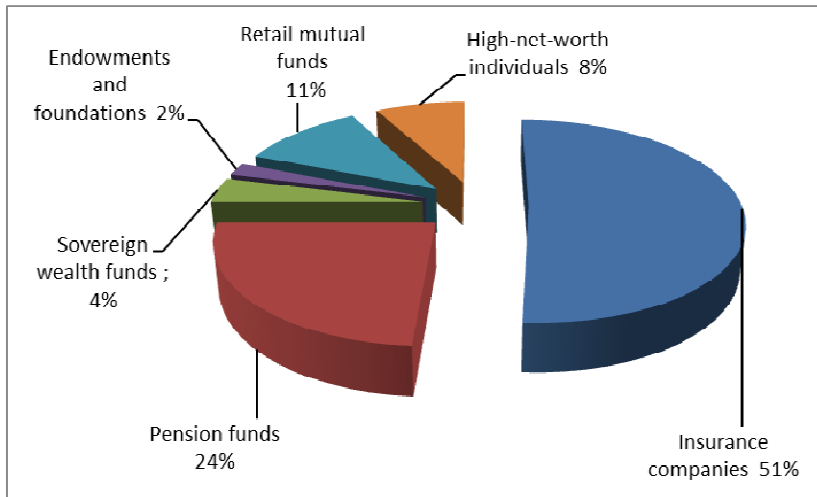
Source: *Insurance activity indicators, OECD Insurance Statistics (database)*,  
[www.oecd-ilibrary.org](http://www.oecd-ilibrary.org)

Models and patterns for investment in individual securities are determined by the limited nature of their duties, liabilities. How are life insurance at present a permanent long-term sources of funds, it is natural that the insurance companies involved in life insurance invest primarily in capital markets, primarily in government bonds and mortgage deed. It is essential that there is a coincidence of time maturities investments and commitments.

Unlike life insurance, property insurance and face a basic form of investment is in shares and corporate bonds. It is caused by the fact that their reserves less and less stable, and the potential damage to large.<sup>3</sup>

<sup>3</sup> The financial Services Fact Book, 2006, [www.financialservicesfacts.org](http://www.financialservicesfacts.org)



**Graphic 2. Insurers are the largest institutional investors in Europe**

*Source: OECD; IMF; EFAMA; Insurance Europe; Philanthropy in Europe; Foundation Center; ECB; FSB; Oliver Wyman analysis*

This principle determines the requirement to maximize return on investment while minimizing risk. Portfolio managers at insurance companies are required to in the asset management of reserves, ensuring return on investment that provides at least to preserve the real value of invested assets. Such rates therefore should be at least equal to the average interest rate on the capital market.

Insurance companies would have effectively and with minimal risk to invest resources while maintaining the current liquidity. Given that the primary function of ensuring the protection of the insured, safety should be the basic principle of investing and much more important than profitability. It is therefore a necessity to diversify the investment portfolio and thus ensure the realization of returns with an acceptable level of risk.

In order to ensure the safety of investments shall be the division of assets of insurance companies according to the level of risk:

The principle of liquidity assumed such investment structure that guarantees that at any time a sufficient amount of liquid assets or liquid securities that can be easily and at low cost can sell the financial market before their maturity.

Given the need to respect this principle, the insurance company is extremely important to comply with the funding sources of the maturity structure of the same rank. The main characteristic of the non-life insurance is to have duration of one

year, therefore it is a short-term sources and short term obligation, and the investment should be focused on short-term securities, liquid assets such as commercial paper, treasury bills.

## **2. WORLD PRACTICE OF INVESTMENT FUNDS INSURANCE COMPANY**

As institutional investors, insurance companies are among the most important participants in the financial market, especially in the capital market. One of the important factors that determine the structure of investments of insurance companies in the world, certainly are the level of development of financial markets in a country. As the capital market is more developed, there are more high quality paper and as more investors to invest in it, be sure that such a market insurance companies provide many more opportunities for adequate investment.

Compared with the structure of investments in companies engaged in life insurance, it is evident that in the non-life insurance companies much smaller share of bonds. From participation in this type of bond insurance, short and dominated by corporate bonds.

**Table 2. The structure of investment placements**

	<b>Nonlife insurance</b>	<b>Life insurance</b>
Premium	Determinated	Determianted
Claim/Insured sum	Stochastic	Predictable
Maturity funding sources	Short term	Long term
Maturity of liabilities	Short term	Long term

The share of real estate has decreased, while the commercial paper and borrowings at approximately constant levels. As the conclusions that could be drawn from the structure of investments in securities (shares) in the global markets, perform the following:

- 1) For a life insurance risks are easier to predict and no major unexpected events that could endanger the liquidity of the business and is planning more likely. Therefore, insurance companies dealing with this type of insurance can invest in long-term government bonds, shares of good companies or real estate.
- 2) In the non-life insurance potential liability for payment of claims and the amount paid is more difficult to predict. Therefore, it is necessary to

provide part of liquid instruments that can quickly be converted into cash in the case of unforeseen expenses.

### 3. IMPACT OF THE FINANCIAL CRISIS

High exposure to property insurance companies the impact of the financial crisis stems from their significant role in the financial markets of developed countries. Of the total value of assets of institutional investors in the European market, 42% relates to insurance companies and 30% of the pension funds.

On the basis of a portfolio of securities of companies life insurance in developed countries, it can be argued that those in general most of its assets are invested in bonds, as well as securities that are characterized by lower yields, but also lower risk compared to equity instruments. In order to maximize security investments and the realization of certain tax incentives, these companies are particularly interested in investing in government bonds.

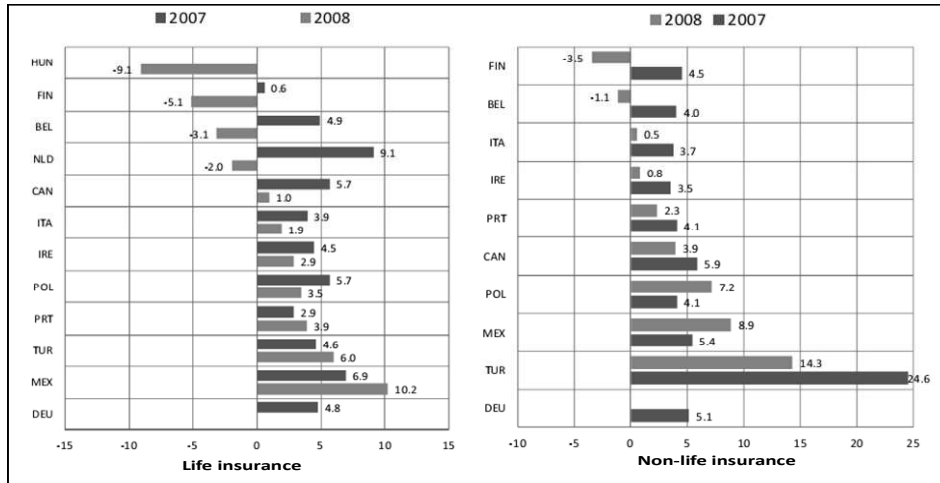
Companies in the field of non-life insurance, on the other hand, a relatively larger share of their assets held in cash, cash equivalents and short-term securities (primarily commercial paper and treasury bills). In addition, these companies invest relatively more in stocks compared to life insurance companies. The financial crisis is affecting insurance companies in five ways:

- direct influence of the sub-prime mortgage loans at risk through exposure to the assets of insurance companies sub-prime loans,
- impact on portfolio insurance companies through specific exposure to risk falling prices of certificates of deposit, bonds and other securities of banks that were hit by the financial crisis,
- impact overall meltdown of the financial markets as measured by the decline in stock prices and rising interest rates in the capital markets,
- impact of the crisis on the business of underwriting,
- valuation (price) of insurance companies.

The direct impact of the crisis on insurers is manifested through investment losses due to the drop in the market value of their investment placements, as well as due to non-fulfillment of the obligation to pay principal and / or interest by the issuer of a debt instrument. Riskiness of assets increased due to the direct impact of "sub-prime" mortgage loans, but also the risk of banks affected by the crisis, and with whom they associate by insurers to hold deposits and investment in their securities. In 2008 compared to 2007, insurers in most OECD countries recorded a significant decline in average net return on investment, both in the field of life, and life

insurance, while in countries such as Hungary, Finland, Belgium and the Netherlands provide returns become negative.

**Graphic 3. Insurance activity indicators in OECD country**



Source: Insurance activity indicators, OECD Insurance Statistics (database), [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org)

In response to the collapse of financial markets, insurers as a rule reduce the share of stocks and increase participation (government) bonds and short-term investments in their investment portfolios. The above tendency is manifested after the 2000-2001 crisis. year, and after the onset of the economic crisis of 2008. However, even government bonds as safe traditional instruments, in terms of the current debt crisis are a source of credit risk for insurers! Therefore, in recent years there is a tendency unusual decrease in the share of bonds and increase the proportion of stocks in the portfolios of insurers. Despite growing uncertainty and increasing regulatory requirements, the role of stocks in the investment portfolio of insurers should not be underestimated. Because of the need for harmonization of property forms with fluctuations in the value of liabilities of insurers and for exploiting effects of risk diversification, owning shares can contribute to reducing the overall risk to the insurer is exposed as an investor.

One way to alleviate the effect of inflation risk may be allocating a relatively large part of the assets of insurers in real assets. Although reducing exposure to inflationary action and provide returns comparable to equity instruments, investments in real assets are characterized by low liquidity and high volatility, which reduces their attractiveness to insurers. As suitable investment alternatives under conditions of high expected inflation affects short-term government bonds and bonds indexed to inflation.

#### 4. INVESTMENT OF INSURANCE COMPANY IN SERBIA

Insurance companies in Serbia is very difficult to manage their portfolio, in addition to limitations in the law they have a "shallow" and "narrow" financial market. It is essential that insurance companies change approach to investment policy. To insurance companies reckon they deserve in the financial markets, it is necessary that the following conditions are met: increase in volume of business, increasing competition and the type of insurance the concentration of capital in the branch, forming pools and insurance associations, integration of insurance and banking products, expanding its investment assets .

Restrictions which are given by the Insurance Act are necessary because they provide stability and do not allow insurers to invest in projects with a high risk long-standing instability and lack of transparency of the insurance sector is the result of poor control and management weaknesses insurance companies. Strengthening the regulation and control is of great importance to the strengthening and development of the capital market.<sup>4</sup>

Based on the analysis and review of data in the previous section of this paper, it is proposed that the investment policy should be concentrate the effective investment of resources with minimum risk, maintain liquidity, diversification of the investment portfolio at the end of the realization of return on investment. To achieve the efficiency of investment required is a detailed financial analysis, identifying the factors that could negatively impact.

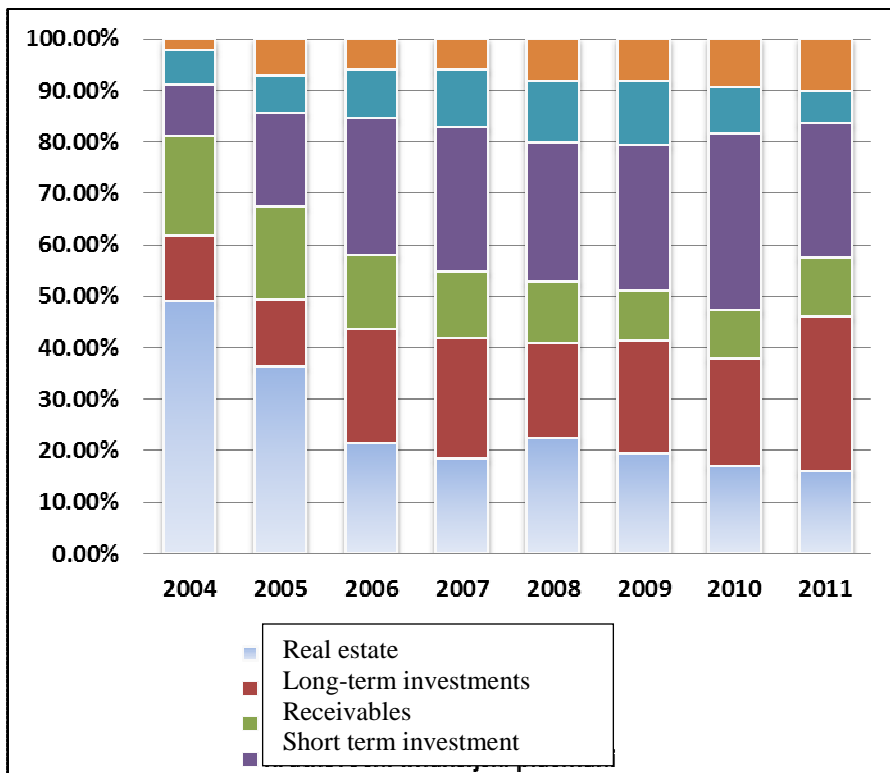
Investment and business in Serbia is exposed to a large extent, credit risk and market risk. Credit risk is primarily from investments in banks. What could be seen from the preceding analysis is that the insurance company in Serbia does not adhere to the policy of equalization of long-term assets and long term liabilities. This creates a problem of an appointment of their rating. The reason is that there are no relevant long financial instruments in the financial market, as well as management decisions to maintain liquidity significantly affects the portfolio. Investments must be matched by size and maturity structure of liabilities of insurance. However, an earlier target insurance company was the first place maintains liquidity without taking into account the matching of assets and liabilities by maturity. It did not manage assets, because securing liquidity. The adoption of the new Insurance Act, which ordered alignment of assets and liabilities, many insurance companies that operated on the principles mentioned above, have lost their license to operate. During the placement of funds in the financial market, insurance companies may be faced with a rise in interest rates,

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<sup>4</sup> Balaban M., Insurance in modern world, monograph, Cikos, Belgrade 2007.

which can lead to fall of value of their investments. Ill-formed portfolio will provide sufficient rate of return. Therefore, it is necessary to establish an implementation of investment portfolio, which will enable with minimum risk and maximum return rate at the same time guarantee a certain degree of liquidity of the insurer in case of an increased number of payments on behalf indemnity damage.

**Graphic 4. Structure of investment of Insurance company in Serbia for period 2004-2011**



To ensure a normal investment climate is necessary to strengthen the capital market, otherwise any investment in this type of securities investors at risk. The function of institutional investors, and therefore insurance companies in the securities market are facing the problem solving the budget deficit, which is negative. Insurance companies, through the development of life insurance should be available to mobilize savings and that is directed towards productive investments, which will raise the level of its economy activity. in shares and corporate bonds. Investments in government bonds are useful, but should not be the only role of insurance companies. In addition, it is necessary to provide adequate flow and accuracy of information from the financial markets to be able to make

appropriate decisions. Status of investor requires not only skilled personnel, but also the operational procedures for making decisions on investment, the ability to report on this work and effective internal control.

Although limited, the effects of the global economic crisis on the investment activities of insurers in Serbia can be identified in the area of coverage of technical reserves prescribed types of assets, as well as in the domain structure of the investment portfolio of the company.

**Table 3. Coverage of technical reserves of insurance companies in Serbia prescribed types of assets**

Year	2007	2008	2009	2010	2011
Coverage of technical reserves prescribed types property	96,4%	90,4%	94,2%	100,29% (nonlife) 101,74% (life)	99,35% (nonlife) 101,51% (life)

On the basis of capital gains, the coverage of technical provisions prescribed types of assets has deteriorated at the time of a crisis. Although below the period achieved notable improvements, the problem of providing quality forms of property in accordance with the appropriate secondary legislation is still pronounced, especially in the field of non-life insurance. In an effort to avoid capital losses and increase the safety and liquidity of its investments, the insurance companies are reorganize structure of own investment portfolio, according to the resultant crisis conditions. In the countries of the region there are certain investment limitations for insurance companies.

**Table 4. Investment limitation for insurance company in Serbia, Croatia and Slovenia**

	SERBIA	CROATIA	SLOVENIA
Securities which are not traded on a regulated market	10%	10% for nonlife	10%
Deposits at banks	35% life 40% nonlife	30%	30%
Real estate	30% life 20% nonlife	30%	30%
Foreign investment	20% capital	No limit in EU and OECD	No limit in EU and OECD

## CONCLUSION

Insurance companies as a non-deposit taking financial institutions are an important part of the institutional infrastructure next investment, which in a competitive game participates in the transfer of savings from lenders to defective economic units, and which almost surpassed the bank as a depository financial institution. In practice, insurance companies and pension funds Investment funds collected from its customers. By purchasing an insurance policy, an individual benefits from insurance, because the insurance company assumes the risk in favor of his client. Insurance companies and pension funds, many individuals use it as their primary investment avenues. That raised funds of their clients; insurance companies and pension funds are channeled to various profitable investment alternatives.

OECD data show that the insurance sector is the highest source of investment for the growth of any economy, which is a real challenge for these institutional investors. Therefore, it is essential that economic policy makers ensure climate that will provide insurance companies the security for their investment.

As a novelty in the field of regulation of investment funds of insurance companies, the concept of Solvency II introduces a method of prudential regulation (Prudent person principle), abolishing the existing quantitative restrictions on investment.

... "Member states should not require insurers and reinsurers to invest in specific property types, because such a request is not in accordance with the freedom of movement of capital ..." (Solvency II Directive, Article 72)

... "The entire property, especially one that serves the coverage of SCR and MCR, should be invested in a manner that ensures the safety, quality, liquidity and profitability of the entire portfolio. Assets used to cover the technical reserves should also be invested in a manner that is consistent with the nature and duration of the liabilities of insurers "... (Solvency II Directive, Article 132)

Only exceptionally, Solvency II allows EU Member States the possibility to impose quantitative limits investments exclusively for those who are already investing risks are not adequately covered by the standard formula calculation of the SCR.

There is a lot of room for growth of the insurance market in Serbia, the fact is that the insurance companies are doing less to promote their activities than banks, and that is on them at their competitive struggle to branch out to the market in Serbia. The economic crisis has slowed down the development of the insurance market, but there is room for development, for example, in 2012, in Slovenia insurance premiums reached two billion euros in Croatia billion, while in Serbia just half a



billion. But certainly need the support of the state in terms of amendments to the Insurance Act, and the introduction of tax incentives for all insurance companies that want to invest in the economy. On the other hand, insurance companies need to work on educating and raising awareness about insurance, but also the creation of products that are acceptable to the existing standard of living in Serbia. Only this way will ensure that the vast free resources insurance company put on economic development, through different forms of investment.

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# SMART SPECIALISATION STRATEGIES IN SMALL OPEN ECONOMIES - THE CASES OF SLOVENIA AND CROATIA

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## **Abstract**

*The paper deals with the theoretical and practical issues of smart specialisation process in small open economies. Smart specialisation strategy (S3) is an innovative policy concept which emphasizes the principles of prioritisation in a vertical sense (to favour some technologies, fields, population of firms, networks) and defines methods to identify desirable areas for innovation policy intervention.*

*The concept has evolved in academic circles in the last decade and has been accepted and recommended by EU and OECD. The preparation of S3 is an ex ante conditionality for all EU member states (regions) in order to sign partnership agreements. It is also an important document in the process of drawing the Cohesion and structural funds in the financial perspective 2014-2020. The analytical part of the paper focuses on innovation performance and the current »state of the art« of the preparation of S3 documents in Slovenia and Croatia. The S3 draft documents in these EU new member states are being prepared by government authorities on the basis of good analytical work and broad consultation with the stakeholders in the process (private business enterprises organised in clusters, the academic sector, intermediary support institutions and government bodies). Case studies of more advanced EU regions can be very instructive for small new EU members. We can admit that the current priorities determined in the S3 drafts in Slovenia and Croatia are quite broad and need further articulation according to the adopted concepts and principles.*

**Key words:** *smart specialisation strategy, innovation policy, small open economies, process of entrepreneurial discovery, EU Cohesion policy*

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## 1. INTRODUCTION

The worldwide economic and financial crisis has caused turbulent social changes in practically all countries and regions. Europe as demographically old and fiscally fragmented region was hit more than other regions in the world. Huge foreign and public debts, increasing budget deficits and volatile financial markets have been influencing the slowdown of economic growth in the majority of European countries and especially jeopardised the stability of the euro zone. Over the period 2010-2014, the overwhelming attention of the international community, EU institutions and national authorities has been paid to the stabilisation of public finances, and the consolidation of banking systems and other financial institutions. EU has prepared and introduced new strategic documents (Europe 2020 – inclusive, smart and sustainable growth, HORIZON 2020, stability pact etc.) in order to promote innovation processes and promote competitiveness.

However, despite several efforts, the development gap between the old and the new EU member states, between northern and southern part of Europe has not diminished in the last 7 years but has to some extent even widened (Mencinger et al, 2014).

The focus of policy makers and other social stakeholders is being oriented to the recovery of the economic growth, the sanation of financial systems and the reduction of unemployment. The other important development issues, such as the enhancement of national innovation systems, reforms of labour markets, improvement of science, R&D and educational systems and value systems, have been in many aspects neglected and put aside. In order to support the convergence process and to (re)gain competitive position and economic strength, the EU (including every member state and region) must — strive to enhance its innovation capabilities at the macro and micro level (Europe 2020) besides ensuring macroeconomic stabilization and the recovery of economic growth. National R&D and innovation systems and corresponding macroeconomic policies should trace an important trajectory towards knowledge based economy in order to compete successfully in the global market, especially with new emerging economies such as BRICS countries. Innovations, either technological or non-technological, are considered as the main drivers and leverages of total factor productivity, economic growth and international competitiveness.

The objectives of the paper are manifold, ranging from theoretical to practical policy making issues. Firstly, the paper deals with the theoretical concepts underlying the process of preparation of S3 (smart specialization strategies) as the main documents at national (regional) level for the drawing of EU Cohesion funds and for the restructuring of innovation and R&D systems in new member states

(regions). Secondly, the complex and demanding procedures of the preparation of S3 documents for the financial perspective 2014-2020 are discussed. The fourth chapter overviews the present standings in innovation performance and “state of the art” of national smart specialization strategies in small open economies: Slovenia and Croatia. Finally, some lessons are learned from the experience of developed European regions and concluding remarks are given for the purpose of improving the present strategic documents in the analysed countries.

## **2. THEORETICAL CONCEPTS AND INSTITUTIONAL FRAMEWORK FOR SMART SPECIALISATION**

Smart specialisation has emerged as relevant concept and policy agenda for science, technology and innovation against the background of important changes in the world economy. These economic changes are the result of both long-term and structural trends e.g. the diffusion of ICTs, the rising supply of R&D and human capital and other knowledge-based assets, globalisation of production systems but also of business R&D, the rise of services and of new global players and shorter-term developments such as fiscal austerity in EU countries and quests for savings in public spending; the devolution of national innovation policy prerogatives to specialised agencies (public or private) and to regional governments; the (re)emergence of “new” industrial policy with a focus on revitalising manufacturing production activities in Europe (OECD, 2013).

The start of the concept can be traced back to the work of Etzkowitz, (2002), Foray and van Ark (2007) and other members of the “Knowledge for Growth”, an EU expert group tasked with finding an alternative to public policies that spread public investments in knowledge and innovation – research, education, public support to business R&D, etc. thinly across technology research fields such as biotechnology, ICTs, and nanotechnology. A central point of the smart specialisation argument advanced by Foray and others is that governments should focus their knowledge investments in activities – not in sectors per se – that reflect areas where a region or country has some comparative advantage (specialisation) or emerging areas where entrepreneurs could develop new activities (diversification). This connection between specialisation and technological diversification in the context of regional development and growth has been highly influential as it demonstrated that the smart specialisation as policy framework is very well suited for dealing with the problems of place-based growth (OECD, 2013).

The principles behind smart specialisation rapidly became a central element of the Europe 2020 Strategy and smart specialisation strategies have been incorporated as

an ex ante conditionality for countries and regions to access the European Cohesion Fund, structural funds and for Regional Development Fund (ERDF).

The theoretical origins of smart specialisation are deep and are grounded in the classical economic theories of economic growth (e.g. the theory of the division of labour by Adam Smith) and notably trade specialisation. Modern recent strands of economic thought from evolutionary economics to the economics of agglomeration are also visible in the smart specialisation concept, notably the issue of increasing returns to knowledge, the role of knowledge spill-overs and rigidities (e.g. labour market barriers) that prevent shifts in specialisation patterns. Smart specialisation also draws on the broad economic research on industrial development [e.g. Marshallian externalities, industrial districts; flexible specialisation and neoclassical spatial economics (Krugman and Venables, 1995)].

Smart specialisation thus is very much an economic framework focussed on small countries (regions) that aims to illustrate – for the purpose of policy making – how public policies, framework conditions, but especially R&D and innovation investment policies – can influence economic, scientific and technological specialisation within a regional policy framework and through this mechanism, productivity, competitiveness and economic growth. Another important feature of the smart specialisation concept is that through policy interventions focused on releasing entrepreneurial forces, it aims to impact not only on the rate but also the direction of innovation.

The core elements of the smart specialisation concept include activities that show:

1. potential for discovering technological and market opportunities and have potential to provide learning spillovers to others in the economy;
2. have scale and agglomeration economies or produce characteristics of coordination failures;
3. are natural candidates for prioritisation (Rodrik, 2004).

Smart specialisation policy includes 5 basic principles:

### *1. Granularity*

The level at which priorities are identified, assessed and supported should not be too high, otherwise smart specialisation transforms itself into a sectoral prioritisation. There is no rationale to prioritise sectors in terms of innovation policy.

However, intervention at too detailed a level would transform smart specialisation into a horizontal policy via which all micro-projects of some merit would be

supported (a task usually done by R&D tax credit systems or programmes of R&D subsidies targeting the whole population of firms).

The point here is to identify the right level, between sectors and very micro-activities, at which it is possible to observe in detail the pieces of the knowledge economy that a region can take as a basis for smart specialisation. The relevant level is of “mid-grained” granularity. At this level:

- new activities/projects involve groups of firms and other (research) partners;
- the aim is to explore a new domain of (technological and market) opportunities;
- there is potentially a certain weight and a high significance relative to the regional economy (in terms of the kind of structural changes it is likely to generate). (Foray, Goenaga, 2013)

## 2. *Entrepreneurial discovery*

Smart specialisation involves a self-discovery or entrepreneurial discovery process that reveals what a country or region does/will do best in terms of R&D and innovation. There is always an element of gambling and risk in any policy aimed at identifying and prioritising the firms, technologies or sectors to be supported; and the best bet is entrepreneurial trial and error. This principle is so important that any model that did not include this provision would have an entirely different character. Its importance lies in the association of two words: entrepreneurial and discovery.

Entrepreneurial discovery means that the notion of entrepreneurial discovery is not only important to emphasize the bottom-up/decentralized logic of the policy process and thereby to oblige policy makers to design and implement modern governance mechanisms. It is also crucial to introduce a central distinction between “innovation” and “discoveries”. What will matter and will need to be identified and supported as vertical priorities are not “simple” innovations undertaken by individual firms. Horizontal policies are just designed to subsidise the costs of R&D and innovation and incentivise any potential innovator and “good projects”. Vertical policies need to target activities aiming at exploring, experimenting and learning about what should be done in the future within one sector or between different sectors in terms of R&D and innovation.

## 3. *Priorities emerging today will not be supported forever*

While some priorities emerge and subsequent activities will be supported, it is expected that three or four years later other discoveries will be made in other parts of the national (regional) system and the subsequent emerging activities will also

be supported. This implies that the now “old” priorities should no longer be part of the smart specialisation strategy (Rodrik, (2004).

#### *4. Smart specialisation is an inclusive strategy*

Within the regional economy, different sub-systems (sectors, clusters) perform very differently. It would be easy to look only at the most dynamic and productive part of the economy to search for entrepreneurial discoveries and select priorities. However, this would represent a quite narrow and exclusive view of smart specialisation. This also represents an inefficient process of resource allocation since it is precisely the less dynamic parts of the economy that desperately need structural changes (modernisation, diversification or transition), and therefore to be part of the smart specialisation strategy (Phelps, 2012).

#### *5. The experimental nature of the policy and the need for evaluation*

Clear benchmarks and criteria for success and failures are needed. Because of its nature S3 policy is experimental: it is the nature of entrepreneurial discovery that not all investments in new activities will pay off. Evaluation is therefore a central policy task so that the support of a particular line of capability formation will not be discontinued too early nor continued so long that subsidies are wasted on non-viable projects.

### **3. CURRENT PROCEDURES FOR THE PREPARATION OF SMART SPECIALISATION STRATEGIES IN EU COUNTRIES IN FINANCIAL PERSPECTIVE 2014-2020**

European Commission has prepared procedures, time schedules and methodological guidance for policy-makers and implementing bodies on how to prepare for and how to design, draft and implement a national/regional research and innovation strategies for smart specialisation (RIS3).

Rather than an all-encompassing, prescriptive agenda, the RIS3 documents are to be understood as a general orientation document which will evolve as the concept develops. Indeed, the document should be improved and updated on a regular basis.

Most of the concepts are based on the previous experience that the European Commission has gained over the years by working with the countries and regions through initiatives STRIDE and the PRAIS, as well as the former research and

innovation programmes. The EC also gained experience from comparative studies by the OECD in this field (OECD, 2012).

The RIS3 Guide sets out a number of practical steps to design a national/regional RIS3, namely:

1. the analysis of the national/regional context and potential for innovation,
2. the set-up of a sound and inclusive governance structure,
3. the production of a shared vision about the future of the country/region,
4. the selection of a limited number of priorities for national/regional development,
5. the establishment of suitable policy mixes, and
6. the integration of monitoring and evaluation mechanisms.

**Figure 1. Steps to develop a RIS3**

## Steps to develop a RIS3

**Step 1:** Analysis of regional potential for innovation-driven differentiation

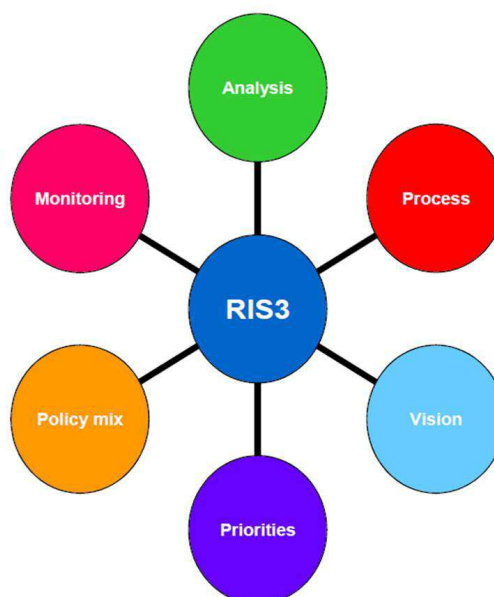
**Step 2:** Design and governance – ensuring participation & ownership

**Step 3:** Elaboration of an overall vision for the future of the region

**Step 4:** Selection of priorities for RIS3 + definition of objectives

**Step 5:** Definition of coherent policy mix, roadmaps and action plan

**Step 6:** Integration of monitoring and evaluation mechanisms



Source: European Commission

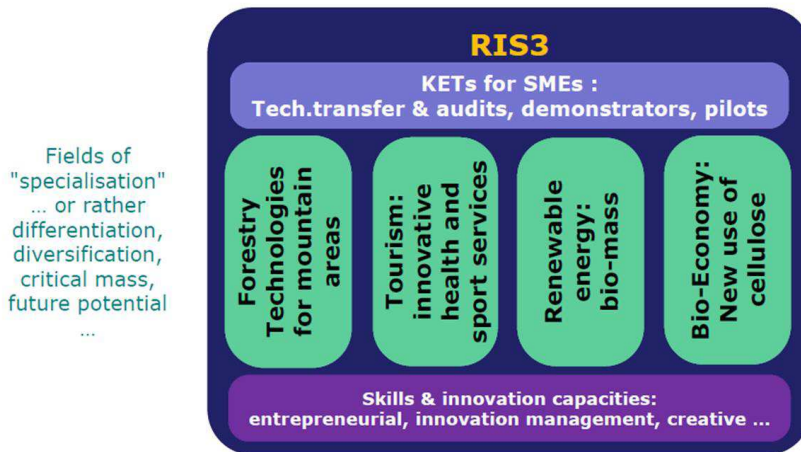
The guide also presents an array of delivery instruments at the disposal of national and regional policy makers for the development of the strategy and also advice on horizontal approaches, such as sustainable growth, social innovation and skills development. The document contains examples of different experiences on the development of innovation strategies.



Consistently, this guide is to be interpreted as the 'trunk' establishing the skeleton structure from which a number of 'branches' develop and grow.

**Figure 2. Hypothetical structure of RIS3**

## Hypothetical Structure of a RIS3



Source: European Commission

Slovenia, like the other EU member states, is in the process of preparing the key national strategic documents for the period 2014-2020, notably the partnership agreement, the smart specialisation strategy (S3) and the corresponding operational programmes (OPs). In this context, a coherent and well-designed S3 should provide a framework for EU funds to support the restructuring of the Slovenian economy and enhanced performance of the national innovation system. From the standpoint of EU research policy, there is also a need to align funding secured through competing in the 8th research framework programme (HORIZON 2020) and the funding of research infrastructure and R&D and innovation programmes through the Structural Funds.

## 4. INNOVATION PERFORMANCE AND S3 DOCUMENTS IN SLOVENIA AND CROATIA

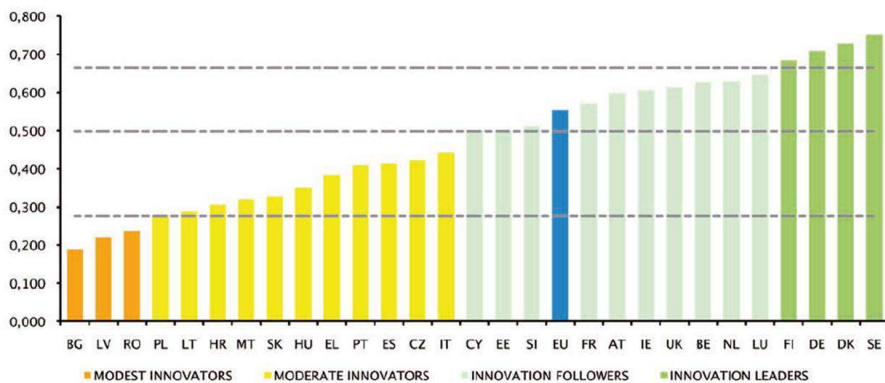
### 4.1. Where do Slovenia and Croatia stand in terms of innovation

The analysis of innovation performance in EU28 member states in 2014 is summarised by the innovation composite index prepared by the Innovation Union Scoreboard. The EU member states fall into four performance groups. The green columns (Figure 3) categorise enterprises from Sweden, Germany, Denmark and Finland as innovation leaders. The performance of innovation leaders is 20% above the EU average. Slovenian enterprises are categorised into the second group (»innovation followers«) and have a below average composite index compared to EU28 (0,54). The enterprises from 11 countries (Great Britain, Belgium, Austria, the Netherlands, Ireland, Luxembourg, France, Cyprus, Slovenia, Lithuania, Estonia) falling within the group of innovation followers performed less than 20% above but more than 10% below the EU average innovation performance. Croatia is categorized into the third group of countries (»moderate innovators«) having performed less than 10% below but more than 50% below the EU average. The last category of 3 countries (Latvia, Bulgaria, and Romania) are »modest innovators«.

Figure 3. EU member states' innovation performance

## EU Member States' innovation performance

Figure 1: EU Member States' innovation performance



**Slovenia's** innovation performance has been steadily increasing in the period 2006-2014 with a minor downfall in 2012. Its relative performance to the EU has improved from 85% in 2007 to 93% in 2013. Consequently, Slovenia moved forward from being a moderate innovator in 2006 and 2007 to becoming an innovation follower in 2008.

Slovenia's relative strengths lie in international scientific co-publications, the level of business enterprise expenditure on R&D and public-private scientific co-publications. On the other hand, its relative weaknesses are the number of non-EU doctorate students and knowledge-intensive services exports.

The value of most innovation indicators has been growing in the case of Slovenia. High growth has been observed in the number of Community trademarks, Community designs, non-EU doctorate students, and license and patent revenues from abroad. However, strong declines in growth have been identified in two indicators, namely non-R&D innovation expenditures and sales share of new innovations. (Innovation Union Scoreboard, 2014).

After an initial decline in 2007, the innovation performance of **Croatia**, the »moderate innovator«, improved at about the same rate as that of the EU until 2011. Innovation performance started to decline in 2012 (in particular due to a declining sales share of new innovative products) leading to a decrease in the performance relative to the EU from 60% in 2011 to 55% in 2013.

Croatia performs below the EU average in most indicators, most notably for Community designs, Community trademarks and non-EU doctorate students. Its relative strengths compared to the EU lie in international scientific co-publications, youth with upper secondary level of education and non-R&D innovation expenditures (IUS, 2014).

High growth has been observed for non-R&D innovation expenditures, new doctorate graduates and international scientific co-publications. On the other hand, declines in growth have been recorded in Community designs, PCT patent applications in societal challenges, and in license and patent revenues from abroad.

## **4.2. Drafting of S3 documents in Slovenia and Croatia**

### **4.2.1. Slovenia**

At the beginning of 2013, Slovenian authorities started to prepare in parallel different programming documents: the programme of structural reforms, partnership agreement (PA), ERDF operational programme and Smart

Specialisation Strategy as an ex-ante conditionality for the drawing of Cohesion funds. Due to the unstable political situation (the changes of coalition government in 2014), the appropriate management of the S3 process was hindered and the submission of the strategy was delayed until the end of 2014. That is why this analysis is based on the last draft version of S3 document.

The strategic objectives of S3 are to establish state of the art, responsive, dynamic, strategically-guided, inclusive and globally connected research, innovative and entrepreneurial eco-system.

The S3 draft is structured in two pillars:

- a. The first one refers to the entrepreneurial and innovation ecosystem which, by its nature, should primarily be horizontal, whereas its mission is to generate and promote new ideas to be developed through an entrepreneurial initiative by thus ensuring entrepreneurial growth and development.
- b. The second pillar of the S3 refers to value chains and networks where niche products and services are being identified and where critical mass is created for the global breakthrough on the basis of connecting excellent competences and potentials, which engages various stakeholders, disciplines and areas in the global context. Here, concentration is of key importance because scattered potentials in global competition cannot lead to success.

Cross cutting fields of envisaged specialisation are based on different analytical papers (Kotnik et al., 2013, Kotnik, Burger, 2014), on emerging and existing innovation entities and networks (Centers of Excellence, Competence Centers, regional Development Centers, technology parks, clusters, business consortia) and on 49 entrepreneurial initiatives prepared in the year 2014. These fields can be summarised in the following domains:

- smart factories (for example in the electroindustry and machine building by the use of ICT and process control technologies);
- smart buildings and homes;
- smart cities;
- rational use of energy;
- health.

A package of measures envisaged in S3 deals with individual domains of development policies whereby:

1. The measures in the fields of RTDI are focused exclusively on the S3 and support all priority areas of application at the same time;

2. The RTDI measures are complemented by horizontal measures in the fields of human resources, the promotion and attractiveness of economy and business environment. These are horizontal measures offering support to all priority areas of application while also potentially addressing areas outside the S3. The establishment of competence centres can also be adequate outside the S3, e.g. in paper industry. The same applies to international mobility of higher education teachers. Such mobility is important for a quality study process in the fields relevant to the S3 but at the same time this measure cannot be limited and is not reasonable to be limited exclusively to the S3 priority areas of application. This differentiation is also reflected in thematic objectives and funds from which the horizontal measures will be financed.
3. The third set contains vertical measures specific to each of the priority areas of application.

#### **4.2.2. Croatia**

The S3 Croatia has been based on 4 general principles (“4 C’s”): Choices and Critical mass, Competitive Advantage, Connectivity and Clusters, and Collaborative leadership.

Croatia has sought to make clear choices for specialization based on achieving critical mass (“C1”). This is a particular issue for the country as it has a high proportion of micro and small businesses and a low population compared to most other member states.

S3 Croatia builds on clearly identified and verifiable competitive advantages and excellence (“C2”). Substantial analysis has been undertaken for the purposes of developing the S3 using robust economic and innovation indicators and including an analysis of key enabling technologies deployment in Croatia.

Policy is directed towards cooperation and synergy in both a national and international context (“C3”). Building national and international networks for both firms and research institutions, including through initiatives such as the HORIZON 2020 Teaming activity is at the heart of the S3 strategy for Croatia.

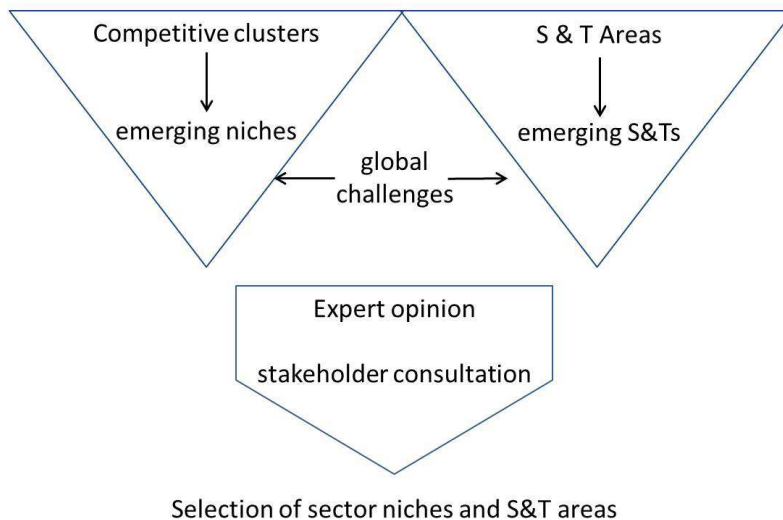
Finally, the proposed actions for Croatia are based on achieving close collaboration between the private business sector, the government, and the publically funded science & technology (S&T) sector (“C4”). This ‘triple helix’ model of innovation is widely embraced across Europe and is centrally addressed in the emerging National Innovation System (NIS) of Croatia. (S3 Croatia, 2014)

In developing the S3 Croatia the country has made use of the EU S3-Platform, set up to enable the exchange of information and good practice regarding Member States smart specialisation strategies. The development of the S3 Croatia has also closely followed the RIS3-Guide that was established as a reference document for the development of S3-strategies at national and regional level in all EU-Member States.

In the conceptualisation of S3 document the Croatian Government has systematically followed an entrepreneurial process of discovery. The strategy has been developed through an active stakeholder process that brings together entrepreneurs and researchers, public bodies involved in innovation, and relevant groups from civil society. By adopting such a process the Croatian Government has avoided relying on a traditional top down, centralized approach. The entrepreneurial discovery process has been key to building a robust S3 for Croatia. The approach to identifying emerging priorities is shown in Figure 4.

**Figure 4. Approach to identifying emerging priorities for Croatian S3**

### Approach to identifying emerging priorities for Croatian S3



## 5. OECD CASE STUDIES AND CONCLUDING REMARKS

In 2013, OECD has provided experiences in policies and governance mechanisms for building smart specialisation in several countries (Finland, Estonia, Netherlands, UK) and regions (Flanders, Andalusia, Basque country, Upper and Lower Austria, Malopolska region) (OECD, 2013). The case studies in above mentioned countries and regions can be very instructive also for the process of preparing S3 in new member states. It should be pointed out that practically all new EU member states (Estonia, Latvia, Lithuania, Slovakia, Czech republic, Cyprus, Hungary, Malta, Slovenia, Croatia) decided to prepare the S3 document at the national level.

The cases demonstrate a variety of multi-level governance in action. Each case is very context specific and involves many institutions, agencies and government bodies. The regional – national alignment of strategies and policies is important, although some focuses of strategy formulation are on the regional level.

In regions with relatively strong innovation capabilities, a rich network of institutions and well-organised stakeholders, one of the key challenges for policy makers is how to make a balanced choice of ‘smart’ priorities, taking account of economic strengths, as well as being flexible and open to new opportunities. In a considerable number of case studies public investments for R&D are still spread across a wide number of priority areas. In less advanced regions the key challenge is to provide the right framework conditions to build capabilities that stimulate the entrepreneurial discovery process, as well as mobilising stakeholders to interact with government and cooperate with each other. These are often more generic policies rather than domain specific policies.

The need to develop linkages with regions and nations across the borders (internationalisation process) is evident for most cases. Internationalisation of individual businesses and clusters is high on the policy agenda. However, the cases also demonstrate that implementing this in practice still faces a lot of troubles. For a start, the smart specialisation strategy processes are mostly defined within the parameters of the own region, even if this region borders another region with a rich pool of complementary assets, such as is the case with Lower Austria and its neighbouring region, the city of Vienna. Despite the strong willingness to develop cross-border linkages with innovative eco-systems or clusters, the lack of practical policy instruments to support them creates a bottleneck. In the Malopolska region the life sciences cluster has established a co-operation agreement with the French Genopol Evry to jointly manage development projects, finance and to commercialize research.

While good progress has been made to collect data and develop indicators to monitor the innovation performance of regions and countries, there is still a challenge to develop appropriate evaluation frameworks for smart specialisation strategies and policies. Most evaluation efforts are geared to the programme and project level. The impacts of these policies are mostly long-term and are difficult to attribute to the overall strategy process.

The case studies confirmed that policy makers are developing concepts how to evaluate smart specialisation strategies, but this task is still in progress. Particularly for the European regions, to prepare their smart specialisation strategies in order to obtain European Structural Funds, this is a task for the period 2014-2020. For example, in Lower Austria a Steering Committee has been created to oversee the overall development of the strategy; it is principally responsible for information exchange and consensus building. On the top of that, the smart specialisation approach is characterized by sophisticated systems of evaluation, spanning from the impact of single initiatives on specific players to those of integrated initiatives comprising wider sectors of the economy/RIS. Precisely, measuring of impact then takes place at regional level, programme level and project level; the results of these evaluations are used to indicate future strategy (OECD, 2013).

The main messages of the OECD should be applied also in the case of Slovenia and Croatia:

- An impressive array of evidence based innovation strategy processes and policies have been put in place.
- There is a widespread understanding amongst policy makers of the bottlenecks and risks of top-down government induced specialisation.
- Stakeholder involvement and the combination of bottom-up and top-down prioritisation processes appear to be a common pattern in studied regions. Nevertheless, assessing their effectiveness in the short- and long-term would need a closer study.
- The prioritisation process and focusing on a limited number of “knowledge investments” is not uncontested and still proves difficult to implement in policy practice. A lack of a coherent set of selection criteria, duplication of prioritisation processes and political pressures form hurdles.
- The key policy instruments for smart specialisation are already in place in today’s portfolio of innovation policies. The challenge is to find the appropriate policy mix that fits with the specific strategy of a region and to align it with the policy instruments available at national and international level.
- The entrepreneurial discovery process can come from many actors, and requires a level of self-organisation and commitment from these stakeholders in order to scale this up from an individual “good idea”, to a



novel direction with a potential to impact value chains and clusters. This requires considerable time and resources. The challenge for policy makers is to know when and how to support and prioritise these and to develop a balanced portfolio of existing initiatives.

- Many valuable diagnostic and prognostic tools are currently used by policy makers and entrepreneurial stakeholders and contribute to enhance evidence based policy making. There could be a role for governments to make the availability of these types of strategic intelligence more transparent and accessible.
- Cross-border collaboration, an essential element of the smart specialisation approach, is high on the policy agenda but still faces various practical bottlenecks. This asks for multi-level governance solutions.
- Evaluation and monitoring of the overall smart specialisation strategies is work in progress, albeit building blocks – e.g. programme evaluations, monitoring systems, scoreboards – are put in place in many of the cases. The current state of the art for baseline data profiling for policy prioritisation is much more developed than that for on-going monitoring.

There remains much to be done by the Slovenian authorities to further improve the intervention logic under-pinning the smart specialisation priorities by linking them more clearly to the overall challenges faced in terms of creating a more sustainable (in both financial and ‘ecological’ terms) and competitive development path. The selected priorities are quite broad and driven by ‘what exists’ rather than ‘what do we need to achieve or change’ or ‘what technologies do we master’ rather than ‘where are the market opportunities’.

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# **ANALYSIS OF FINANCIAL RISK MANAGEMENT**

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**B.M. ALIEVA<sup>1</sup>**

Factoring as a financial instrument for business began the formation in Kazakhstan not so long ago. This type of operation provides collection of receivables of the client, crediting and a guarantee from currency and credit risks. Practice showed that factoring proved as the effective tool for financing of small and medium business. According to the experts International Factors Group, it is possible to estimate volume of the Kazakhstan market of factoring at \$2 billion. Services of factoring assume fast receiving the most part of payment on debts, decrease in expenses on maintaining accounts, improvement of control of receivables. Thus the factoring structure (bank or the company) plays a role of the credit manager, operating risks on this service, the account and collection of accounts payable and control over the payment scheme of the debtor.

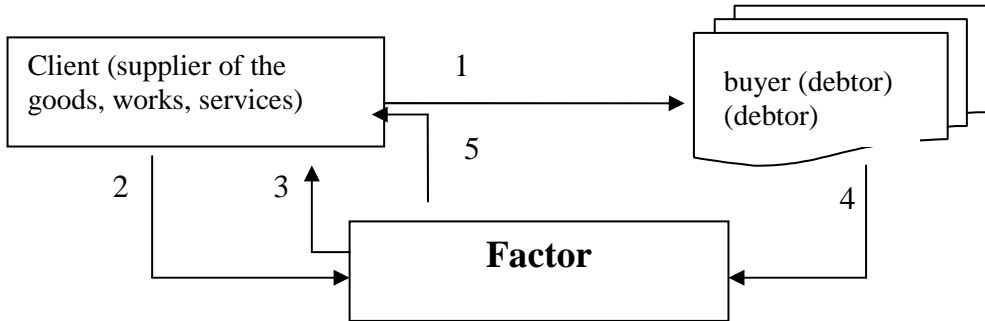
In the conditions of the competition the factoring companies expand the range of offered products, and the organizations representing other segments of the financial market (for example, insurance companies, banks, collector agencies, etc.), start to develop the specialized directions for mutually beneficial cooperation with the factoring companies. Thus, naturally, there is a need for a return assessment from investments and efficiency of activity in the factoring market, to carry out which it is impossible without an assessment of the corresponding risks. Absence of significant researches on the matter even more raises a problem urgency. First of all, we will list the main participants of factoring operation (see drawing 1). In the standard transaction participate a factor (the factoring company or bank), rendering services to the client, the client and his buyers receivables on which the client transfers to a factor. Two main types of factoring are widespread in Kazakhstan: factoring with recourse and factoring without recourse. In the first case a factor, without having received in time payment from buyers – debtors, has the right after a certain period (so-called preferential) to demand duty payment in the full size from the client (the supplier to whom financing was provided). Respectively, as recourse with reference to factoring understand the right of the return requirement of a factor to the supplier in case of insolvency of the debtor.

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In case of factoring without recourse (sometimes it call factoring with the guarantee) the factor takes up all risks connected with non-payments. The factor can involve the insurer and insure a part of risk of non-payment. It is natural that this scheme is more risky for factoring, and as a result, factoring cost for the client is quite high.

**Figure 1. The scheme of factoring services**



It is also important to note the substantial differences in the factoring and its main "competitor" - credit. In lending transactions are only two players (the lender and the borrower), while the factoring of a minimum of three (the client, the creditor and the debtor). The recipient of the money when factoring is one person - the customer (supplier), and their return by another person (the buyer). Thus, the time for completion of the factoring operation is always associated with the term of execution of the transaction for the sale of goods with deferred payment. In principle, the actual user of the loan is the buyer of goods, since it was he interested in obtaining trade credit. Taking the goods, he becomes a debtor in relation to the supplier, who in turn assigns the factor of the right to receive money due to him. This is reflected in the formation of specific risk factors in the provision of factoring services.

Besides, within factoring operation there are risks, not characteristic for crediting. The main difference of factoring from the credit is distribution of a source of credit risk between the client and the buyer whereas when crediting it arises only from the borrower.

So, we will list main types of risks for participants of the factoring transaction. Risks of the factoring company:

- 1) Credit risk (risk of a non-payment) which source is either the buyer or the client (in case of presentation to it recourse)
- 2) Risk of loss of liquidity from - for untimely payment of the buyer or the client

- 3) The risk of fraud caused by difficult structure of the factoring transaction that complicates the full preliminary analysis of all his participants.

The main risks of factoring operations: del credere risk, currency and political. The risk due to the possibility of default del credere / incomplete or late repayment due to dishonesty or breach of the buyer's solvency or exporter contract conditions (in the case of international factoring). Parties to the transaction face two major types of risk: credit risk and liquidity risk. Credit risk means that the participants in the transaction may not obtain payment of a monetary demand. This risk usually arises when a participant becomes (in the case of factoring, accounts receivable, or a client, which is also important when factoring with recourse).

The risk of liquidity is a risk of that the party – the debtor can't carry out of the obligations in due time, having worsened, thus, liquid position of the recipient of means. In case of factoring, the debtor usually is the buyer. The factoring companies face this type of risk most often as according to the developed trading practice of a delay at payment of deliveries with a delay of payment is a commonplace. The factoring company initially allows possibility of a small delay from the buyer called so-called «the technical reasons» i.e. actually standard practice not to pay precisely in time. It should be noted that the risk of liquidity only in the presence of a number of additional circumstances can develop into credit risk.

Currency risks are caused by change of exchange rates that leads to losses when translating means from currency of the buyer in currency of the seller. Now all calculations between the Kazakhstan companies it is carried out to tenge therefore the currency risk can arise only at transactions of the international factoring.

Political risks are connected with impossibility to execute the export contract or to carry out calculations for it from – for changes of a political situation in the country of the seller or in the country of the buyer.

It should be noted that for the factoring business as a sphere characterized by the same risks as the business services sector. All risks of business, depending on the factors influencing their occurrence can be divided into external and internal. External risks from macroeconomic factors, in the case of factoring businesses do not differ fundamentally from those that arise under any other business. To a large extent we are interested in specific internal risks.

So, risks are identified, the following stage is their assessment. As it was already noted, specifics of factoring transactions is that risks proceed not only from the borrower (plus external risks), as in usual crediting, but also also from the client,

which can appear unfair, not execute the contract provision with the buyer etc. Therefore it is necessary to estimate all these risks in aggregate. One of weak lines of a risk management of many factoring companies is that at the conclusion of the contract with the client they, first of all, estimate his own reliability and solvency, without giving sufficient attention to quality of transferred receivables.

For a start on available for the supplier or bank to statistics of payments the payment discipline of the debtor is estimated. The probability of failure to pay of debt can be measured as a share of unpaid accounts ( $S_{unpaid}$ ) in total of the conceded accounts ( $S$ ) in a money equivalent:

$$P(\text{unpaid}) = S_{unpaid} / S \quad (1)$$

The probability of delay of payment is estimated similarly: a share of back payments ( $S_{delayed}$ ) in total of the conceded accounts in a money equivalent:

$$S(\text{delayed}) = S_{delayed} / S \quad (2)$$

To carry out such appraisal expediently concerning each debtor. Than more share of back payments, subjects a high probability of that at the debtor can arise problems with repayment of the obligations. For calculation of probability of this event it is possible to determine by each client for a number of the periods specific weight of accounts on which there were refusals of payment from debtors for the specified reasons, and also growth rates of number of such accounts. If there is a tendency to growth of unpaid accounts or rates of their growth advance growth rates of total number of accounts, with this client it is necessary to recognize carrying out factoring operations inefficient. So, because of the supplier it is possible to define probability of non-payment as follows:

$$P(\text{supplier}) = N_{\text{deviation}} / N \quad (3)$$

where  $N$  - total number of deliveries,

$N_{\text{deviation}}$  – number of deliveries on which there were refusals of payment because of the supplier.

The probability of a non-return of the credit will develop of probability of bankruptcy (insolvency) of the debtor, probability of default by the supplier of contract provisions and probabilities of a default for the external reasons not depending on the parties:

$$P(\text{not return}) = P_{\text{unpaid}} + P_{\text{supplier}} + n \quad (4)$$

It should be noted that the reason for non-repayment of debt the debtor may also be a fraud on his part, and from the supplier. To assess the likelihood of fraud is difficult to quantify, but qualitative assessment can be obtained by studying the firm's reputation and client companies debtors. Due to the fact that not all factoring companies and even banks have accumulated enough statistical base of clients and their customers to assess credit risk and liquidity risk is also proposed to use traditional methods for assessing the solvency of the debtor, such as rating and expert methods. The credit rating is made by evaluating the financial condition of the borrower (his solvency and financial stability) on the basis of financial statements (balance sheet, income statement). The main criteria of insolvency, which characterize the structure of the balance sheet are as follows: the coefficient current liquidity ratio of own funds, and the coefficient of restitution (loss) to pay. Based on the above system parameters can be estimated probability of insolvency of the company (Table 1).

1) Current ratio is calculated as follows:

$$\text{Current ratio} = \text{current assets} / \text{short-term obligations}, \quad (5)$$

i.e. as relation of size of current assets to size of short-term obligations;

2) The factor of security is defined by own current assets as the relation of own current assets to the sum of current assets:

$$\text{Factor of security with own current assets} = \frac{\text{Own current assets} - \text{Non-current assets}}{\text{current assets}}, \quad (6)$$

3) If at least one of the above-stated factors matters, indicating on an inadmissible or high risk level, the factor of restoration (loss) of solvency pays off. It is defined as follows:

$$\text{Factor of solvency} = \frac{FCLB + Y/T(FCLB - FCLE)}{2}, \quad (7)$$

where FCLE — value of factor of the current liquidity for the end of the reporting period, FCLB - value of factor of the current liquidity for the beginning of the reporting period, T — duration of the reporting period in months, Y — the period of restoration (loss) of solvency. At calculation of factor of restoration of solvency of Y = to 6 months. At calculation of factor of loss of solvency of Y = to 3 months. In the analysis of data of the annual reporting duration (T) is accepted to equal 12 months, for the first quarter — to 3 months etc.

**Table 1. Assessment of solvency of the buyer**

Indicator	Meaning	Quality assessment	Quantitative assessment
Factor of the current liquidity (1)	<1	Inadmissible risk	50-100%
	From 1 to 1,5	High risk	10-50%
	From 1,5 to 2	Moderate risk	5-10%
	>2	Low risk	1-5%
Factor of security with own current assets (2)	<0,1	Inadmissible risk	50-100%
	From 0,1 to 0,4	High risk	10-50%
	From 0,4 to 0,7	Moderate risk	5-10%
	>0,7	Low risk	1-5%
Factor of restoration (loss) of solvency (3)	<1	Inadmissible risk	50-100%
	From 1 to 1,2	High risk	10-50%
	From 1,2 to 1,5	Moderate risk	5-10%
	>1,5	Low risk	1-5%

Thus, if value of one of the two first factors is lower standard, and the factor of restoration of solvency accepts value less than 1, the structure of balance of the enterprise can be recognized unsatisfactory, and the enterprise – insolvent.

In this case the cumulative indicator of credit risk will represent average these indicators. If to consider them as equivalent, level of credit risk will be their arithmetic-mean. For an assessment of credit risk and risk of liquidity it is possible to calculate also growth rates of non-payments (back payments) and to compare them to growth rates of payments as a whole (if the first above, the situation becomes complicated).

If all levels of separate risks expressed as a percentage (i.e. probabilities) are known, it is possible to calculate the general level of risks of the factoring transaction which will represent the following:

$$P_{\text{fact.}} = (P_{\text{s.t.}} + P_{\text{liq.}}) P_{\text{curr.}} P_{\text{per.}} P_{\text{curr.}} P_{\text{polit.}} P_{\text{legisl.}} P_{\text{operat.}},$$

Let's try to analyses from the point of view of need of minimization of risks the main activities of the factoring company:

- Fond;
- Risk management:
- Internal business – processes;
- IT providing;
- Marketing;
- Sale and regional network;



- Personnel.

As the main components of competitiveness factoring the companies act as IT – providing, internal operational processes, system risk - management, cost of monetary resources.

Cost of monetary resources is the main element of prime cost of factoring products. Finally it defines the price of a factoring product, so, and competitiveness of the factoring company to the sphere of sales.

IT providing and internal operational processes form key competitive advantages on each factoring product at a stage of its creation, sale and service.

The system risk – management also is of great importance, as principles of a risk management define, what products the company can offer the clients.

Main ways of minimization of risks of the current activity of the factoring company it: Use of three-level model of a risk management; Creation of multilevel system of decision-making; Automation of processes; Flexible regulation of working conditions with the client; Application of scoring -rating model of an assessment of clients and debtors; Division of operational and strategic functions of client service.

Application of three-level system of a risk management provides control and the analysis of actions of the client at all stages of existence of a factoring product. At a stage of sales this function is carried out originally by the seller, then risk manager, and at a stage of service of the client – the manager on clients and risk manager.

The multilevel system of the decision-making, concerning interaction with the client and transaction parameters, allows to minimize risk of the wrong assessment. At an initial stage the analysis of the transaction is carried out by the seller, then risk – the manager, the final decision is accepted jointly with participation of the management of factoring division.

Automation provides a choice and control of the specialized factoring software for maximum quantity processing business – processes that will allow to reduce service terms to clients and will reduce probability of the mistakes resulting influence of a human factor. The specialized software allows to automate the majority of stages of the factoring transaction.

As shows world experiment, in providing the enterprises with fast and short working capital factoring just is engaged. In Kazakhstan, along with banks which not so willingly render factoring services as there are own bank products, already there were first specialized factoring companies. The subjects of MSB having stable debit payments, interested in urgent financing of the cash gaps became their clients.

However the factoring potential while is used not completely. There are two main problems disturbing to development of factoring in Kazakhstan. The first consists in weak awareness of business on the factoring possibilities, the second as it was noted, - in absence of state support. Both problems are interconnected.

That business, especially in regions, knew about factoring more, it is necessary to open regional representations, to carry out explanatory work. All this demands additional resources which developing subjects of factoring simply don't have. As participants of a meeting, by big incentive for development of factoring both in Russia specified, and in Kazakhstan absence of regulation is from a financial regulator. Because the factoring companies, unlike banks, shouldn't carry out standards for sufficiency of the capital, they have good possibilities to finance current assets, demand on which from real sector the very big. Benefit of factoring at the correct use is obvious to MSB - the company spends the received means on purchase the new goods or raw materials at the expense of what can increase considerably sales volumes of finished goods, thus his buyers will receive a desirable delay of payment. At the same time, at interest of the client, the factoring company can take up risks of a non-payment of delivery from the debtor, i.e. actually insure the client from financial losses. The bank credit of such possibility of MSB won't give.

As a whole, development of factoring will promote in many respects to decrease in dependence of MSB from bank crediting. And also to competition strengthening in financial sector that will favorably affect quality of its development.

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