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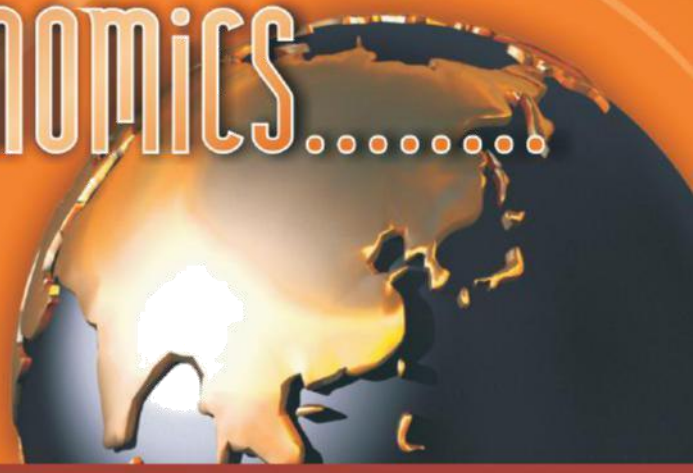

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Marjan Nikolov
Editor-in-Chief

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THE POVERTY REDUCING EFFECT OF HEALTH - THE CASE OF REPUBLIC OF MACEDONIA

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Abstract

Beyond its intrinsic value for individuals, improving and protecting health is also central to overall human development and to the reduction of poverty. Enjoying the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief and economic or social condition. Good health contributes to development through a number of pathways, having a macroeconomic impact, intergenerational spillover effects that are clearly shown in micro-economic activities, not least in the household itself. Based on this, the aim of this study is to examine the impact of the health costs of reducing the poverty in the Republic of Macedonia, this specifically by excluding the health cost from the poor family budgets, and to, therefore, reduce the inequality in the country. The at-risk-of-poverty rate in the Republic of Macedonia in 2015 is 21.5% and the Gini coefficient 33.7%.The study examines health cost based on available official data from the State Statistical Office (Household Consumption in the Republic of Macedonia and Laeken poverty indicators) from the period of 2005-2015. Findings show that if we exclude the costs for health from the cost structure, the poverty line would be reduced by 3% on average and the number of poor reduced for 15 000 persons in average. Therefore the health system in the country should be based on the pro-poor approach, be more fair and responsive to the needs of people.

Key words: *economic development, health, inequality, income distribution, poverty*

1. INTRODUCTION

Health is being considered now higher on the national and international agenda than ever before, because of its big influence on the country's development. Most nations throughout the world have agreed that enjoy-ing the highest attainable standard of health is one of the fundamental rights of every human being. Beyond its intrinsic value to individuals, health is also central to overall human development and to the reduction of poverty (OECD, 2003). Introducing the pro-poor health approach in the countries with the support of the development agencies will put the promotion, protection and the improvement of the health of the poor peo-ple high on the priority list. Investment in health contributes to the development of the country through a num-ber of ways, like higher labor productivity, educational attainment, higher investments, savings, improved human capital, demographic changes and etc.

Measuring the health expenditures poverty-reducing effect in an economy is crucial for building a more responsive system that will answer the needs of the poor people in a more effective and efficient manner.

2. HEALTH, POVERTY AND THE ECONOMY

2.1. Health and poverty

Poverty and poor health worldwide are inextricably linked. The causes of poor health for millions globally are rooted in political, social and economic injustices. Poverty is both a cause and a consequence of poor health. Poverty increases the chances of poor health. Poor health, in turn, traps communities in poverty. The poor suffer worse health and die younger because of the high levels of the child and maternal mortality, diseases, limited access to health care and social protection.

The DAC Guidelines on Poverty Reduction present five core dimensions of poverty that reflect the deprivation of human capabilities: economic (income, livelihoods, decent work), human (health, education), political (empowerment, rights, voice), socio-cultural (status, dignity) and protective (insecurity, risk, vulnerability). Some social categories are particularly affected by severe poverty, among them indigenous populations, minority and socially excluded groups, refugees or displaced persons, the mentally or physically disabled and people living with HIV/AIDS. These groups are among the poorest of the poor in many societies and require special attention in policy action for poverty reduction. Poor women and girls are worse off, in rela-tion to assets and entitlements, within the household and in society (OECD, 2003).

Poverty and disease are tied closely together, with each factor aiding the other (Singh and Singh, 2008). Many diseases that primarily affect the poor serve to also deepen poverty and worsen conditions. Poverty also significantly reduces people's capabilities making it more difficult to avoid poverty-related diseases (Singh and Singh, 2008). The majority of diseases and related mortality in poor countries is due to preventable, treatable diseases for which medicines and treatment regimes are readily available. Poverty is in many cases the single dominating factor in higher rates of prevalence of these diseases. Poor hygiene, ignorance in health-related education, non-availability of safe drinking water, inadequate nutrition and indoor pollution are factors exacerbated by poverty (Stevens, 2004). For many environmental and social reasons, including crowded living and working conditions, inadequate sanitation, the poor are more likely to be exposed to infec-tious diseases. Malnutrition, stress, overwork, and inadequate, inaccessible, or non-existent health care can hinder recovery and exacerbate the disease (UNFPA, 2002). Malnutrition is associated with 54% of child-hood deaths from diseases of poverty, and lack of skilled attendants during childbirth is primarily responsi-ble for the high maternal and infant death rates among the poor.

Better health services can break out the cycles of poverty in the country. In economics, the cycle of poverty is the "set of factors or events by which poverty, once started, is likely to continue unless there is outside intervention".

Health is a crucial economic asset of the poor people because their income gain depends on it, and that’s why health investments are an important means of economic development.

2.2. Health and the Economy

The health can influence the economy in a number of ways. Good health has a positive impact on increasing people's productivity and the possibility to increase their knowledge and skills or the "human capital" and therefore be more productive. School attainment is also determined by the health status which influences the future earnings of the individuals and the households in general. Large health costs can worsen the finan-cial status of the individuals and push them into poverty. The health care services and their expenditures are important for the economy in general, as their financial scheme also.

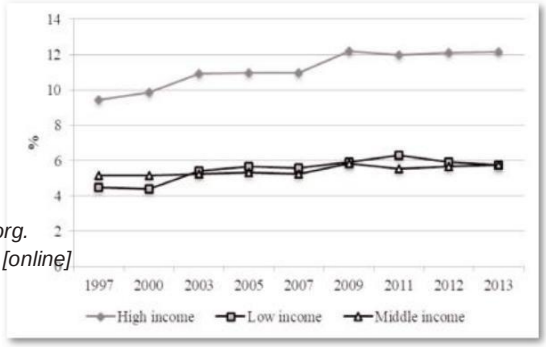
Good health can increase the longevity and therefore the earnings of the people in the country which can increase the labor productivity in general. Sick people are often absent from work and therefore could not earn money, the entire household can become trapped in a downward spiral of lost income and high health-care costs, and can cause them to fall into poverty. The costs of illness can be devastating for poor families. The cascading effect can mean an absence from school also, selling assets from the households and etc.

A study of the poor carried out for the preparation of the 2000 World Development Report of the World Bank stresses the importance to the poor people on maintaining a good health. Ill health is an important contributor to poverty and to the economic vulnerability that is at the foundation of the poverty problems (World Bank, 2001).

Another important issue is how much the health system is responsive to the needs of the people and the fair-ness of its' financing. Disadvantaged groups such as poor ethnic minorities, people living in distant places from the health services and women have less access to health services. Sometimes the health services are being offered in areas like larger cities and towns, whereas the people that live in rural areas often should make additional costs in order to be able to use those health services, causing to decrease their incomes.

Health is important to the countries also as they spent a lot of money in their fiscal budgets for this issue. High-income countries spend around 9-12 percent of their national income on health (Figure 1), whereas the low-income countries from 3 to 6 percent of their national income (Skolnik, 2016). What is also very important is not only how much expenditures the country has made on health, but also how that money is being spent or the par-ticular investment of that money. Having in mind that the governments have limited amount of financial assets and therefore limited health budget, they have to prioritize which health interventions will be covered based on the cost-effectiveness analysis. Scaling up financial resources for health should be a priority, requiring more financing from the budgets of the countries as well as substantial resources from the developing agencies.

Figure 1
Health expenditure by income countries, total (% of GDP)



Source: Authors calculation, Databank.worldbank.org. (2017). World Development Indicators | DataBank. [online] Available at: http://databank.worldbank.org/data/reports.aspx?

Many economists' studies show that the importance of the health to economic development is growing. Higher levels of economic development promote better health at the level of both individuals and of society. Higher income is associated with better health and longer life expectancy which could be also as a result of the technological progress in the medicines they use, such as on vaccines, new drugs, treating methods and etc.

Good health contributes to development through a number of pathways, which partly overlap but in each case add to the total impact:

- Higher labor productivity. Healthier workers are more productive, earn higher wages, and miss fewer days of work than those who are ill. This increases the output, reduces turnover in the workforce, and increases enterprise profitability and agricultural production.
- Higher rates of domestic and foreign investment. Increased labor productivity, in turn, creates incentives for investment. In addition, controlling endemic and epidemic diseases, such as HIV/AIDS, is likely to encourage foreign investment, both by increasing growth opportunities for them and by reducing health risks for their personnel.
- Improved human capital. Healthy children have better cognitive potential. As health improves, rates of absenteeism and early school drop-outs fall, and children learn better, leading to growth in the human capital base.
- Higher rates of national savings. Healthy people have more resources to devote to savings, and people who live longer save for retirement. These savings, in turn, provide funds for capital investment.
- Demographic changes. Improvements in both health and education contribute to lower rates of fertility and mortality. After a delay, fertility falls faster than mortality, slowing population growth and reducing the “dependency ratio” (the ratio of active workers to dependants). This “demographic dividend” has been shown to be an important source of growth in per capita income for low-income countries (Birdsall, Kelley and Sinding, 2001).

In addition to their beneficial macroeconomic impact, health improvements have intergenerational spillover effects that are clearly shown in micro-economic activities, not least in the household itself.

3. PRO-POOR HEALTH SYSTEM AND THE POVERTY

The broad development impact of health investment points to the importance of a comprehensive approach to improving the health of poor people. In many developing countries health services are often ineffective, with the result that hundreds of millions of the world's poor do not have access to the public health and per-sonal care they need. Ensuring that people have access to effective and affordable health services is not only vital to give them opportunities to improve their lives but is an essential measure of social protection to prevent the spiral from ill health to poverty. If the health of poor people is to improve a pro-poor approach must be in introduced.

A pro-poor health approach is one that gives priority to promoting, protecting and improving the health of the poor. It includes the provision of quality public health and personal care services, with equitable financing mechanisms. It goes beyond the health sector to encompass policies in areas that affect the health of the poor disproportionately, such as education, nutrition, water, and sanitation. Finally, it is concerned with glob-al action on the effects of trade in health services, intellectual property rights, and the funding of health research as they impact on the health of the poor in developing countries (OECD, 2003)

A pro-poor health approach builds on the following four pillars:

- Health systems comprise the promotive, preventive, curative and rehabilitative services delivered by health personnel and their support structures (e.g. drug procurement systems). They include public and private sector services (for-profit and not-for-profit), formal and informal, as well as traditional services, and home- and family-based care.
- Health financing and broader social protection strategies are necessary to protect the poor and socially vulnerable from the impoverishing costs of health care.
- Key policy areas beyond the health sector. The health of poor people, in particular, is determined by a wide range of factors, including income, education level, food security, environmental conditions, and access to water and sanitation. Economic, trade and fiscal policies are also important determinants of household incomes and nutritional status. They have an impact on inequality and exclusion, whether, by

gender, ethnicity or socio-economic groups, and these, in turn, have a major impact on health status. National Poverty Reduction Strategies (PRS) provide an important framework to connect policies outside the health sector with pro-poor health objectives.

- Promoting policy coherence and global public goods. International action – such as the provision of glob-al public goods, multilateral agreements on trade and investment, and environmental conventions – should complement other pro-poor health strategies (OECD, 2003).

Development agencies are committed to working in partnership with developing countries to develop health systems that provide quality public health programs and personal (i.e. individual) health services that are accessible by the poor and nearly poor. The ways in which the countries and the development agencies can develop a pro-poor health approach is being given in table 1.

Table 1. Key actions to develop effective pro-poor health systems

Partner country	Development agency
Assume key public-sector functions in health: policy-making, regulation, purchase and provision of services.	Strengthen capacity for the execution of the core functions of the ministry of health.
Provide accessible, affordable, and responsive quality health services	Facilitate the identification of disease patterns, and the health service needs of poor people and vulnerable groups.
Strengthen health financing systems to allow for equitable access of the poor to health services.	Support capacity in social impact analysis, to make health systems, including financing, more accessible to the poor.
Support health policies through decentralization and greater local capacity to deliver services. Ensure meaningful community participation	Assist civil society organizations and community representatives to increase their capacity to participate in health policy and programs.
Develop partnerships with the private sector and NGOs for the delivery of health services.	Support strategies to improve service delivery including better public services and partnerships with the private sector to increase coverage

Source: OECD, (2003). DAC Guidelines and Reference Series: Poverty and Health. Paris: WHO Library. pp.10

Improving the health of the poor is an investment in economic growth and development and should be a pri-ority for reducing poverty. The lack of resources allocated to health is not the only obstacle to the effective implementation of pro-poor health policies, but it is a major, and inescapable, part of the problem. Existing resources allocated to health in developing countries are inadequate to finance a health system that meets the needs of poor people. Some increases in government spending for health are possible through budget reallocations, efficiency savings, and the use of funds released from debt relief. Yet the poorest countries will remain unable to provide sufficient resources to meet pro-poor health objectives without a substantial increase in external financing. Increased resources should come from a combination of public, private, domestic and external sources. Development agencies should consider how to improve their own capacity to support pro-poor health objectives and overcome the constraints that limit the effectiveness of develop-ment co-operation and help the countries to implement this concept. (OECD, 2003)

Ensuring that the poor have access to effective and affordable health services is central to a pro-poor health approach. However, it is not sufficient in itself to improve the health of the poor since major determinants of their health depend on actions beyond the health sector. There is, indeed, ample and longstanding evidence of the effects of a range of sectoral policies and macroeconomic practices on health outcomes. Those that

are critically important include education, food security, safe water, sanitation, and energy. The health of the poor can also be improved by reducing their exposure to air pollution, violence, injuries at home, in the work-place, and on the roads, and by preventing the devastating impact of conflict and natural disasters.

- **Education.** Education and health are fundamental to poverty reduction. The evidence demonstrating inter-linkages between investments in health and education and their synergetic effects on reducing poverty is compelling. Minds and bodies – education and health – are the most important assets of poor people, enabling them to lead socially and economically productive lives. Even a few years of schooling provide basic skills that can have far-reaching implications for health-seeking behavior. Moreover, edu-cation emphasizing health prevention and informed self-help is among the most effective ways of empowering the poor to take charge of their own lives. Although education is essential for health improvement, health is also a major determinant of educational attainment: it has a direct impact on cog-nitive abilities and school attendance. Policymakers and staff in the two sectors, therefore, have a mutu-al interest in interacting closely and identifying strategies for collaboration using both the school system and informal education channels.
- **Food security, nutrition and health.** Hunger and malnutrition are among the most devastating prob-lems facing the world today. Although food security has improved in developing countries in the last 30 years, there has been a slowdown in the reduction of hunger in the 1990s. While the total number of undernourished people has declined (especially in China), in most countries the numbers have increased (FAO, 2001). Key linkages with poverty and health Malnutrition and food insecurity, obvious-ly, have strong implications for health. Nearly 800 million people in developing countries are chronically hungry. Many live in conflict areas and more than 60% of them are women (ACC/SCN and IFPRI, 2000). Although the large majority of hungry people live in rural areas, rapid urbanization contributes to increas-ing poverty and food insecurity in large towns and cities. Hunger and malnutrition increase vulnerability to disease and premature death, and reduce people's ability to earn a livelihood, not least through culti-vation and generating an income. Malnutrition is both a major cause and effect and a key indicator, of poverty and lack of development. Moreover, a failure to treat the underlying causes of malnutrition and their consequences undermines the impact of other efforts to improve health, while ill health itself reduces the ability of the body to absorb nutrients from food.
- **Poverty, health, and the environment.** Estimates suggest that at least 25% of the global burden of dis-ease may be attributed to environmental conditions (WEHAB, 2002). Poor people are often subject, in their homes and workplaces, to exposure to toxic pollutants from sources including waste disposal sites and incinerators. Poor health status increases a person's vulnerability to the impact of toxic chemicals. It is important to have a healthy and safe work environment and a coherent policy for the safe use of chemicals, including their production, handling, storage, and disposal (ILO, 2001). Almost 1.2 billion peo-ple lack access to safe drinking water; twice that number lack adequate sanitation. Sanitation is the safe management of waste. Hospitals and health facilities are themselves a source of hazardous waste, which can be environmentally damaging and impact on the health of poor people. Inadequate water quality leads to the transmission of such diseases as diarrhea, cholera, trachoma, and onchocerciasis (WELL, 1999). Scabies and trachoma depend on the quantity of water available while stagnant water is a breeding ground for the vectors transmitting malaria and schistosomiasis. Access to adequate quanti-ties of water is also essential for food production, which in turn improves nutrition, health and people's ability to withstand and recover from diseases. Lack of sanitation increases the transmission of excreta-related illnesses, including certain faecal-oral diseases such as cholera, soil-transmitted helminths (among them roundworms and hookworms), and water-based helminths (which cause, for example, schistosomiasis). In addition, the contamination of water (and food) by pesticides and toxic chemicals such as mercury, lead, and arsenic causes millions of cases of poisoning each year (WEHAB, 2002) The majority of people affected by these diseases are poor. Most of the resulting deaths are among children under five and are concentrated in poorest households and communities. According to one estimate, at any one time, half of the urban population is suffering from one or more of the diseases associated with

the provision of water and sanitation (WHO, 1996). During conflicts and emergencies, people are even more vulnerable to water and sanitation-related diseases.

- **Air pollution, indoors and out,** is a major problem that affects the health of poor people disproportion-ately. Poverty leads to a dependence on cheap traditional fuels for cooking and heating which combines with unventilated, overcrowded accommodation to cause indoor pollution. In addition, in urban areas poor people live close to highly polluting industries and transport networks, with predictable effects on their health. Around 3 billion people are exposed to indoor air pollution from the use of traditional fuels for household energy. Poor households in sub-Saharan Africa and Asia rely mostly on biomass or kerosene because of cost; only the more affluent households use gas or electricity. Indoor air pollution causes an estimated 2 million deaths a year, mostly in developing countries (WEHAB, 2002). It primari-ly affects the poor in rural areas but exposure is rising among urban populations. Inadequate regulation, rapid urbanization, the proximity of industries to residential areas, and high population density exacer-bate the degree of exposure of poor people.

4. THE POVERTY REDUCING EFFECT OF HEALTH-THE CASE OF REPUBLIC OF MACEDONIA

The health of poor people is currently a central issue in international debate and a serious concern in the Republic of Macedonia, which registered 6.5% health expenditures as a percentage of GDP in 2015, com-pared with 8% in 2005.The minimum health expenditures in EU countries are around 10%. According to the final data of the State Statistical Office in 2016 (Table 2), the at-risk-of-poverty rate in the Republic of Macedonia in 2015 was 21.5%. Analyzed by household types, the at-risk-of-poverty rate in households of two adults with two dependent children in 2015 was 22.9%, while for households with 5 and more members 52%. According to the most frequent activity status, the at-risk-of-poverty rate for unemployed persons was around 40%, the GINI coefficient is 33.7, which has decreased from around 40% mostly based on the newly changed methodology that is being used for calculating GINI in the State statistical office of Republic of Macedonia.

Table 2. Some selected poverty and social exclusion indicators in Republic of Macedonia, 2013-2015

	2013	2014	2015
At-risk-of-poverty rate, % of population	24.2	22.1	21.5
Number of persons below at-risk-of-poverty threshold, in thousand persons	500.4	457.2	445.2
Households of two adults with two dependent children	24.8	25	22.9
Households of two adults with three or more dependent children	49.9	50.9*	52.2
Unemployed	43.7	40.5	39.7
Inequality of income distribution, S80/S20, %	8.4	7.2	6.6
Inequality of income distribution, Gini coefficient, %	37	35.2	33.7
At-risk-of-poverty rate before social transfers	41	41.7	40.5

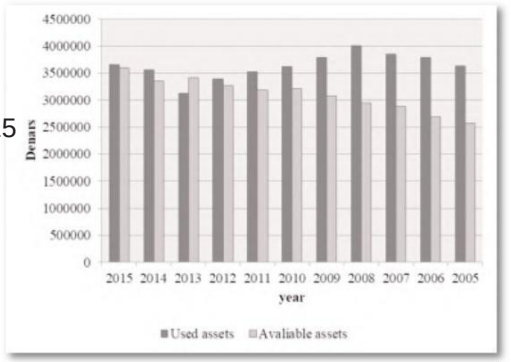
Source: State Statistical Office of RM, Laeken poverty indicators in 2015

The aim of this study is therefore to examine the impact of household health expenditure in reducing pover-ty in the Republic of Macedonia, by excluding such expenditures from poor household budgets to reduce the inequality in the country.

The study examines the health expenditure effect on poverty reduction based on available official data from the State Statistical Office, Survey on Income and Living Conditions and Laeken poverty indicators for the period 2005-2015.

The available assets within a household comprise the financial means at the disposal of the household, the value of products used for personal consumption from own production and the value of consumer credits and loans raised and realized during certain year. The used assets of the household include its expenditures for pur-chasing goods and services for personal consumption, the value of the consumption from own production and the refunded part of the consumer credits and loans. Generally, within the analyzed period from 2005-2015 (Figure 2), the available assets have an increasing tendency, whereas the used assets are the highest in 2008 and later decreasing until the year 2013, where they have the lowest value, and start increasing afterward. The reported used assets are mainly higher than the available assets during the whole period, except in 2013.

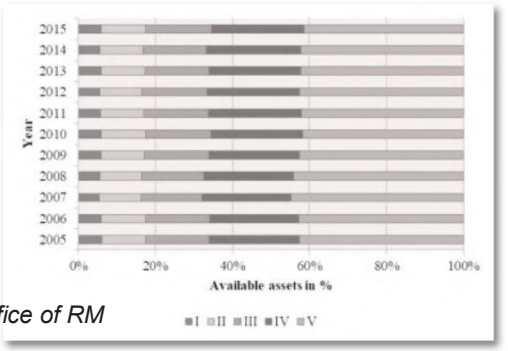
Figure 2
Used assets and available assets, 2005-2015



Source: Authors' calculations, State Statistical Office of RM

The available assets analysis by quintiles in the period 2005-2015 registers high-income inequality which exists in the Macedonian economy presented in Figure 3. In average in the analyzed period the richest peo-ple in the country (fifth quintile) possess 43% of the national income, whereas the poorest people (the first quintile) take only 6% in average from the national income. Another indicator which measures the income inequality is the S80/S20 ratio, which calculates the ratio of total income received by the 20% of the popula-tion with the highest income (the top quintile) to that received by the 20% of the population with the lowest income (the bottom quintile). Income must be understood as equivalised disposable income. In the Republic of Macedonia, this ratio is in average 7, meaning that the richest people in the country receive 7 times more income than the poorest people. According to EUROSTAT this ratio in 2012 was 10.2. The EU 28 countries have an S80/S20 ratio round 5.

Figure 3.
Available assets by quintiles, 2005-2015

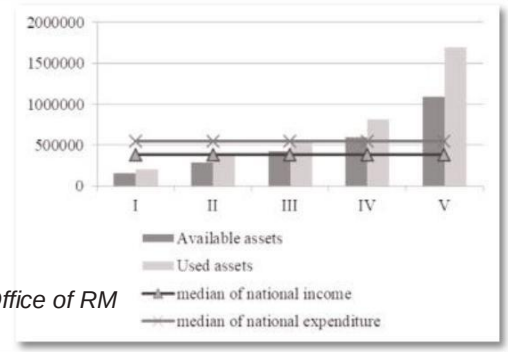


Source: Authors' calculations, State Statistical Office of RM

The used and available assets in quintiles, for the year 2005 and 2015 are given in order to get the picture how they have changed through the time. What can be seen is that there is an upward movement of the median of national income in 2015 and gets closer to the national expenditure median. What is evident is

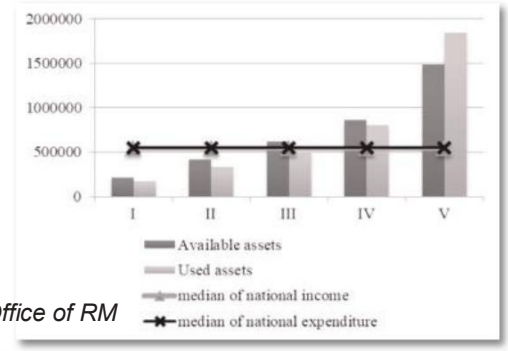
that the households in the first three quintiles are below the median of national income which is an alarming situation (Figure 4 and 5)

Figure 4.
At-risk-of-poverty threshold (2005)



Source: Authors' calculations, State Statistical Office of RM

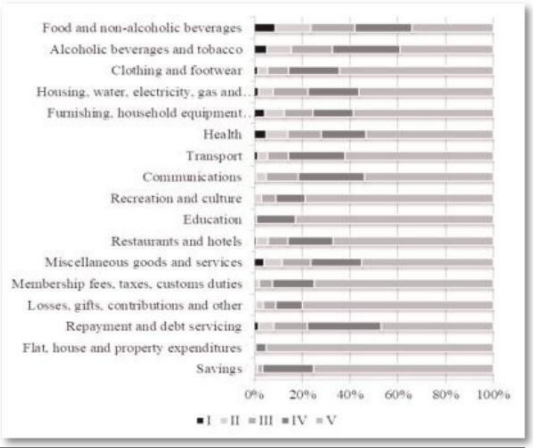
Figure 5.
At-risk-of-poverty threshold, 2015



Source: Authors' calculations, State Statistical Office of RM

The used assets according to the purpose of consumption in 2015 by quintiles are being given in Figure 6. What is evident for the first three quintiles is that most of their used assets are spent on food and nonalcoholic beverages, alcoholic beverages and tobacco and health. This is an indicator also for the tax inequality which exists in the society based on the fact that the poorer people spend most of their assets on products which are taxed with indirect taxes, making the poor people pay higher percentage of their income on indirect taxes, which are the same for everyone no matter of their purchasing power.

Figure 6.
Used assets according to the purpose of consumption in quintiles (in %), 2015

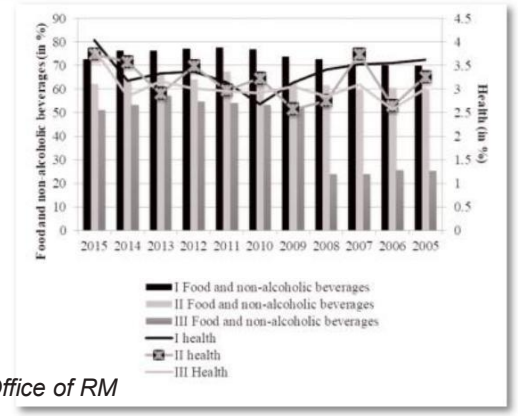


Source: Authors' calculations, State Statistical Office of RM

If the costs for tobacco and alcoholic beverages are excluded, the data shows that in 2015 the first quintile uses 73% of the total used assets for food and non-alcoholic beverages (follow the bars). The second and

the third quintiles use 62% and 51% of the used assets for this purpose, respectively. The data presented with the lines show that the first quintile in 2015 uses 4% of their assets for health services, whereas the sec-ond and the third quintile 3.7% and 3.8% respectively. In average in the analyzed period the first quintile spends 74%, the second 63%, and the third quintile 43% of the used assets for Food and non-alcoholic bev-erages. The health costs do not differ so much and are in average 3% (Figure 7).

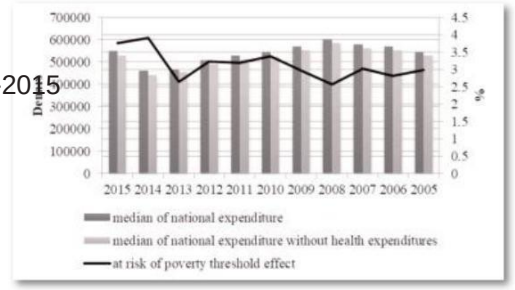
Figure 7.
Used assets according to the purpose of consumption I, II and III quintiles, 2005-2015



Source: Authors' calculations, State Statistical Office of RM

Findings show that if health expenditures are excluded from the overall expenditure structure, the median of the national costs will decrease as shown with the difference between two bars in the same year (values in denars on the left vertical axis). The at-risk of poverty threshold would be reduced by 3% on average in the period from 2005-2015, or 3.8% in 2015 which can be seen with the given line and measurement in percent-age on the right vertical axis (Figure 8).

Figure 8.
The poverty reducing effect of health, 2005-2015



Source: Author's calculation

If shown with numbers, the number of persons below at risk poverty threshold in 2015 is 445 200 persons, whereas if the health costs are excluded this number will fall for 16 918 persons in 2015, or round 15 000 in average for the analyzed period (Table 3). If the positive effects of the pro-poor health approach are being taken into account, then the country should put itself on the road to implement this approach and therefore be more fair and responsive to the needs of people.

Table 3. The poverty reducing effect of health, 2015 and average 2010-2015

	year 2015	Reducing effect on the at poverty risk threshold
Number of persons below at-risk-of-poverty threshold	445,200	
Number of persons above at-risk-of-poverty threshold in 2015 if health costs excluded	16,918	3.80%
average 2010-2015	15,246	3%

Source: Author's calculations

5. CONCLUSION

Beyond its intrinsic value to individuals, health is also central to poverty reduction and for the human devel-opment of the countries in general. The productivity of the countries increases because healthier people can work more, people have longer lifetime and their input to the economy is higher. When people get ill less therefore spend less and reduce the risk that their income declines and go below the poverty line. High income countries spend more financial assets on health than the low-income countries do. What is more important is how that money is used. The cost-effectiveness analysis can be used as a tool for setting the priorities for the health expenditures in the countries. Better health increases the well-being in the countries by increasing the labor productivity, higher domestic and foreign investment, higher savings, improved human capital and etc.

The broad development impact of health investment points to the importance of pro-poor health approach to improving the health of poor people. The implementation of this approach should be supported by the devel-opment agencies also, as the developing countries can develop a health systems that will provide quality public health programs and health services that are easy accessible by the poor people. Ensuring that the poor people have access to effective and affordable health services is at the centre of the pro-poor health approach. There is also a need for complementarities with a range of other sectoral policies and practices, such as education, food security, safe water, sanitation and energy.

The health of poor people is currently a central issue in international debate and a serious concern in the Republic of Macedonia, which in 2015 registered 6.5% health expenditures as a percentage of GDP and at-risk-of-poverty rate of 21.5%. The income inequality measured by the GINI coefficient is 33.7, whereas the S80/S20 ratio is around 7. The main objective of the study to examine the health expenditure effect on pover-ty reduction is based on available official data from the State Statistical Office, Survey on Income and Living Conditions and Laeken poverty indicators for the period 2005-2015.

Findings show that if health expenditures are excluded from the overall expenditure structure, the at-risk of poverty threshold would be reduced by 3% on average in the period from 2005-2015, or 3.8% in 2015. If shown with numbers, the number of persons below at risk poverty threshold in 2015 is 445 200 persons, whereas if the health costs are excluded this number will fall for 16 918 persons in 2015, or round 15 000 in average for the analyzed period. Therefore the health system in the country should be based on the pro-poor approach, be more fair and responsive to the needs of people.

BIBLIOGRAPHY

1. ACC/SCN and IFPRI. (2000). Fourth Report on the World Nutrition Situation. Geneva:UN Sub-Committee on Nutrition.

2. Bank, World (2001). World Development Report 2000/2001:Attacking Poverty. Washington, DC:Oxford University Press.

3. Birdsall, N., Kelley, A.C. and Sinding, S. (2001). Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World. New York: Oxford University Press.

4. Chemicals Convention (C170, 1990) of the International Labour Organization (ILO) and the ILO Safety and Health in Agriculture Convention (C176, 2001) and other related conventions and recommendations on health and safety. Accessible at www.ilo.org

5. databank.worldbank.org (2017). World Development Indicators | DataBank. [online] Available at: http://databank.worldbank.org/data/reports.aspx?.

6. FAO (UN Food and Agriculture Organization) (2001), FAO Warns Further Slowdown in Hunger Reduction – In most Developing Countries the Number of Hungry even Increased. Press Release 01/ 69. Accessible at www.fao.org/wai-cent/ois/press_ne/presseng/2001/pren0169.htm

7. OECD, (2003). DAC Guidelines and Reference Series: Poverty and Health. Paris: WHO Library.

8. Singh, A. R., & Singh, S. A. (2008). Diseases of Poverty and Lifestyle, Well-Being and Human Development. Mens Sana Monographs, 6(1), 187-225.

9. Skolnik, R. (2016). Health Education, Poverty, and the Economy. In: R. Skolnik, ed.,Global Health 101, 3 ed. Burlington: Jones and Bartlett Learning, pp.57-96.

10.Stat.gov.mk. (2017). Државен завод за статистика. [online] Available at: http://www.stat.gov.mk/ [Accessed 2 Mar. 2017].

11. Stevens, P. (2004). Diseases of Poverty and the 10/90 gap (PDF). Available at: http://who.int/intellectualproperty/sub-missions/InternationalPolicyNetwork.pdf [Accessed 20 Mar. 2017].

12. Soubbotina, T.P. (2004). Beyond Economic Growth, 2nd ed. Washington D.C.: World Bank.

13. UNFPA, (2002). Health and Poverty. UNFPA State of World Population . United Nations Population Fund.

14. unscn.org. (2017). Nutrition-A Foundation for Development. [online] Available at: https://www.unscn.org/web/archives_resources/files/Brief1-12EN.pdf [Accessed 17 Feb. 2017].

15. WEHAB Working Group. (2002). A Framework for Action on Health and the Environment. United Nations. Accessible at www.johannesburgsummit.org/html/documents/summit_docs/ wehab_papers/wehab_health.pdf.

16. WELL. (1999). DFID Guidance Manual on Water Supply and Sanitation Programmes. WELL Resource Centre. Accessible at www.lboro.ac.uk/well/index.htm.

17.WHO. (1996). Creating Health Cities in the 21st Century Background Paper prepared for the Dialogue on Health in Human Settlements for Habitat II. Geneva: WHO.

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EFFICENCY OF THE MACEDONIAN BANKING SECTOR: A NON-PARAMETRIC APPROACH

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Abstract

The aim of this paper is to measure the relative efficiency of the commercial banks in Macedonia by using the non-parametric methodology Data Envelopment Analysis (DEA). The key role when applying DEA for measur-ing the efficiency of entities is given to the selection of inputs and outputs. In our study 3 inputs and 3 outputs are selected according to the intermediation approach. The sample consists of 14 banks and the observed peri-od is eight years (2008-2015). According to the obtained results, the average efficiency of the Macedonian banking sector in the observed period is 88.77%. There is no bank that is relatively efficient in every year in every window. The results indicate that 28.57% of the banks have an overall efficiency by years that is higher than 95%. The group of large banks has the highest efficiency in the Macedonian banking sector. Furthermore, Macedonian banks have noted lower efficiency in the post-crisis period. Findings from our paper are valuable for further use by regulators, policy makers and bank management in order for the efficiency of the relatively inefficient Macedonian banks and the banking sector as a whole to improve.

Key words: *non-parametric approach, DEA, relative efficiency, banking sector, commercial banks*

JEL: *C02, C44, C61, G21*

1. Introduction

Financial institutions in every country are a very important part of the financial system. The quality of the financial institutions determines the level of the development of a country’s economy. A healthy financial insti-tution relies on its asset quality, capacity, asset flow, capital adequate ratio, etc. (Kumar et al., 2015). The banking sector plays a significant role in the economic development of any country and is considered a backbone of the country's economy. The financial system of Macedonia is relatively simple and financial mar-kets are still underdeveloped. It is considered to be a bank-based financial system where banks play a cru-

cial role in financing the economic activities and maintaining the financial stability of the system as well as the stability of the other institutional segments. Banks are the main strings that connect the institutions and participants in the financial system, and they have the highest influence on the total movements in the sys-tem. It is safe to assume that the banking sector is the key segment, which can transfer the risks onto the other segments in the financial system. Therefore, it is crucial to maintain its stability in order to maintain the total financial stability in the economy (NBRM, 2016).

According to Khan and Khattak (2016), the banking sector is considered to be a nervous system of the coun-try's economy. If the nervous system fails to function, the whole body becomes useless. Similarly, failure of the banking system will lead to a catastrophe of the whole economic system. Therefore, for the stability and growth of economy, the banking sector has to function at its optimum level. This can be achieved only if the banking sector is able to allocate the resources efficiently or with minimum waste. In the last few decades, substantial changes have been witnessed in the banking sector, like financial deregulation, globalization, competition, innovation and advances in technology. These changes have drastically altered the financial scenario and led the banks to operate at a high level of efficiency in order to survive.

Data Envelopment Analysis (DEA) is the leading non-parametric methodology for measuring the relative effi-ciency of Decision-Making Units (DMUs). Thanassoulis (2001) points out that the DMUs should be homoge-neous, i.e. they shoud use the same inputs and produce the same outputs. This methodology is introduced in the literature of the discipline Operations Research (OR) by Charnes, Cooper and Rhodes in 1978. Based on the empirical data for the inputs that are used and the outputs that are produced, i.e. achieved by the decision-making units under consideration, an empirical efficiency frontier is constructed. The DMU that is efficient lies at the extreme frontier, while the inefficient one lies below this frontier (Charnes et al.,1994: 5-6). DEA assigns a score of 1 (100%) to highly efficient DMUs and a score of less than 1 to relatively ineffi-cient units. DEA enables the amounts and sources of inefficiency to be determined, which is very valuable information in order to improve the efficiency of inefficient DMUs. Emrouznejad et al. (2008) published a bib-liography on DEA that consists of over 4000 research articles, and in the following areas most of the appli-cations are noted: banking, education, healthcare and hospital effficiency (Cvetkoska and Savic, 2017).

In this paper the DEA technique Window Analysis is employed in order to measure the efficiency of commer-cial banks in Macedonia in the period from 2008 to 2015. This technique allows for the number of DMUs to be increased and a time dimension to be included in the analysis. In the existing literature we have not found a study like ours, which means that it will contribute to the existing literature on banking efficiency in the developing countries, particularly in the Balkans.

The paper is structured as follows: besides the introduction that is given in Section 1, in Section 2 there is given a brief literature review. Methodology is explained in Section 3, and the data is presented in Section 4. The obtained empirical results are shown and analyzed in Section 5, while the conclusion is given is Section 6.

2. Literature review

Naumovska and Cvetkoska (2014) give an overview of literature of the application of DEA methodology in measuring the relative efficiency of banks in: Bosnia and Herzegovina (Memic and Memic, 2013), Bulgaria (Nenovsky et al., 2008; Toci, 2009), Greece (Varias and Sofianopoulou, 2012), Kosovo (Toci, 2009), Letonia and Lithuania (Titko and Jureviciene, 2014), Macedonia (Micajkova and Poposka, 2013), Poland (Chudy et al., 2012; Kisielewska et al., 2005), Slovakia (Repkova, 2014), Serbia (Mihailovic et al., 2009; Savic et al., 2012), Croatia (Jemric and Vujcic, 2002; Toci, 2009), Montenegro (Toci, 2009) and the Czech Republic (Repkova, 2013). Information regarding the author/s of the study, the observed country, the time period, the sample and the used methodology can be obtained from their review.

In this paper we have employed the DEA technique Window analysis for measuring the relative efficiency of the commercial banks in Macedonia. Based on the existing literature, it has been found that: Kisielewska et al. (2005) have used Window analysis and Malmquist indexes in order to analyze the performances of 10 large commercial banks in Poland in the period from 1995 to 2003; Asmild et al. (2004) have combined the

Window analysis with the Malmquist indexes in a study regarding the Canadian banking industry; Hartman and Storbeck (1996) have used the Window analysis for investigating the development of loan efficiency in 12 Swedish banks in the period of 9 years, while Savić et al. (2012) have used the Window analysis for measuring the efficiency of 28 commercial banks in Serbia in the period from 2005 to 2011.

There are a few studies regarding the measurement of the relative efficiency of the commercial banks in Macedonia: Micajkova and Poposka (2013), Naumovska and Cvetkoska (2014), and Naumovska and Cvetkoska (2016).

Micajkova and Poposka (2013) have estimated the efficiency of the Macedonian banking sector during the period 2008-2011 using the DEA approach. They have measured the technical, pure technical efficiency and scale efficiency of 15 banks in the Republic of Macedonia using two DEA models: the CCR model and the BCC model, which are input-oriented. The intermediation approach is applied and two inputs and two out-puts are chosen. As inputs the following are chosen: total deposits received and labor costs, and as outputs: loans to banks and customers, and investments. According to the obtained results, the average efficiency of the Macedonian banking sector increased in the period from 2008 to 2010, while it decreased in the last year of the observed period, i.e. in 2011. In this banking sector the highest pure efficiency scores and the great-est scale inefficiency were noted in the group of large banks.

Naumovska and Cvetkoska (2014) measure the efficiency of the banking sector in the Republic of Macedonia from two perspectives. Firstly, they have compared the indicators of efficiency of the Macedonian banking sector with those of the countries of Central and Southeastern Europe in the period from 2003 to 2012. Secondly, they estimated the relative efficiency of 14 Macedonian commercial banks in the period from 2007 to 2013 by using the DEA methodology, i.e. the output-oriented CCR DEA model. Deposits and oper-ating costs have been selected as inputs, whereas loans and net interest income as outputs. Based on the obtained results from the used DEA model, they have concluded that no bank has been efficient in all of the observed years. Komercijalna banka AD Skopje and ProCredit Banka AD Skopje have been relatively effi-cient in 6 out of 7 years, whereas 5 banks are not relatively efficient in any of the observed years. The high-est number of efficient banks (i.e. 6 banks) has been identified in 2008, whereas the lowest number of effi-cient banks (i.e. 3 banks) has been identified in 2011 and 2012. The average efficiency of the Macedonian banking sector has been the highest in 2008 (90.35%) and the lowest in 2012 (79.83%).

Naumovska and Cvetkoska (2016) have used the same sample of banks, variables and time frame as in the study by Naumovska and Cvetkoska (2014), but here the output-oriented BCC DEA model is applied. Based on the obtained results, it has been determined that in the observed period, 4 banks have been relatively efficient. The average efficiency of the Macedonian banking sector has been the highest in 2008 (93.66%) and the lowest in 2009 (86.96%). In 2013, 5 of the banks were identified as relatively inefficient and there has been a projection of how to improve their efficiency.

Based on the above, it can be concluded that there is no reference for the Window analysis application in the analysis of the relative efficiency of commercial banks in Macedonia. Therefore, this is an original study.

3. Methodology

For measuring the relative efficiency of commercial banks in Macedonia, in this paper we have used the out-put-oriented DEA Window analysis model with the variable returns to scale (VRS) assumption. A model is output-oriented when its purpose is to maximize the outputs by using the given level of inputs (Cooper et al., 2007). According to Popovic (2006), variable returns to scale (VRS) means that the increase in inputs does not lead to a proportional change in the outputs.

In this paper, the DEA technique Window analysis is used under variable a returns to scale assumption, based on the Banker-Charnes-Cooper (BCC) model. Further details about the BCC model, which is one of basic DEA models, can be found in Banker et al. (1984). What follows is the envelopment form of the out-put-oriented BCC model (Cooper et al., 2007: 93; Cvetkoska and Barisic, 2014: 79):

$$(BCC\text{-}O_O) \qquad \max_{\kappa_B, O} K_B \tag{1}$$

$$\text{subject to} \qquad X O \delta x_o \tag{2}$$

$$K_B y_o \quad YO \text{ d } 0 \tag{3}$$

$$e O \ 1 \tag{4}$$

$$O \tau 0 \tag{5}$$

where η_B is a scalar; $(x_{1j}, x_{2j},....x_{mj})$ - the input data for DMUj (j=1,…,n), $(y_{1j}, y_{2j},....y_{sj})$ - the output data; by two matrices X and Y the data set is given, the input data matrix is X, and the output data matrix is Y, a column vector with all elements non-negative is λ, and the row vector with all elements equal to 1 is e.

If the number of DMUs is not at least three times larger than the total number of inputs and outputs (Cooper et al., 2007: 116), more DMUs will form the efficiency frontier, and in order to overcome this problem, the DEA technique Window analysis can be used. It enables the number of DMUs to be increased and the changes in efficiency of the DMUs to be observed over time.

In our case, three inputs and three outputs are selected, and the number of DMUs, i.e. banks is 14 (explained in the next section), so to achieve appropriate results, the number of DMUs should be at least 18. Because of this, we have decided to use the DEA technique Window analysis.

The name of this DEA technique and its basic concept are associated with Klopp (1985). The idea of Window analysis is that the same DMU in the period i, i.e. in the period j (for i ≠ j) is observed like two different DMUs; p is the length of the window (a number of periods to be observed), then, first to be observed is the data for the first p period, then the data for the period 1 are omitted and the data for the period p + 1 are added, and this allows for the next window to be obtained, then the data for the first two periods are omit-ted and the data for periods p +1 and p + 2 are added, so the next window is obtained, and this is repeated as soon as all of the time periods in the analysis have passed (Neralic, 1995: 207).

In Window analysis the following symbols and formulas are used (Cooper et al., 2007: 326-327, Cvetkoska and Savic, 2017: 322): n – the number of decision-making units, k - the number of periods, p - length of the window (p ≤ k), p=k+1/2, w – the number of windows (w = k – p + 1), the number of decision making units in each window is calculated according to this formula: np, while the number of “different” decision making units is calculated through the formula: npw.

The obtained results with the Window analysis are presented in a table, and through the rows the trend can be observed, while through the column what can be noted is how the result changes or not with the change from one to another window. A disadvantage of this technique is that the DMUs in the first and the last peri-od are not tested as frequently as others (Cooper at al., 2007).

4. Data

The sample for analysis consists of 14 commercial banks in Macedonia: Alfa Banka AD Skopje (rebranded in Silk Road Bank AD Skopje in May 2016), Centralna Kooperativna Banka AD Skopje, Eurostandard Banka AD Skopje, Halk Banka AD Skopje, Kapital Banka AD Skopje, Komercijalna Banka AD Skopje, NLB Tutunska Banka AD Skopje, Ohridska Banka AD Ohrid, ProKredit Banka AD Skopje, Sparkasse Banka AD Skopje, Stopanska Banka AD Bitola, Stopanska Banka AD Skopje, TTK Banka AD Skopje and Uni Banka AD Skopje. We have left out the Macedonian Bank for Development Promotion from our analysis because it is not comparable with other banks: it has a specific function in the sector and works on different principles than the commercial banks (it is a state-owned bank and is not involved in deposits collection).

The selection of inputs and outputs has been made according to the intermediation approach. The intermediation approach refers to the process in which from collected deposits loans are being given (Paradi et al., 2004: 355). As inputs the following 3 are selected: total deposits (deposits from banks and other clients),

interest costs and operating (non-interest) costs (costs for salaries, amortization, administrative costs and other operating costs), while as outputs the following 3 are selected: total loans (issued to banks and other clients) interest income and non-interest income (fee and commission income and other operating income). We have used data from the revised financial statements for the selected inputs and outputs for each com-mercial bank in the period from 2008 to 2015.

5. Empirical results and analysis

Our sample of analysis consists of 14 commercial banks (n=14), eight years are considered (k=8), the length of the window is 4 years (p=4), and the number of windows is 5 (w=k-p+1= 8-4+1=5). In each window there are 56 banks, and the number of "different" banks is 280. Every window covers 4 years (for example, win-dow 1 covers 4 years: 2008, 2009, 2010 and 2011; in the next window (window 2) data for 2008 are omitted and the data for 2012 are added, and so on), as presented below:

window 1	2008	2009	2010	2011				
window 2		2009	2010	2011	2012			
window 3			2010	2011	2012	2013		
window 4				2011	2012	2013	2014	
window 5					2012	2013	2014	2015

For solving the specified DEA model the software DEA-Solver-LV has been used, and details for this software can be found in (Cooper et al., 2007: 454-476). DEA efficiency scores will enable banks that are relatively efficient to be identified, as well as those that are relatively inefficient. Efficient banks will be those with a score of 1, i.e. 100%, while inefficient ones will have an efficiency score lower than 1.

Table 1 presents the average efficiency of commercial banks in Macedonia, by years, and the average efficiency for the whole banking sector in the observed period. According to the presented results in Table 1 it can be noted that in the post-crisis period (i.e. in the first few years shortly after the Global financial crisis) many of the banks note lower efficiency. The lowest average efficiency for the whole banking sector was achieved in 2011 (83.26%), while the highest was achieved in 2015 (96.35%). From 2012 to 2015 the average effieciency for the whole banking sector in Macedonia noted an increase. The increase in efficiency can be interpreted as a consequence of the processes of M&A in 2012 (when Halk Banka AD Skopje took over Ziraat Banka) and 2014 (when Postenska Banka AD Skopje was acquired by Eurostandard Banka AD Skopje). For example, in 2014, Eurostandard Banka AD Skopje acquired Postenska Banka AD Skopje. In 2015, its efficiency reached the peak and equaled 1 (100%), i.e. the bank was relatively efficient after the M&A. Halk Banka AD Skopje was taken over by the Turkish Halk Banka in 2011, and in 2013 the Macedonian Halk Banka acquired Ziraat Banka AD Skopje. Stopanska banka AD Bitola had AD Pelisterka as its largest shareholder in 2013 and that was the year that this bank began its modernization and expansion. According to the average efficiency scores, it increased its efficiency after this ownership change, i.e. after the year 2013.

As presented in Table 1, there is no one bank which has noted an efficiency score of 1 in each of the 8 years of the observed period. Furthermore, two banks (Ohridska Banka AD Ohrid and Uni Banka AD Skopje) have not achieved an efficiency score of 1 in any of the analyzed years.

Table 1. Avarege efficiency of the commercial banks in Macedonia, by years

DMUs	2008	2009	2010	2011	2012	2013	2014	2015
Alfa Banka AD Skopje	0.7041	0.7854	0.7549	0.7015	0.6044	0.8058	0.8030	1
Centralna Kooperativna Banka AD Skopje	0.8726	1	1	1	0.8687	0.7964	0.8139	0.8144
Eurostandard Banka AD Skopje	0.7030	0.7496	0.7050	0.6622	0.5739	0.5910	0.6373	1
Halk Banka AD Skopje	1	0.8328	0.7039	0.8415	0.8507	0.9477	0.9191	0.9499
Kapital Banka AD Skopje	1	0.9431	0.9715	0.5417	0.6419	0.8393	0.8931	1
Komercijalna Banka AD Skopje	1	1	1	1	1	0.9816	0.9943	1
NLB Tutunska Banka AD Skopje	1	0.9772	0.9341	0.9920	1	1	1	1
Ohridska Banka AD Ohrid	0.7342	0.8323	0.9157	0.8599	0.8271	0.8557	0.8094	0.8823
ProKredit Banka AD Skopje	1	0.9782	0.9970	0.9901	1	1	1	1
Sparkasse Banka AD Skopje	0.7467	0.8519	0.8039	0.7851	0.8761	0.9837	0.9833	1
Stopanska Banka AD Bitola	0.9907	1	0.8097	0.6935	0.7310	0.8435	1	0.9075
Stopanska Banka AD Skopje	1	1	1	1	1	0,9958	1	1
TTK Banka AD Skopje	0.7441	0.7285	0.8641	0.7641	0.8618	0.9682	0.9989	1
Uni Banka AD Skopje	0.8724	0.8425	0.8172	0.8255	0.8878	0.8765	0.9739	0.9345
Average	**0.8834**	**0.8944**	**0.8769**	**0.8326**	**0.8374**	**0.8918**	**0.9162**	**0.9635**

Source: Authors' calculations.

Table 2 gives the overall efficiency by windows and by years for the analyzed banks. For each bank what is used is the average of efficiency scores in 5 windows to estimate the overall efficiency by windows, while by using the average of annual efficiency the results of the overall efficiency by years for each bank are esti-mated. Based on the presented results (overall efficiency by years) in Table 2, it can be noted that the most relatively efficient banks are: Stopanska Banka AD Skopje (99.95%), Komercijalna Banka AD Skopje (99.70%), ProKredit Banka AD Skopje (99.57%) and NLB Tutunska Banka AD Skopje (98.79%), while the least efficient banks are identified as: Eurostandard Banka AD Skopje (70.27%) and Alfa Banka AD Skopje (76.99%).

Table 2: Overall efficiency (by windows and by years) of Macedonian commercial banks

DMUs	Overall efficiency	
	by windows	by years
Alfa Banka AD Skopje	0.7393	0.7699
Centralna Kooperativna Banka AD Skopje	0.9089	0.8957
Eurostandard Banka AD Skopje	0.6655	0.7027
Halk Banka AD Skopje	0.8589	0.8807
Kapital Banka AD Skopje	0.7920	0.8538
Komercijalna Banka AD Skopje	0.9967	0.9970
NLB Tutunska Banka AD Skopje	0.9862	0.9879
Ohridska Banka AD Ohrid	0.8481	0.8396
ProKredit Banka AD Skopje	0.9954	0.9957
Sparkasse Banka AD Skopje	0.8712	0.8788
Stopanska Banka AD Bitola	0.8278	0.8720
Stopanska Banka AD Skopje	0.9994	0.9995
TTK Banka AD Skopje	0.8599	0.8662
Uni Banka AD Skopje	0.8687	0.8788

 Source: Authors' calculations.

As the previous research has shown (Naumovska and Cvetkoska, 2014, 2016), so has ours led to the con-clusion that the group of large banks has the highest efficiency, and the group of small banks the lowest effi-ciency in the Macedonian banking sector. So, in order to improve their efficiency and the efficiency of the banking sector as a whole, small banks are best to consolidate. In that way, they could use the benefits of economies of scale and they could gain higher competitiveness through the ability to offer diversified prod-ucts and invest in new and modern software and technological solutions, which will decrease their operating costs and thus increase their efficiency.

Figure 1 shows the variation through Window (row-wise averages of results) for 4 banks from the sample. As can be noted, Stopanska Banka AD Skopje shows the most stable results, which is also the most efficient bank. Halk Banka AD Skopje shows an increase in its efficiency in window 3 and window 4, and a decrease in effi-ciency in the last window. Eurostandard Banka AD Skopje shows an increase in the efficiency score in the last window, while Alfa Banka AD Skopje shows an increase in the efficiency score in windows: 3, 4 and 5.

Figure 1.
Variation through Window

6. Conclusion

This paper attempts to measure the efficiency of the commercial banks in Macedonia in the period from 2008 to 2015 by employing the DEA technique Window analysis. According to the obtained results of average effi-ciency in separate years, a decrease of efficiency is noted in 2010 and 2011, and an increase in efficiency from 2012 to 2015.

The lowest score of average efficiency of the banking system as a whole was achieved in 2011 (83.26%), while the highest score of average efficiency was noted in 2015 (96.35%). The Global crisis has left its consequences on the Macedonian banking market with a time lag, but it appears that the market is rather quick-ly recovering, reaching 9 out of 14 banks in the sample being efficient in 2015. These results and the increase in efficiency can be interpreted as a consequence of the processes of M&A from 2012 (when Halk Banka AD Skopje took over Ziraat Banka) and 2014 (when Postenska Banka AD Skopje was acquired by Eurostandard Banka AD Skopje). Furthermore, we can name some more examples of benefits (in the form of growing efficiency) of the M&As in banking. Such benefits are identified in the cases of Halk Banka AD Skopje, Stopanska Banka AD Bitola and Eurostandard Bank AD Skopje.

Stopanska banka AD Skopje has been relatively the most efficient bank in Macedonia in this analyzed time frame, which has noted relative inefficiency only in 2013. The highest average efficiency scores were noted in the group of large banks.

The DEA technique Window analysis is applied to measure the efficiency of bank-branches of one of the leading banks in Macedonia – Komercijalna Banka AD Skopje, and the main contribution of our research is in the fact that this technique has not yet been applied to measure the relative efficiency of the Macedonian banking sector. The Macedonian financial markets are still underdeveloped and with the results of such a research not only can banking benefit but also the financial market and the whole economy, since it leads to conclusions and detection of inefficiencies among the commercial banks.

Considering the globalization and internalization of businesses and banks, the inception of new banking technologies as well as the continuous processes of M&A in banking, the commercial banks in the Republic of Macedonia would have to offer higher efficiency in the future, in order to survive these modern trends. The main contribution of the research is the fact that the whole banking sector as well as each individual bank have been screened in the study, enabling both generalization and specialization of the results and findings for their future use from the bank management and the interested public.

References

Abraham Charnes, William W. Cooper and Edwardo L. Rhodes, "Measuring Efficiency of Decision Making Units", European Journal of Operational Research, 2 (6) (1978): 429-444.

Abraham Charnes, William W. Cooper, Arie Y. Lewin and Lawrence M. Seiford, Data envelopment analysis: Theory, methodology and applications, (Boston: Kluwer Academic Publishers, 1994).

Ali Emrouznejad, Barnett Parker and Gabriel Tavares, "Evaluation of research in efficiency and productivity: A survey and analysis of the first 30 years of scholarly literature in DEA", Socio-Economics Planning Science, 42(3) (2008): 151-157 accessed 01.06.2017 at doi:10.1016/j.seps.2007.07.002

Anastasios D. Varias and Stella Sofianopoulou, "Efficiency Evaluation of Greek Commercial Banks Using Data Envelopment Analysis", Lecture Notes in Management Science, Vol. 4 (2012): 254-261.

Deni Memić and Selma Škaljić-Memić, "Performance Analysis and Benchmarking of Commercial Banks Operation in Bosnia and Herzegovina: A DEA Approach", Business Systems Research, Vol. 4, No. 2. (2013): 4-24.

Elena Naumovska and Violeta Cvetkoska, "Efficiency of the Macedonian banking sector", Yugoslav Journal of Operations Research, [S.l.], v. 26, n. 3, (2016). Accessed 10.03.2017 at: <http://yujor.fon.bg.ac.rs/index.php/yujor/article/view/7>.

Elena Naumovska and Violeta Cvetkoska, "Measuring the Efficiency of the Banking Sector in the Republic of Macedonia", Annual of the Faculty of Economics – Skopje, Vol. 49, (2014): 221-238.

Emmanuel Thanassoulis, Introduction to the theory and application of data envelopment analysis: A foundation text with integrated software, (Boston: Kluwer Academic Publishers, 2001).

Farhat Khan and Bakhtiar Khattak, „An empirical investigation of commercial banks' efficiency in Pakistan: A non para-metric Data Envelopment approach", Gomal University Journal of Research, (2016): 21-32

G. Klopp, "The analysis of the efficiency of a production system with multiple inputs and outputs", (Ph.D. Thesis, Chicago: the University of Illinois at Chicago, Industrial and Systems Engineering College, 1985).

Gordana Popovic, "Assessment of efficiency of loan programs using data envelopment analysis", (Master's thesis, University of Belgrade, Faculty of Organizational Sciences, 2006). (on Serbian)

Gordana Savic, Marko Radosavljevic and Danijel Ilijevski, "DEA Window Analysis Approach for Measuring Efficiency of Serbian Banks Based on Panel Data", Management, 65, (2012): 5-14.

Igor Jemric, Boris Vujcic, "Efficiency of Banks in Croatia: A DEA Approach", Working papers, published by Croatian National Bank, Zagreb, W-7, (2002).

Iveta Repkova, "Estimation of Banking Efficiency in the Czech Republic: Dynamic Data Envelopment Analysis", Law and Economics Review, 4(4) (2013): 261-275.

Jelena Titko and Daiva Jureviciene, "DEA Application at Cross-Country Benchmarking: Latvian vs. Lithuanian Banking Sector", Proceida – Social and Behavioral Sciences, 110 (2014): 1124-1135.

Joseph C. Paradi, Sandra Vela and Zijiang Yang, "Assessing bank and bank branch performance", in Handbook of Data Envelopment Analysis edited by William W. Cooper, Lawrence M. Seiford, & Joe Zhu (Boston: Kluwer Academic Publishers, 2004), 349-400.

Katarzyna Chudy, Marek Sobolewski and Kinga Stępień, "Changes in the Productivity of Banks Situated in Poland dur-ing the Years Preceding the Financial Crisis", Bank i Kredyt, 43(2), (2012): 5-24.

Luka Neralic, "About one application of data envelopment analysis in agriculture", Proceedings of the Fifth Conference on Operational Research, Tihomir Hunjak, Ljubomir Martic & Luka Neralic (eds.), Croatian Operational Research Society, Rab, (1995): 204-214.

Magdalena Kisielewska, Malgorzata Guzowska, Joseph G. Nellis and Dariusz Zarzecki, "Polish banking industry efficien-cy: DEA window analysis approach," International Journal of Banking and Finance, Vol. 3, Iss. 1, Article 2. (2005), accessed 05.04.2017 at: http://epublications.bond.edu.au/ijbf/vol3/iss1/2

Manoj Kumar, Jyoti Raman and Priya Raman, "A fuzzy DEA Approach for Effectively Measuring the Efficiency of Indian Banks", IUP Journal of Bank Management, (2015): 21-38.

Mette Asmild, Joseph C. Paradi, Vanita Aggarwall and Claire Schaffnit, "Combining DEA window analysis with the Malmquist Index approach in a study of the Canadian banking industry", Journal of Productivity Analysis, 21(1) (2004): 67-89, accessed 08.01.2017 at doi:10.1023/B:PROD.0000012453.91326.ec

NBRM, Annual report 2015, (2016), Skopje

Nevena Mihailovic, Milica Bulajic and Gordana Savic, “Ranking of Banks in Serbia”, Yugoslav Journal of Operations Research, 19(2), (2009): 323-334.

Nikolay Nenovsky, Petar Chobanov, Gergana Mihaylova and Darina Koleva, “Efficiency of the Bulgarian Banking System: Traditional Approach and Data Envelopment Analysis”, Agency for Economic Analysis and Forecasting, Working paper 1, (2008)

Rajiv D. Banker, Abraham Charnes and William W. Cooper, “Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis”, Management Science, 30(9) (1984):1078-1092.

Repkova, I., (2014): “Efficiency of the Slovak Commercial Banks Applying the DEA Window Analysis”, International Journal of Social, Management, Economics and Business Engineering, 8(5), pp. 1262-1267.

Thomas E. Hartman and Justin E. Storbeck, “Input Congestion in Loan Operations”, International Journal of Production Economics, 46-47, (1996): 413-421, accessed 05.03.2017 at doi:10.1016/S0925-5273(96)00076-X

Valentin Z. Toçi, “Efficiency of Banks in South-East Europe: with Special Reference to Kosovo”, CBK Working paper, No. 4. (2009)

Vesna Micajkova and Klimentina Poposka, “Efficiency of Macedonian Banks: A DEA Approach”, Research Journal of Finance and Accounting, Vol. 4, No. 12 (2013): 141-149.

Violeta Cvetkoska and Gordana Savić, “Efficiency of bank branches: empirical evidence from a two-phase research approach”, Economic Research-Ekonomska Istraživanja, 30:1, (2017): 318-333, accessed 25.02.2017 at DOI: 10.1080/1331677X.2017.1305775

Violeta Cvetkoska and Petra Barisic, “Measuring the Efficiency of Certain European Countries in Tourism: DEA Window Analysis”, Book of Proceedings of the International May Conference on Strategic Management – IMKSM2014, 23-25 May 2014, Bor, Serbia, (2014): 77-86.

William W. Cooper, Lawrence M. Seiford and Kaoru Tone, Data Envelopment Analysis: A Comprehensive T e x t with Models, Applications, References and DEA-Solver Software, 2nd edition, (New York, Springer Science + Business Media, LLC, 2007).

UDK 35.088.7:005.332.8]:303.725.39497.7)”2000/2014”

EVALUATING ORGANIZATIONAL EFFECTIVENESS

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Abstract

The paper provides an approach to defining organizational effectiveness as a state of relations within and among relevant constituencies of the organization. Further on a review of relevant research on evaluating orga-nizational effectiveness is provided and a methodology for evaluating effectiveness through a multiple con-stituency approach is proposed. The method is elaborated and tested on a case, of one administrative agency in the Republic of Macedonia, the Administration Agency for a period of 13 years.

Keywords: *public administration, Administration Agency, organizational effectiveness, multiple constituencies approach, decision makers, task execution, operative readiness, external factors.*

1. Introduction:

Traditional Propositions and Definitions of Organizational Effectiveness

One of the ongoing and increasingly visible problems in public management is how to assess organization-al effectiveness. Some of the most persistent issues associated with effectiveness have been identified by Paul. S. Goodman and Johannes M. Pennings, but there is continuing disagreement about criteria and indi-cators (Stevens: 1984, 372). Discussions of effectiveness focused on various criteria and models, ranging from reviewing the validity of the rational goal-seeking models and internal processes, various alternatives such as the system resource perspective which emphasized the value of acquiring scarce resources from the environment, some emphasized global indicators of effectiveness and others focused upon specific cri-teria. All there differences considered they shared a crucial assumption: that it is possible and desirable, to

arrive at a single set of evaluative criteria, and thus at a single statement of organizational effectiveness. In order to relax this assumption, a group of authors argued for a multiple constituency and “multiple objective model” in order to assess effectiveness (Connolly, Conlon, Deutsch: 1980, 212). The proposition is a view of organizational effectiveness in which several (or, potentially, many) different effectiveness statements can be made about the focal organization, reflecting the criterion sets of different individuals and groups referred to as "constituencies”.

Crucial in any attempt to adequately assess organizational effectiveness is providing a comprehensive (as can possibly be provided) definition. Most authors have argued that such a definition is impossible to be pro-vided as yet, however there are certain characteristics common to most definitions. Organizational effective-ness is not a unitary construct. Effectiveness implies an effective external as well as internal (strategic, man-agerial) approach, needing to assess resources, authority, professional skills, cooperative mechanics and systematic assessments of critical contingencies. The multiple constituencies approach is what makes eval-uating organizational effectiveness difficult because there is no one single method or technique to evaluate all the processes within an organization, the organizations outputs and the long-term outcomes of the proj-ects that organization carries out. The overall organizational effectiveness requires a specific set of methods (instruments) appropriate for each constituency and a proposition that there is some level of dependency between them, or that each process in the organization influences the other, thus the proper interpretation of how relationships between various processes in an organization may serve as a basis for evaluating how effective that organization is overall.

Gartner and Ramnarayan proposed a paradigm model that views effectiveness as the ability of an organiza-tion to account successfully for its outputs and operations to its various internal and external constituencies (Gaertner, Ramnarayan: 1983, 97). They argued that effectiveness in organizations is not a thing, or a goal, or a characteristic of organizational outputs or behaviors, but rather a state of relations within and among rel-evant constituencies of the organization, thus an effective organization is one that is able to fashion accounts of itself and its activities in ways in which these constituencies find acceptable. The accounts may be for var-ious purposes to various audiences and for a variety of activities. They also proposed that different defini-tions and approaches on evaluating organizational effectiveness can be characterized by two major dimen-sions: (1) Focus of the definition[1] and (2) Intended use of concept.[2] Summarized briefly they proposed two approaches to measuring organizational effectiveness, one that relies on general output measures and one that relies on organization-specific output measures, each with their benefits and drawbacks. A benefit of try-ing to accept general output measures would be broad and general applicability of the methodology to a vast array of organizations, the major impetus of these approaches is that different organizations produce differ-ent things, as do even different subunits in the same organization (Aldrich 1979; Hannan & Freeman, 1978; McKelvey 1980). Metrics that can convert these outputs into comparable units across or even within organ-izations are not always available, subunits and managerial positions produce outputs that are not easily quantified and are only indirectly related to most terminal outputs. Also, the multiplicity of outputs produced by the organization results in their being differently valued by different constituencies of the organization (Friedlander & Pickle 1968; Scott, 1977). Goal-centered approaches on the other hand, assess effectiveness by how well the goals of the organization are being achieved. Organizational goal attainment yields valuable insight about the organization’s character and behavior (Etzioni, 1964; Perrow, 1970), because serious goal setting represents an attempt at optimization of potentially conflicting organizational factors, in light of partic-ular past and present circumstances and desired future (Gaertner, Ramnarayan: 1983, 98). Thus, even though goal-centered approaches provide a useful degree of detail and context often lacking in general out-put measures (at the expense of some generality in findings), analysis of goal attainment for evaluating orga-nizational effectiveness has its own limitations. As Bardach and Kahn argue, goals for programs and organ-izations are dynamic and are likely to change over time, partly as reflections of changing external circum-

1) Some definitions focus on measures of terminal outcomes, such as profitability, survival, or goal attainment. Others tend to be more concerned with organizational processes and structures;

2) There are approaches that tend to be organization-specific. Others are intended for a generality of organizations;

stances and partly due to changes in the political makeup of the organization itself (Bardach, 1977; Kahn, 1977). Other authors have expressed a problem of interpreting the uses of goals in organizations, goals being treated as window dressing designed not to orient the behavior of organizational members but rather to provide symbolic recognition to some constituency (Galbraith, 1967; Hannan & Freeman, 1977), and even that goals in organizations frequently are inventions to suit activity already performed (Wick, 1979).

Whatever the outputs finally arrived at, an understanding of effectiveness must include not only these out-puts, but also an understanding of the factors that are associated with their production. In the absence of such understanding, any output measure of effectiveness is simple but barren-clear in its measurement, but inadequate in utility (Gaertner, Ramnarayan: 1983, 99).

2. Proposed Approach to Evaluating Organizational Effectiveness of Public Organizations

Accepting, or rather following the multiple constituencies view, we recognize that the multiple-constituency approach views organizations as intersections of multiple influence loops, each embracing a constituency biased toward the assessment of the organization's activities in terms of its own exchanges within the loop. In such a view, the organization's location is not merely geographic, but implies its existence as including some influence loops rather than (or more extensively than) others. We also accept that this approach (as many approaches to defining and evaluating organizational effectiveness) needs further extensive empirical analysis.

We propose that a typical public organization depends on the following constituencies in order to fully achieve its (general) goals, accepting that each constituency assesses the organization’s activities by its own set of values. We propose that in order for a public organization to be effective (hens the level of its effec-tiveness) all constituencies need to agree that individual actions and activities contribute to the same gener-al goals and justify those goals.

Constituency 1: Decision makers. Typically, politically appointed managers (ministers, directors, high officials). For understanding the outputs and the changes in them, an examination is needed, not of the outputs themselves, but rather of the decision making and priorities within the agency, which are behind the planning and production of these outputs. Such an analysis would utilize a perspective of agency-specific views of effective operation. General goals are set by Laws independent of the decision makers’ will. In order to achieve those goals decision makers set concrete objectives (usually through annual programs) and task internal staff with operationalize them in order to produce outputs. We propose that even though politically appointed, managers in public organizations are driven by bounded rationality in determining objectives and follow a Bayesian logic of managerial behavior, under conditions of uncertainty, using previous information to define expectations, which are updated when new information becomes available, adjusting subsequent decisions based on updated expectations (Meier, Favero, Zhu: 2015).

Constituency 2: Staff. Typically, professional employees, carrier based, with a special status (civil servants). Operationalizing preset objectives is directly dependent of the skills and motivation of staff. We propose that in order to adequately meet objectives an organization must have be sufficiently staffed, the staff must be adequately trained and be motivated to fulfill their tasks. The achievement of objectives by staff can be per-ceived and productiveness.

3) Quote: An example of the integrative power of the multiple-constituency view, it is worth re-examining the only study of which we are aware [Molnar & Rogers, 1976] that attempted an empirical comparison of the "goals" and "systems" views of effectiveness. For 110 public agencies, these investigators obtained effectiveness ratings from agency administrators, from their peers, and from a variety of agency clients. The first two were interpreted in terms of agency goal attainment, the last in terms of systems resource effectiveness. The results showed a striking failure of convergence between the three ratings, a failure that Molnar and Rogers attribute to various conceptual and methodological problems. In a multiple-constituency view, of course, such divergence is to be expected: different constituencies rate a given organization in different ways (Connolly, Conlon, Deutsch: 1980, 214);

Constituency 3: Resources (material and financial). Although we recognize that resources (other than human) are not sentient and thus cannot be fully treated as an independent constituency, having sufficient budgeting and material resources is paramount for any organization to achieve its goals. Given enough recourses an organization may achieve optimum levels or performances, while given limited resources deci-sion makers may be forced to make compromises – reducing staff, or limiting the scope of actions the organ-ization may undertake, thus influencing it's effectiveness. The exact nature of the relationship between avail-able resources and scope of actions, needs further theorizing.

Constituency 4: Dominant political elites, international community, clients, business sector, changes in legal framework. Public organizations are not "lonely islands". An though decision makers may have best inten-tions, we propose, than even given optimum resources (human and material) in order for them to achieve objectives, all stakeholders affected by their achievement must provide a degree of support or acceptance for the actions that organization undertakes. Disagreement with the organizations objectives by stakehold-ers may negatively affect the final outcomes thus reducing their effectiveness.

One can present the proposed constituencies as variables, presented as follows:

C_1, Subjective perceptions of decision makers on the validity of the general goals, predetermined for the organization to achieve, and their commitment to make rational decisions formulated in setting individual objectives through which the organization is supposed to achieve general goals.[4] A (ideal) situation where (for example) following a change in government, a political appointee may view the general goals of the organi-zation as no longer valid and attempt to moderate them by setting objectives that would keep the organiza-tion working at its bare minimum of expected performance. In this case C_1 would be given a value of 0. An opposite (ideal) scenario is where the decision maker fully accepts the organizations predetermined goals and is committed to doing what feels best to fully achieving those goals. In this ideal scenario C_1 would be given a value of 1. Information regarding the perceptions and commitment of decision makers may be obtained by interviewing state officials, high administrative officials, governing civil servants etc. Depending on real case scenarios, the decision maker may feel more committed to achieving some goals rather than others and more supportive of some measures rather than others, thus C_1 in reality may be given a value between 0 and 1. Such an intermediary value may be derived by giving a value of 0, 0.5 or 1 to each individual objective (if there are more), summing them, and dividing the sum with the total number of evaluated objectives.

$$C_1 = \frac{O_1 + O_2 + O_3 \ldots + O_n}{N*O} = (0 \text{ to } 1) \quad (1)$$

C_2, human capacities, staff competence, level of productiveness can be obtained through quantitative meth-ods, surveys, focus groups, scientific studies etc.[5] Following the logic of C_1, relying on available data, C_2 may be given a value between 0 and 1. Just as in C_1, the value of C_2 may be obtained by assessing individual aspects of human capacities: if the number of staff corresponds to the volume of workloads, if there is a suf-

4) Important note: public organizations can disguise individual projects and process (instruments) as organizational goals – thus buy publishing statistical reports trying to portray them as very busy and able to cope with many problems. However this is syndrome only common to public administration, and we must emphasize the error of this misconception. A new experimental drug is not a goal for it self, nor is setting traffic cameras and issuing more fines to traffic offenders. These are but instruments to achieve general goals, in these examples having cheaper and more effective drugs that more people can offered and respectively a decrease in the number of traffic offenders over a period of time following the installation of traffic cameras;

5) There is fairly extensive literature suggesting that organizations tend to tailor the accounts of their performance in different ways, depending on whether the measurements and reports are for external or internal consumption (Altheide & Johnson, 1980; Boland, 1982; Edelman, 1977; Hopwood, 1972; Meyer & Rowan, 1977; Wildavsky, 1972).

ficient number of operative or analytical staff, average score of annual evaluations of staff etc. Each param-eter given a value of 0, 0.5 or 1.[6]

$$C_2= \frac{P_1 + P_2 + P_3 \ldots + P_n}{N*P} = (0 \text{ to} 1)\ (2)^7$$

C_3, Material and financial resources available to an organization can be assessed by analyzing annual budg-et plans for the organization, individual items in the budget dedicated for different objectives, employment of more staff, interviewing employees and observing actual facilities where staff works. Following the logic of C_1 and C_2, the value of C_3 is obtained by giving a value between 0 and 1 to each individual item analyzed and dividing their sum with the total number of analyzed items.

$$C_3= \frac{R_1 + R_2 + R_3 \ldots + R_n}{N*R} = (0 \text{ to} 1)\ (3)^8$$

C_4, External factors. Assessing the attitudes of external agents, such as political elites, international organizations, national experts etc. can be performed by analyzing publicly available documents which express atti-tudes or observations of how the organization is performing in regards to achieving its goals. Such documents may be progress reports by the European Commission, reports by the World Bank, published papers by rel-evant scientists and other experts, in certain cases in public opinion surveys. In the case of analyzing the per-ceptions (or evaluations) of external factors to how successful the organization is in achieving its goals, deter-mining the exact number of external factors is subject to case by base assessment and is open to a more descriptive approach by the researcher (respectively).[9] The value of C_4 is obtained by giving values between 0 to 1 to each external factor and dividing their sum with the total number of determined external factors.

$$C_4= \frac{Ef_1 + Ef_2 + Ef_3 \ldots + Ef_n}{N*Ef} = (0 \text{ to} 1)\ (4)^{10}$$

Thus the effectiveness of a given organization may be evaluated by summing the values of selected constituencies, and dividing their sum with the total number of constituencies measured. Providing a value between 0 and 1. In this proposed methodology, 0 and 1 are ideal situations which least likely to every occur in reality, meaning that the organization is completely ineffective or is 100% effective.[11] This method strives to provide a general indicator of the effectiveness of an organization in achieving its goals. The smaller to value or the closer the value is to 0 the less effective the organization is, and the closer the value is to 1, more effective the organization is. Individual constituency values provide a useful indicator of which factors are contributing to higher or lower levels of the organizations effectiveness.

$$C = \frac{C_1 + C_2 + C_3 + \ldots C_n}{N*C}^{12} \quad (5)$$

6) Assuming that certain parameters are more susceptible to quantitative representation, resulting values may be any given value between 0 and 1;

7) "P" in this equation representing potential or productiveness. Though any symbol or form of nomenclature would bee appropriate as long as it suits the needs of the researcher for particular case;

8) "R" in this equation represents resources. Though the same logic as footnote 7 applies;

9) First, what are the various accounts that the organization makes of its activities? What activities are being accounted for and to whom? How are these accounts changing over time? Second, how do these accounts mesh with the expectations of actors in the task environment, with the processes the accounts are supposed to represent, and with other accounts?;

10) "Ef" in this equation represents external factor. The same logic as footnotes 7 and 8 applies;

11) One might say that administrative organizations have general goals who can never truly be achieved: there will never be a day for the Ministry of health when there are no more sick people, but it must always strive to keep the levels of sick people at their mini-mum by monitoring the development of new illnesses and constantly proposing new measures and instruments to achieve this gen-eral goal of health care and disease prevention;

12) Depending on the complexity of the organization or network of organization, this model may be integrate more constituencies;

or in our example

$$C = \frac{C_1 + C_2 + C_3 + C_4}{4} \quad (6)$$

Paradigm model of organizational effectiveness. Multiple constituencies approach.[13]

C1: DECISION MAKERS Upper management, political officials *Instrument: Interviewing state officials, high administrative officials, governing civil servants etc.*	C2: PROGRAM EXECUTION civil servants directly involved in implementation of decisions *Instrument: quantitative methods, surveys, focus groups, scientific studies etc.*
C3: GENERAL OPERATIVE READINESS *Size of staff, budget, capacities etc.*	C4: EXTERNAL FACTORS Dominant political elite, international community, clients, business sector, legal framework *External analysis: in desk research, literature review, progress reports,*

Primary hypothesis: [14]

Organizational effectiveness is the ability of an organization to achieve it's general goals and tasks.

Administrative organizations are directly influenced by the approval of all relevant stakeholders in the valid-ity (justification) of the organizations goals and the organizational operative radiness (technical and financial resources needed to achieve it's goals).

Representation of a production process in relation to general organizational goals

Input	process				output	outcome
What is expected of thatorganization	Internal rules and regulations	Technical resources	Financial resources	Human resources	The direct end result of an individual process. Is quantifiable.	A long term effect the output has on a achieving a general goal

In the following chapter, we test the proposed method of evaluating the effectiveness of a public organization in the Republic of Macedonia, tasked with conducting a selection process and training of civil servants.

13) Kishore Gawande and Timothy Wheeler, Measures of Effectiveness for Governmental Organizations, Management Science, Vol. 45, No. 1, Jan., 1999, pp. 42-58;

14) PhD Dissertation: Efektivnost administrativnih organizacija. Dragan Gocevski, 2012 (unpublished);

3. Testing a method: How effective is the Administration Agency in the Republic of Macedonia

The Administration Agency was originally established in 2000, as the Agency for Civil Servants. It was tasked with conducting selection procedures for employment of civil servants and to provide legal aid as a second instance authority for protection of civil servants rights, in disciplinary procedures.[15] Government intentions in 2000 were to establish an independent regulator type organization, as an impartial and professional party in employing civil servants, giving them legal protection and provide trainings, ultimately, contributing to build-ing a professional and non partisan public administration in Macedonia - which we accept as the long term goal for this organization.

Originally the Agency had a broader scope of competencies, which were transferred to the Ministry of Information Society in 2009.[16] In order to keep the evaluation objective only the competencies which remained under the Agencies' competencies from 2000 until 2013 were taken in to account. As the legal competencies are fairly explicit, we derive specific objectives of the Agency as:

O_1 - conducting selection procedures

O_2 - acting on appeals filed by civil servants, against disciplinary measures

O_3 - conducting training of civil servants

The relevant constituencies that influence the effectiveness of the Agency for Administration in achieving the aforementioned general objectives are:

C_1 – Decision makers. Perceptions of management and high-ranking officials;

C_2 – Program execution. Staff directly involved in the execution of specific tasks and processes;

C_3 – General operative readiness. Available resources;

C_4 – External factors.

High ranking officials in Agency expressed firm commitment and confidence in the Agencies ability to cope with all three objectives, justifying them all. However, personal views on the support the Agency is given (financial mostly) the feel most confident in the Agencies ability to conduct selection procedures and conduc-ing second instance legal procedures, whilst trainings were significantly underfunded by national funding and relied mostly on collaboration with foreign organizations to finance trainings on a more or less ad hoc basis. Thus for the C_1 we assess that O_1 and O_2 are closest to 1. Giving three possible values that could be deter-mined from a descriptive evaluation of the Agencies management attitudes on O_3: 0 being the agencies inability to cope with tasks at hand, 0.5 being limited ability of the Agency to cope with tasks and 1 being opti-mal ability to cope with tasks, we deduce that O_3 fits a value of 0.5.

$$C_1 = \frac{O_1 + O_2 + O_3}{3} \quad (7) \qquad = \qquad \frac{1 + 1 + 0.5}{3} \qquad = \quad 0.83 \quad (8)$$

15) Art. 7-8b, 14-17b. Law on Civil Servants (Off. Gazette No. 59/2000, 112/2000, 30/2001, 34/2001, 103/2001, 43/2002, 98/2002, 100/2002, 17/2003, 40/2003, 84/2003, 85/2003, 17/2004, 69/2004, 81/2005, 61/2006, 36/2007, 118/2008, 128/2008, 161/2008, 6/2009, 114/2009, 1/2010, 35/2010, 167/2010, 36/2011);

16) State Servant Agency, Annual Report for 2008: Independent protection, care and supervision over the implementation of the civil service legislation and the principle upon which the civil service is founded, including rightful representation of all ethnic communities in the Republic of Macedonia; A single governing framework for development, organization and directing of civil servants, including the definition of terms for employment, work post description, evaluation of civil servants, code of ethics, salaries and compensations, trainings and professional development; Holding and maintenance of the Register of civil servants.

Assessing the three objectives through available human potential we analyzed official statistics produced by the Agency in the form of Annual Reports. The first remark we point out is a lack of data for the first five years of the Agencies' operation. Since 2000 till 2005 the Agency published no reports, and save for two docu-ments Annual Indicators[17] and Quarterly Indicators[18] on Human Resource Management published in April 2009 there is no official information on the period from 2000 to 2005. The two documents cover the period between 2004 and 2008, contain fragmented data and a very imprecise. An interview with a high ranking offi-cial in the Agency provided information that the Agency hardly conducted employment related procedures at all from 2000 till 2002, and qualified the Agencies' general operational scope as "bare minimum".[19]

The period covered in great detail is 2005 – 2013 due to availability of information.

Thus for the following two constituencies, we cannot propose a complete value od 1 in any situation, because for the first five years of it's operation the Agency produced little or no usable date. Thus C_2 and C_3 have should have a maximum potential value of 0,5. However, if we decide to evaluate the effectiveness of the Agency for the period it was considered operational the values would be as presented in the following paragraphs.

Considering productiveness of it's staff, or C_2 –program execution, of the three objectives, in this case pre-sented as P_1 – selection procedures, P_2 – acting on appeals and P_3 – trainings, we could present C_2 as:

$$C_2 = \frac{P_1 + P_2 + P_3}{3} \quad (9)$$

From 2005 till 2013, the Agency published 2051 public competitions for the employment of 13.715 state ser-vants in all levels of government. Of those, according to available date (only for the period 2005 to 2010) 10.100 state servants were actually employed. As data is fragmented, we present data on the total number of employed state servants only for informational purposes. From 2009, the total number of state servants went up from 11.130 to 15.321 in 2013. It is not debatable, that from a technical point of view, task execu-tion regarding selection procedures is clear, thus P_1 deserves a value of 1 (for the period of 2005 to 2013). Regarding the Agencies' role as a second instance authority that acts upon appeals when state servant's rights are regarded, the Agency received 4.497 appeals, and decided on 4.107 of them for the period of 2005 to 2013 (2010 and 2011 there is no available data). Though efficiency may be better in this regard, we can-not dispute that the Agency acted accordingly and within its competence in this area, thus P_2 deserves a value of 1. Regarding trainings of state servants, the Agency managed dozens of project based trainings both domestic and international, and total of 5.660 state servants attended (data relevant to this case is only from 2000 till 2010, as the organization of trainings as a competence was transferred from the Agency to the Ministry of Information Society and Administration since 2010 and trainings fall in the Ministries Report year 2011. However data is only available from 2005 to 2010). As data is so fragmented and only half of the peri-od covered is provided with official statistics it is difficult to objectively grade the Agencies ability to organize trainings. For the second constituency as only the execution of tasks is assessed we award the Agency with a grade of 1, as it clearly did conduct trainings and provided positive data on it, thus $P_3 = 1$.

Thus, for the period 2005 to 2013 C'_2 is:

$$C'_2 = \frac{1 + 1 + 1}{3} = 1 \quad (10)$$

17) Administration Agency: Annual Indicators on Human Resource Management in State Administration, 21.4.2009 (visited 2.8.2012). Available at: http://www.ads.gov.mk/?ItemID=DFCFDD95BB2E054EA91CF3BB90D84228

18) Administration Agency: Quarterly Indicators on Human Resource Management in State Administration 21.4.2009 (visited 2.8.2012). Available at: http://www.ads.gov.mk/?ItemID=DFCFDD95BB2E054EA91CF3BB90D84228;

19) Interview with a State Servant in the Administration Agency (May 2012);

While if the entire period from 2000 till 2013 was covered, C_2 would have to include the deficiency of lack of any data in the first five years of operation, thus we propose

$$C_2 = 1/13 * (13 - 5) = 0.076*8 = 0.61 \quad (11)$$

The logic of including the lack in operability for the first five years since it was established follows when eval-uating the third constituency or the Agencies' general operative readiness. Data on the Agencies' budget is also scares, however we know from Annual reports, that in 2012 the Agencies budget for all it's competen-cies was 528.195 euro and in 2013 it was 510.715 euro. Also, a favorable information is given from the data available on the conducted trainings, i.e. virtually all of them were either co-sponsored or fully funded by for-eign donations, thus we cannot attribute a great deal of value for the Agencies' resources allocated on train-ings (this being an external factor, as it's budget is determined by the Assembly). We also derive, from avail-able data that the agency staff varied around 43 employees. For C_3, we determine the variables as R_1 – selection procedures, R_2 - acting on appeals and R_3 - trainings. We assume that given the amount of resources available, the Agencies' policy was to ensure selection procedures and appeal procedures had pri-ority thus R_1 and R_2 are awarded a value of 1. As for trainings, all the data points that the Agency was heav-ily dependent on foreign funding to perform this task, however it provided the necessary logistics thus R_3 is awarded a value of 0.5.

Thus for the period of 2005 to 2013, C'_3 is as follows:

$$C'_3 = \frac{1 + 1 + 0.5}{3} = 0.83 \quad (12)$$

When we introduce the factor of time when the Agency was optimally operable, we come to the following result:

$$C_3 = 0.83/13 * (13 - 5) = 0.063 *8 = 0.51 \quad (13)$$

Regarding the external factors that influence the Agencies' overall effectiveness we will use available data from Progress reports by the European Commission and papers published on the issue by domestic experts. As this constituency is comprised of the evaluations by more than one actor, we shall provide a broader nar-rative and summarize conclusions afterwards.

The number of civil servants in service in the Republic of Macedonia at the end of 2011 totaled 14.821.[20] This number includes civil servants employed in the executive branch, state agencies and administration in the judiciary, state attorney' office and local self-government.[21] According to Agency records there were a total of 12.480 civil servants in active service in 2010. Regretfully, there is no official data on the number of civil servants in 2005. Unofficial data shows that in 2006 there were 11.830. Although methodologically not justi-fied, these figures do offer and indication of events and trends. In order to get an idea of the meaning of these figures we must discard the number of new employments in 2005, which is 788, and sum up the new employ-ments in the years following up to 2010, which give us 10.100 new civil servant employments.[22] This means that of the total number of 11.830 civil servants in active servants in 2006, up until 2010 by employing 9.312 new civil servants, virtually 94.7% of the entire civil service in Macedonia was changed in 5 years. Of course, we emphasize that this result may only considered indicative and not as an absolute statistic. This is because more factors must be taken into account to explain the number of people who terminated employment in this period: legal age for retirement, a large number of civil servants had their status changed by law (civil ser-vants employed in the IRS and State Customs were declared Revenue Servants and Customs Servants

20) Annual Report on Data from the State Servant Register for 2011, Ministry for Information Society and Administration, 2011;
21) Ibid: 6;
22) State Servants Agency, Annual Report 2005: 6, Annual Report 2006: 6, Annual Report 2007: 6, Annual Report 2008: 6, Annual Report 2009: 6, Annual Report 2010: 6, Annual Report 2011: 6, Annual Report 2012: 7, Annual Report 2013: 6;

respectively in 2008-2009 etc.). Still, it is difficult to justify changing 94.7% of the active administrative staff within 5 years. Seeing how the Agency was competent to give consent to all of these employments (at the time) we cannot rationalize this dynamic of change as objective.

In 2006 the number of civil servants who belonged to an ethnic minority summed 2.042. This number grew to 3.747 in 2010, of which in 2006 1.447 were Albanian and grew to 3002 in 2010 (24% of the total number of employed civil servants in Macedonia. When put in to relative context this shows that at least 1.555 eth-nic Albanian civil servants were employed as a result of the obligations towards the Ohrid Framework Agreement.[23] This number and the method through which they were employed throughout 2009-2011 was portrayed with much controversy in the media. A common "affair" popularized in media was that 700 civil ser-vants of Albanian ethnicity were employed at the Secretariat for Implementation of the Ohrid Framework Agreement with no actual vacancies for employment, which is a legal requirement. Regardless of this, the Administration Agency conducted (under political benefice) 700 employment procedures just the same, skip-ping a formal prerequisite (thus diminishing the Agencies' role as a legitimate mechanism for selection of state servants).

If we accept observations coming from the European commission in the Progress reports for 2009, 2010 and 2011 we see a very disappointing impression of the institutional mechanism the Republic of Macedonia built to create a competent, professional civil service employed by merit.[24]

The 2009 Progress report holds a commandment to the amendments in legal framework regulating the status and competencies of the Administration Agency, strengthening its role in the selection procedure of state servants, placing a strong accent on merit. The Agency was authorized to prepare secondary legislation, conduct inspections and other legal supervision on internal organization of state agencies, approve new employments in civil service and supervise the progress of proportional representation in public administra-tion. We must notice a certain latency here, as the Ohrid Framework Agreement was ratified in 2001, official records on its implementation date back to 2005 and an official institutional mechanism for its implementa-tion (formally based on merit) is legally enacted and implemented in 2009.

In 2009 EC also gave positive marks for the establishment of a system for civil servant training. The Council for trainings and the Department for trainings at the Administration Agency was supposed to supervise the implementation of a three-year strategy for trainings financed by the budget of the Republic of Macedonia.

The Agency published in a 2009 Report that since September 2008, there had been 77 illegal promotions of which 38 were in the Ministry for economy alone. Till 2012 only one was annulled which causes serious con-cern for the implementation of Law. A very serious remark was made on increased use of temporary employ-ment contracts (a form of employment not recognized by Law at the time), a practice which deviates from merit based employment. Many of the temporary employees were contracted to lower ranks in civil service unfitting their qualifications, they weren't provided adequate office space and equipment and did not have a clear description of work posts. This practice was common in both national administrative agencies as well as local self-government and was most demeaning to fully employed civil servants.

Despite obligations laid down in the Code of Ethics, no civil servant had yet reported misconduct or illegal doings by a colleague civil servant in the 13-year period covered by this analysis.

In the 2010 Progress report EC stated that the amendments to Law on State Servants adopted in 2009, began actual implementation in march 2010, and the Administration Agency had adopted most of the rele-vant bylaws and was managing the coordination of their implementation, including civil servant selection pro-cedures. However, due to budged restrictions the 2010 trainings plan could not be implemented. Up until this

23) Ohrid Framework Agreement (http://mls.gov.mk/index.php?news=450) last visited March 20, 2013;

24) The Former Yugoslav Republic of Macedonia 2009 Progress Report, Commission Staff Working Document, Brussels, 14 October 2009 SEC(2009)1335; The Former Yugoslav Republic of Macedonia 2010 Progress Report, Commission Staff Working Document, Brussels, 9 November 2010 SEC(2010)1332; The Former Yugoslav Republic of Macedonia 2011 Progress Report, Commission Staff Working Paper, Brussels, 12 October 2011 SEC(2011)1203 final;

point it is perceivable that when it comes to reforming the legal framework, institutions in Macedonia are very agile in adopting new regulations and harmonizing them to EU directives and regulations. However when implementation of regulations, and fulfilment of obligations coming from them is assessed, the whole institu-tional mechanism seems to be either lagging or is dysfunctional entirely.

Regarding the training system, which brought so much enthusiasm in 2009, the 2010 Progress Report stat-ed: "after 18 months since its establishment the Centre for training of civil servants was not yet operational".

Most of the temporary employees were given a full employment during the third quarter of 2010. This process in many accounts was not transparent which puts it under doubt. Employment of civil servants belonging to ethnic groups had been conducted on quantifiable criteria, without consideration for institutional actual needs and discarding professional requirements for employment. The selection procedure was often subjected to out side influence. There was no structural connection between the Administration Agency and the Secretariat for implementation of the Ohrid Framework Agreement regarding the planning and implementation of proportion-al representation. The last (aforementioned) critiques in the Report only confirm institutional dysfunctions, which were supposed to build a professional and competent administration employed by merit.

In the Final EC Progress Report covered by this analysis there is a general mark that the "new" institutional arrangement provides a good stepping-stone for successful implementation of public administration reforms. However the budget, infrastructure and administrative capacities of the Ministry for Information Society and Administration were not sufficient, with an emphasis on the Administrative Inspectorate.

The Law on State Servants had been amended (than for the 25th time since its enactment) to introduce new elements in selection and promotion rules. Yet none of these amendments provided strategic solutions to contemporary challenges. The legal framework remained inconsistent and subject to frequent changes, frag-mented, providing than many administrative agencies be regulated by completely different regulations. This was most serious in the salaries segment, selection, evaluation, promotion and termination of employment.

The 2011 Progress Report had a critique that the Civil Servant Register wasn't functional (this competence was transferred from Administration Agency to the Ministry of Information Society and Administration in 2010) thus unfulfilling the goal to create a unified digital database for public administration.

A firm statement was made that since February 2011 roughly 1.600 state servants belonging to ethnic minori-ties were employed in order to comply with the principle of proportional (equal) representation, which only con-firms the trend of employing such persons only on quantitative criteria, completely neglecting actual needs of the public service. Practice shows insufficient levels of coordination in the rightful representation in public serv-ice between the Ministry of Information Society and Administration and the Secretariat for implementation of the Ohrid Framework Agreement. Selection procedures remained prone to undesirable political influence.

Starting from 2000 onwards, all documents regarding public administration reforms show constant empha-sis on the importance of building a sustainable training and education system that provides effects. Opposed to recommendations all reports point out that existing methods of training are inefficient, and skill and knowl-edge levels are unsustainable and aren't applicable.

Finally, an overview of contemporary expert opinions relevant to the field confirms the aforementioned con-clusions: the greatest fault in public administration reforms is the selection process and mechanism through which civil servants are employed, as well as the very size of the public administration in Macedonia. Pre electoral periods are often used to employ more and more civil servants (often stated that belong to a promi-nent political party). The amendments to the Law on State servants which were supposed to make civil ser-vant employment termination simpler aren't fully justified because in principle civil servants are most prone to political pressure, thus the need to have their employment status protected by law. Further fragmentation of and changes to the Law on State Servants continued until February 2014, when a new set of legislation was adopted completely annulling this Law.[25] Making these practices a "relative issue" according to various

25) On February 5th 2014 the Law on Administrative Servants and the Law on Employees in the Public Sector were adopted. They stepped into force on February 13th 2014 and began execution on February 13th 2015;

authors may only contribute to legalizing mall practice and political polarization of the public administration in Macedonia (Davitkovski, Pavlovska-Daneva: 2011, 386-400).

Given the fair amount of critic given the outcomes and the Administration Agency operation, as well as its silence on many of the emphasized irregularities regarding selection and employment of state servants as well as the confirmed opinion that it lacks funding to perform a sustainable training system we cannot propose a greater value than 0.5 for those Agency objectives. Thus, for C_4 we propose the following variables Ef_1 – selection procedures, Ef_3 – trainings are awarded values of 0.5. As for acting upon appeals, no one contested this area of the Agencies operation, and even though Annual Reports are bleak we propose a value of 1 for this competence, i.e. Ef_2 – acting upon appeals = 1.

$$C'_4 = \frac{0.5 + 1 + 0.5}{3} = 0.66 \quad (14)$$

Seeing how data on how the Agency operated from 2000 to 2005, and the first EC reports were published after 2006 we include the time factor in this equation as well.

$$C_4 = 0.66/13 * (13 - 5) = 0.05 * 8 = 0.4 \quad (15)$$

Accepting the provided values for the four constituencies, which evaluate the hole considered period from 2000 to 2013, the resulting evaluation of the Agencies effectiveness on three determined objectives is as fol-lows:

$$C = \frac{C_1 + C_2 + C_3 + C_4}{4} \quad (16)$$

$$C = \frac{0.83 + 0.61 + 0.51 + 0.4}{4} = 0.58 \quad (17)$$

Proposing that a resulting 0 meaning theoretically that the Agency would be completely ineffective, and 1 meaning the Agency would be 100% effective, the resulting value of 0.58 is a good indicator that the agency is fairly effective however with many faults and issues which prevent it from fully accomplishing its legal goals. If we were to cover the effectiveness of the Agency for a shorter period of time, this value would rise indicating that effectiveness is not absolute, but rather a time varied ability of an organization to achieve its goals. Also, this multiple constituencies approach provides with the areas where the agency is best at such as motivation and commitment by managing staff and high ranking officials as the first constituency had a largest value overall. Another strong area is task execution, or the second constituency. The lowest score are awarded to trainings and to the agencies operation when evaluated by external actors, indicating that the Agencies ineffective is due mostly because of external influence, such as lack of adequate funding for training programs and exposure to political pressure.

Interesting is that the relative effectiveness of the Agency is close to the already assessed overall efficiency of the budget users in Macedonia calculated with the Data envelopment analysis of around 60% (Trenovski and Nikolov, 2015).

4. Conclusion

What this paper provides is an approach to evaluating the effectiveness of organizations. It provides a method, which can be moulded and adapted to any organization (respectively) and specifically to public organizations such as government agencies. The methodology and results from the presented case, support the claim that effectiveness in organizations is not a thing, or a goal, or a characteristic of organizational out-puts or behaviors, but rather a state of relations within and among relevant constituencies of the organiza-tion, thus an effective organization is one that is able to fashion accounts of itself and its activities in ways in which these constituencies find acceptable.

The particular case selected in this paper shows the high degree of dependency that each constituency has from the optimal functioning of all other constituencies, thus promoting a claim than in order for an organiza-tion to be effective, all aspects (relevant) to its competencies must be attended to. Even if an organization has the most motivated staff and committed management it must take in to account, necessary resources and the attitudes of its environment.

The assessed efficiency of the Administration Agency of 0.58% is close to the overall economic efficiency of the budget users in Macedonia calculated with the Data envelopment analysis of around 60% (Trenovski and Nikolov, 2015).

REFERENCES

1. Aldrich, H. E. Organizations and environments. Englewood Cliffs. N. J.: Prentice-Hall, Inc., 1979;
2. Bardach, E. The implementation game: What happens after a bill becomes a law. Cambridge, Mass.: The MIT Press, 1977;
3. Davitkovski B., Pavlovska-Daneva A., Public Administration-Incentive or Obstacle to the EU Integration of Macedonia, Anals of the Faculty of Law in Belgrade, Belgrade Law Review-Journal of Legal and Social sciences, Belgrade 2011, No.1, Year LIX;
4. Friedlander, F., & Pickle, H. Components of effectiveness in small organizations. Administrative Science Quarterly, 1968;
5. Galbraith, J. K. The new industrial state. Boston: Houghton Mifflin, 1967;
6. Gregory H. Gaertner and S. Ramnarayan, Organizational Effectiveness: An Alternative Perspective, The Academy of Management Review, Vol. 8, No. 1 (Jan. 1983);
7. Grizo N., Davitkovski B., Problems of Governance. Skopje 2001;
8. Hannan, M. T., & Freeman, J. H. The population ecology of organizations. In M. W. Meyer (Ed.), Environments and organizations. San Francisco: Jossey-Bass, 1978;
9. Hannan, M. T., & Freeman, J. Obstacles to comparative studies. In P. S. Goodman & J. M. Pennings (Eds.), New perspectives on organizational effectiveness. San Francisco: Jossey-Bass, 1977;
10. John M. Stevens, "Relationships between Top Level managerial Strategies and Effectiveness in Local Government", Public Productivity Review, Vol. (, No. 4, Strategic Public Management and Productivity Improvement: A symposium (Winter, 1984);
11. Kahn, R. L. Organizational effectiveness: An overview. In P. S. Goodman & J. M. Pennings (Eds.), New perspectives on organizational effectiveness. San Francisco: Jossey-Bass, 1977;
12. Kenneth J. Meier, Nathan Favero, Ling Zhu. "Performance Gaps and Managerial Decisions: A Bayesian Decision Theory of Managerial Action", Journal of Public Administration Research and Theory, Oxford Journals, January 2015;
13. Kishore Gawande and Timothy Wheeler, Measures of Effectiveness for Governmental Organizations, Management Science, Vol. 45, No. 1, Jan., 1999;
14. Law on Civil Servants (Off. Gazette No. 59/2000, 112/2000, 30/2001, 34/2001, 103/2001, 43/2002, 98/2002, 100/2002, 17/2003, 40/2003, 84/2003, 85/2003, 17/2004, 69/2004, 81/2005, 61/2006, 36/2007, 118/2008, 128/2008, 161/2008, 6/2009, 114/2009, 1/2010, 35/2010, 167/2010, 36/2011);
15. McKelvey, B. Organizational speciation. In C. Pinder & L. Moore (Eds.), Middle range theory and the study of organ-izations. Boston: Martinus Nijhoff, 1980;
16. Ohrid Framework Agreement (http://mls.gov.mk/index.php?news=450) last visited March 20, 2013;
17. PhD Dissertation: Efektivnost administrativnih organizacija. Dragan Gocevski, 2012 (unpublished);
18. Scott, W. R. Effectiveness of organizational effectiveness studies. In P. S. Goodman & J. M. Pennings (Eds.), New Perspectives on organizational effectiveness. San Francisco: Jossey-Bass, 1977;
19. Terry Connolly, Edward J. Conlon, and Stuart Jay Deutsch, "Organizational Effectiveness: A Multiple Constituency Approach". The Academy of Management Review (April 1980);
20. Trenovski B., and Nikolov M., (2015): "Cost-Benefit Analysis Of Performance Based Budgeting Implementation", CEA Journal of economics, Vol. 10(2)
21. Weick, K. E. The social psychology of organizing. Reading, Mass.: Addison-Wesley, 1979.
22. M. Barzelay, Breaking Through Bureaucracy: A new vision for managing in government, University of California Press, Berkeley, 1992

Reports and Legal Sources

1. Administration Agency, Annual Report for 2012 (Извештај за работа на АА за 2012 година, Број 01–/1402/1 22.03.2013 година, Скопје);
2. Administration Agency, Annual Report for 2013 (Извештај за работа на Агенцијата за администрација за 2013 година, Број 01–/832/1 19.03.2014 година, Скопје);
3. Administration Agency: Annual Indicators on Human Resource Management in State Administration, 21.4.2009 (visited 2.8.2012). Available at: http://www.ads.gov.mk/?ItemID=DFCFDD95BB2E054EA91CF3BB90D84228
4. Administration Agency: Quarterly Indicators on Human Resource Management in State Administration 21.4.2009 (visited 2.8.2012). Available: http://www.ads.gov.mk/?ItemID=DFCFDD95BB2E054EA91CF3BB90D84228;
5. Annual Report on Data from the State Servant Register for 2010, Ministry for Information Society and Administration (Годишен извештај за податоците од Регистарот на државните службеници за 2010 година, Министерство за информатичко општество и администрација);
6. Annual Report on Data from the State Servant Register for 2011, Ministry for Information Society and Administration (Годишен извештај за податоците од Регистарот на државните службеници за 2011 година, Министерство за информатичко општество и администрација);
7. Annual Report on Data from the State Servant Register for 2012, Ministry for Information Society and Administration (Годишен извештај за податоците од Регистарот на државните службеници за 2012 година, Министерство за информатичко општество и администрација);
8. Annual Report on Data from the State Servant Register for 2013, Ministry for Information Society and Administration (Годишен извештај за податоците од Регистарот на државните службеници за 2013 година, Министерство за информатичко општество и администрација);
9. Interveiw with a State Servant in the Administration Agency (May 2012);
10. State Servant Agency, Annual Report for 2008, No. 01-3180/1, Skopje, 19 March 2009;
11. State Servants Agency, Annual Report for 2005 (Извештај за работа на АДС за 2005 година, Бр. 01- 28 февруа-ри 2006 год., Скопје);
12. State Servants Agency, Annual Report for 2006 (Извештај за работа на АДС за 2006 година, Бр. 01-5337/1, 23 април 2007 год., Скопје);
13. State Servants Agency, Annual Report for 2007 (Извештај за работа на АДС за 2007 година, Бр. 01- 28 февруа-ри 2008 год., Скопје);
14. State Servants Agency, Annual Report for 2008 (Извештај за работа на АДС за 2008 година, Број 01-3180/1, Скопје, 19 Март 2009 год., Скопје);
15. State Servants Agency, Annual Report for 2009 (Извештај за работа на АДС за 2009 година, Бр. 01-1043/1, 2 март 2010 год., Скопје);
16. State Servants Agency, Annual Report for 2010 (Извештај за работа на АДС за 2010 година, Бр. 01-1078/1, 23 март 2011 год., Скопје);
17. The Former Yugoslav Republic of Macedonia 2009 Progress Report, Commission Staff Working Document, Brussels, 14 October 2009 SEC(2009)1335;
18. The Former Yugoslav Republic of Macedonia 2010 Progress Report, Commission Staff Working Document, Brussels, 9 November 2010 SEC(2010)1332;
19. The Former Yugoslav Republic of Macedonia 2011 Progress Report, Commission Staff Working Paper, Brussels, 12 October 2011 SEC(2011)1203 final;

Resume

EVALUATING ORGANIZATIONAL EFFECTIVENESS

The paper provides an approach to defining organizational effectiveness as a state of relations within and among rele-vant constituencies of the organization. Further on an overview of relevant research on evaluating organizational effec-tiveness is provided and a methodology for evaluating effectiveness through a multiple constituency approach is pro-posed. The model reaffirms and expands on Gartner and Ramnarayans paradigm model that views effectiveness as the ability of an organization to account successfully for its outputs and operations to its various internal and external con-stituencies.

The methodology and results from the presented case, support the claim that effectiveness in organizations is not a thing, or a goal, or a characteristic of organizational outputs or behaviors, but rather a state of relations within and among relevant constituencies of the organization, thus an effective organization is one that is able to fashion accounts of itself and its activities in ways in which these constituencies find acceptable. The method is elaborated and tested on a case, of one administrative agency in the Republic of Macedonia, the Administration Agency for a period of 13 years.

The particular case selected in this paper shows a high degree of dependency that each constituency has from the opti-mal functioning of all other constituencies, thus promoting a claim that in order for an organization to be effective, all aspects (relevant) to its competencies must be attended to. Even if an organization has the most motivated staff and committed management it must take in to account, necessary resources and the attitudes of its environment.

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THE MACROECONOMIC DETERMINANTS OF HOUSEHOLD WELFARE IN SADC: A QUANTILE REGRESSION APPROACH

Strike Mbulawa[26]

Abstract

The study focuses on household welfare in the context of Southern Africa Development Community (SADC) against the background that few studies have addressed this issue despite its importance in policy making. Past studies have failed to explain the impact of remittances on household welfare throughout the different distribu-tions. The study aimed to: (1) establish the key determinants of household welfare and explain how they behave across different quantiles (2) discuss the substitutability between remittances and FDI as drivers of household welfare. The study employs panel data (1975-2014), conditional quantile regression and panel least squares approach. Findings support altruistic motives in explaining workers' and recipients' behavior at first while the portfolio approach dominates their behavior at higher levels of the distribution. The study confirms the trade openness led welfare hypothesis and the remittance led welfare hypothesis. The flow of remittances and FDI are substitutes when considered as sources of improved welfare. The paper provides policy implications for improving household welfare.

Keywords: *Household welfare, SADC, Remittances, FDI, Quantile regression.*
JEL Classification: *C32, D12, F41, F63, I31*

1. Introduction and Background

The level of wealth and poverty situation for a country can be determined at both household and country level. Households would then become important units in the development puzzle. Poverty reduction policies are also influenced by understanding the link between migration flows and development. There has been renewed interest on the need to improve the level of economic welfare. One way of achieving this is through improving household welfare. Families are concerned with improvements in their way of life. This is the rea-

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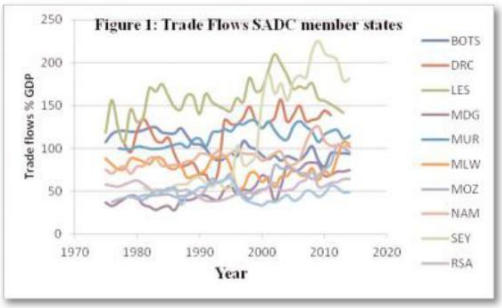
son why those who experience unfortunate situations in their country of origin resort to finding better life else-where. Family members usually leave their country of origin to look for better life somewhere. Migration hap-pens as people move within the same region, to other regions within the same continent and to a different continent. It is common among all countries despite the level of development. Those staying outside their home countries normally send money to help improve the welfare of those who remained behind. Such flows of money often end up being used mainly for consumption purposes. It is also possible for part of these receipts to be used for investment and other development purposes. The money used on consumption becomes an immediate source of improving welfare. Remittances have been on the rise as more people have been moving across nations. The United Nations News Centre (2013), shows that at least two hundred and thirty million people stay outside their country of origin worldwide. Furthermore the report by World Bank (2015) record shows that international migrants were at least two hundred and forty seven million in 2013 and two hundred and fifty million in 2015. Developed countries have received remittances which were three times more than what they received as development assistance. Remittances can be both productive and counter-productive in nature. On the positive side they increase the disposable income for a household. This allows for an increase in savings for investment purpose and increased household expenditure. This makes remittances to be important in the growth equation as they improve welfare directly through consumption and indirectly through increased investment expenditure.

Studies on the impact of remittances on welfare in Sub-Saharan Africa (SSA) are scarce despite the increased flows in the different regions. There are few studies that have focused on different aspects relat-ed to welfare and they show that poverty is reduced by rising incomes and growth (Christiaensen et al, 2002), more flows can be raised through cost reduction and securitizing remittances (Ratha et al, 2008), migrants from Africa remit twice more on average than those from the rest of world, remittances flows differ by factors like marriage, gender and income level (Bollard et al, 2010, Mugumisi, 2014), remittances improve human capital and productivity (Ssozi and Asongu, 2016), remittances have no significant impact on invest-ment (Ndikumana and Blankson, 2015), remittances have positive effect on private investment, industrializa-tion and development (Okudua, 2015, Nweke and Nyewusira, 2015, Efobi et al, 2016) and remittances have insignificant effect on consumption volatility (Jidoud, 2015). All these studies have not directly addressed the impact of remittances on household welfare and how their impact would change in different quantiles. They mainly focus on the determinants of welfare and results provide the contribution of mean values of each vari-able. There is a possibility of non-linear relationship between key the determinants and welfare measures. A policy maker would not only want to understand the impact of mean values of a variable. They would also need information on what happens when the levels of consumption change from low to higher quantiles. Again, literature does not explain whether or not remittances act as substitutes or complements to foreign direct investment (FDI) as potential sources of funds to improve welfare. This study addresses these issues as a point of departure from what is already known in literature. This information guide policy makers on the impact of FDI and remittances flows on welfare. Thus the present study addresses these issues by focusing on household welfare in the context of Southern Africa Development Community (SADC). Welfare can be improved by other money flows like FDI which is affected by the level of openness of the country. All economies are open and differences exist on the degree of openness and the level of FDI flows into each country on aggregate. It is possible for households in open economies to have high chances of experienc-ing improved welfare than those in closed economies. The contribution of trade openness to welfare still needs to be looked into as it affects migration policies. Discussions on these views are still ongoing with no generalized findings. This is despite the significant role played by both FDI and remittance flows in influenc-ing the level of welfare at macroeconomic level. The key questions in this study are as follows: what are the key determinants of household welfare and how do they behave as household welfare levels move among different quantiles? Are remittances and FDI working as complements and/or substitutes on their effect on household welfare? The study supports altruistic motives as explaining workers' and recipients' behavior at first while the portfolio approach dominates their behavior at higher levels of the distribution. Results also confirm the trade openness led welfare hypothesis and the remittance led welfare hypothesis. The flow of

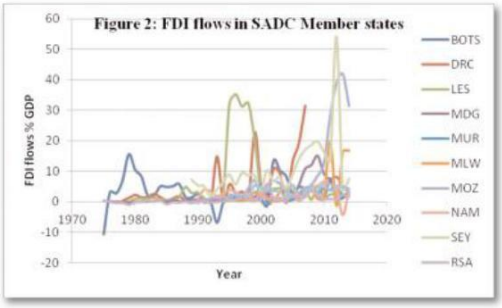
remittances and FDI are substitutes when considered as sources of improved welfare. The rest of the study is organized as follows: section 2 gives an overview of remittances, FDI flows and openness within SADC, section 3 reviews literature, section 4 explains the methodology employed, section 5 discusses the main find-ings and section 6 provides conclusion and policy implications.

2. An overview of Southern Africa Development Community (SADC)

The United Nations' sustainable development goals include ending poverty in all its forms, by 2030, for all people throughout the world. Poverty can be measured by people who survive on less than US$1.25 per day. The expectation is that people have equal access to basic services, control property, natural and financial resources. Countries, in this regard, are expected to come up with policy frameworks at national, regional and international level. They are expected to attract resources, both internally and externally, that promote sustainable growth. They are expected to come up with policies that guarantee improved levels of consump-tion by reducing the amount of waste. The UN intends to improve welfare levels in all countries including regional blocs like SADC. SADC has 15 member states[27] which can be classified into three groups: middle income (RSA, NAM, BOTS, MUR, SWD), low income (MDG, MLW, TNZ, MOZ), fragile (ZIM, LES, DRC) and oil exporting (ANG). The regional bloc has come up with the Regional Indicative Strategic Development Plan (RISDP) which among other things promotes eradication of poverty, enhance trade, economic liberalization and sustainable growth (SADC, 2011). Trade flows, measured as imports plus exports as a percentage of GDP, within selected members have been mainly between 50% and 100% for the period 1975 to 2014. There have been outliers like Seychelles (SEY) and Lesotho (LES) with trade flows above 150% of GDP after the year 2000 but these have been converging towards the 100% mark experienced in other member states (Figure 1).

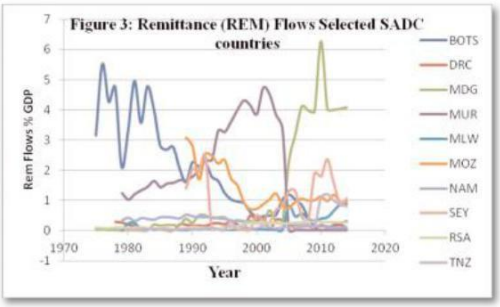


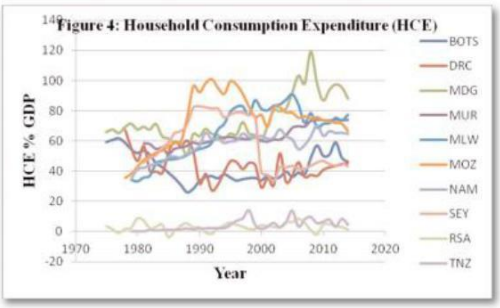
Foreign Direct Investment (FDI) inflows, within the SADC member states, have been below 10% of GDP during the review period. Countries like Lesotho (LES), Democratic Republic of Congo (DRC) and Mauritius (MUR) exceeded this level after 1990. This shows that they were able to attract more funds from outside their borders. But beyond the year 2010 the levels of FDI fell towards the levels being experienced by the rest of the countries in the region (Figure 2).



Remittance flows, Figure 3, within SADC are gener-ally below 6% of GDP. Most of the member states have flows below 1% during the entire period. BOTS has flows of more than 4% before 1985 and they have since fallen below the 1% mark which shows that most of the citizens are staying within their coun-try of origin. However after 2010 the levels of remit-tances have improved slightly above 1% which is high when compared to average flows in SSA (World Bank, 2016).

27) Angola (ANG), Botswana (BOTS), Lesotho (LES), Democratic Republic of Congo (DRC), Madagascar (MDG), Malawi (MLW), Mauritius (MUR), Mozambique (MOZ), Namibia (NAM), Swaziland (SWD), Seychelles (SEY), South Africa (RSA), Tanzania (TNZ), Zambia (ZAM), Zimbabwe (ZIM)





Household consumption final expenditure (HCE) as a percentage of GDP has been between 25% and 80%. Figure 4 shows that market value of all goods and services purchased by households remain at the same level for each country. The highest levels were experienced in Madagascar, Malawi, Mozambique and Namibia after the 1990s. This shows that house-holds were using most of their income to improve welfare as opposed to investment expenditure. In countries like Botswana, DRC and Seychelles HCE was around 40% of GDP. This shows that house-holds were committing most of their receipts for other uses other than consumption. Countries with lower and higher levels of remittances were associated with lower and higher levels of HCE respectively. This same pattern is also found between HCE and trade flows. This suggests a positive association between these trade flows, remittances and HCE. The lower level of FDI suggests a negative effect on HCE. These preliminary assertions are later con-firmed with results in section 5.

3. Literature Review

3.1: Theoretical Review

The contribution of FDI towards welfare can be direct or indirect. Direct effect includes creation of jobs which happens when the inflow of FDI assists in the establishment of new companies. The creation of jobs contin-uously contributes to growth and hence alleviates poverty in host countries. Backward and forward linkages can be created as foreign affiliates generate vertical spillover effects through sourcing materials locally. Foreign firms contribute towards horizontal spillovers as they use technology and create competition in the local market. The indirect effects of FDI comes through its influence on GDP which results in improved stan-dard of living and productivity (Gouhou and Soumaré, 2010; Fauzel et al, 2015; Kurtishi-Kastrati, 2013).

Winters (2000) explain the link between trade liberalization and welfare as follows: the level of poverty can be explained by changes in prices, government income and expenditure, changes in the levels of risk, devel-opments in factor markets and changes in economic growth. The effects of trade liberalization on growth are adversely affected by poor trade policies, prohibitive transaction costs and lack of factor mobility. Trade lib-eralization can have direct effects on wellbeing by improving income and hence consumption levels and improving food development. Trade liberalization can have an indirect effect on welfare by working through improvements in capital accumulation and technological progress. These changes have an effect on employ-ment levels and hence welfare (Rahman, 2014; de Arce et al, 2014; Edwards and Stern, 2006).

The impact of remittances on welfare is understood using two approaches. The portfolio approach is self interest controlled capital transfer which changes the structure of migrant's savings. This approach comes into being as investment opportunities and saving differentiation arise. The second approach is the altruistic approach which comes into being because the remitter sees the benefits that accrue to recipients as they get financial flows. The remitter sends money without demand from the recipient. This happens as the remit-ter feels that they have an obligation to assist other family members back home. The impact of remittances on the economy is not sensitive to the approach employed. However, economic activity rises where portfo-lio investment dominates the altruistic motives since households, through the later approach, would use the

 inflows as they see fit (International Monetary Fund, 2005; Kiiru, 2010; Ratha, 2013).

3.2: Empirical Review

3.2.1: Remittances and Household Welfare

Studies have been done to examine the impact of worker remittances on household welfare. Evidence has produced varying results as follows: Studies (Awan et al, 2015; Abbas et al, 2014) show that, in the case of Pakistan, remittances enhance household welfare. This is evidenced by increased expenditure on consump-tion, health, education and other essentials of life. The level of savings by households increases as they have more income. Similarly, Borci and Gavoci (2015) showed that households that receive remittances experi-ence high welfare levels than those that did not receive them. Recipients of remittances have been seen to have better life style and increased opportunities. Again, De and Ratha (2012) were of the view that remit-tance income was mainly received by households at the lower quantiles. Consistent with previous studies (Nwaru et al, 2011, Thapa and Acharya, 2017) their study provides evidence that remittances have a posi-tive effect on welfare which is shown by increased expenditure on consumption, health and education as compared to non remittance receiving households. This shows that remittances guarantee continuous wel-fare gains over the long term. This is supported by previous studies (Gubert et al, 2010, Beyene, 2012) which showed that remittances reduce poverty by between 5% and 11% and that they are more beneficial to house-holds in lower quantiles. In the same vein, evidence (Anghel et al, 2015, Quartey, 2006) shows that remit-tances have an effect of reducing the level of household poverty. They minimize the adverse impact of eco-nomic shocks that have an effect of lowering household welfare. These findings are consistent with those by Akanle and Adesina (2017) which show that remittances and welfare have a robust relationship. Households receiving remittances show robust expenditure patterns on other essentials apart from consumption. Furthermore, Assaminew et al (2010) explored the impact of remittances on livelihoods and poverty levels. Their study shows that changes in remittances led to changes in poverty. They suggest a positive impact of remittances on welfare through reduction in poverty incidences. Equally, Andersson (2014) examined the impact of remittances on household welfare. Findings show that remittances have a significant and positive effect on welfare as measured by household subjective economic well-being. Their study further shows that remittances have a positive influence on consumer assets and no effect on productive assets.

Sayeed et al (2014) investigated the impact of remittances on savings, gross domestic product and house-hold final consumption. Results show that remittances have a positive effect on welfare. Household receiv-ing remittances spent more on food than non recipients. They also increase expenditure on non food items like education and recreation while expenditure on medical care was found to be low (Soraya, 2007). Gyimah-Brempong and Asiedu (2009) bring a distinction between the effects of international and domestic remittances. They show that the effect of the former is higher than that of the later in reducing poverty. Similarly, studies (Kiiru, 2010, Biyase, 2012) show that remittances result in a fall in poverty level. This is shown in the economy by having a lower poverty rate where remittances are taken into consideration than when they are not taken into account. Duval and Wolff (2013) examined the effects of remittances on living standards for households, proxied by per capita consumption expenditure. Findings, using quantile regres-sion, show that the remittances significantly improved welfare. Those households who had low levels of con-sumption received more benefits from using remittances. Donkoh et al (2014) show that richer households reduce expenditure on food more than their poor counterparts. Conversely, the study further shows that an increase in consumption expenditure results in a fall in household welfare.

FDI and Household Welfare

It is generally accepted that as developing economies remain open capital flows developed nations increase. These flows provide avenues for improved capital positions and more improvements in welfare. Wells Jr (1986) argue that foreign direct investment (FDI) in many cases benefits host countries while in few cases it harms them. The later is visible in the form of low growth rates and low economic welfare. According to Kurtishi-Kustrati (2013) the benefits of FDI in host nations differ according to the level of education and health

of citizens, technological advancement, level of trade openness, level of competition and the level of regu-

lation. Such factors are normally weak in developing as opposed to developed nations which explains the differences in findings. Studies have been in both developed and developing economies. A was study done to test the impact of FDI on poverty. The study finds that in the case of India FDI flows result in fall in house-hold welfare which is different than the situation in other economies. On the contrary the study shows that FDI outflows improve welfare levels (Agarwal and Atri, 2015). In another study, the direct and indirect impact of FDI on welfare was investigated using data from mining sector. The study found that FDI have both pos-itive and negative effect on welfare. On a social level FDI was found to increase the risk of food shortages as few people were engaged in agriculture, households were dislodged from their lands as it was used for other non agricultural activities. On the positive side FDI flows improved government revenue, moderniza-tion, worker incomes and foreign currency flows. These would have an effect of improving overall welfare in the economy (Nyankweli, 2012). Im and Mclaren (2015) investigated the effects of FDI on poverty and income distribution. Evidence, from this study, shows that FDI fails to make significant contribution in reduc-ing inequality and poverty levels. The study suggests that FDI has an insignificant positive effect on poverty reduction. Fauzel et al (2015) investigated the connection between FDI and poverty reduction. Findings, using a dynamic vector error correction model, suggest that FDI is useful in reducing poverty in short and long run. The study further supports a unidirectional causality moving from FDI to poverty reduction.

Trade Openness and Household Welfare

Trade liberalization has been seen in recent years as a potential driver of increased household welfare. It has been regarded as being pro-growth and pro-poor. Countries are making efforts to harness the benefits emanating from trade liberalization. Studies have been done by various authors producing varying results. Mabugu and Chitiga (2007) examined the short and long run impact of trade liberalization on welfare. Findings show that trade liberalization has negative impact on welfare and poverty reduction. The specific effects on trade liberalization would differ among different sectors. For example the study shows that removal of tariffs benefit the mining sector which exports more and harms the textile sector due to high initial tariffs. The benefits of liberalization at household level are dependent on race with African and Colored households experiencing improved welfare more than others. Another study was done in the context of Nigeria to inves-tigate the response of household welfare to different shocks on import taxes. The study finds mixed welfare implications as a result of partial or full liberalization in the short term. Findings show that a negative shock to import taxes make imported goods attractive. As import taxes fall the economy experiences a fall in employment in agricultural and industrial sectors which results in a fall in welfare. The study shows that sec-tors experiencing a fall production will face a fall in labor demand which adversely affects welfare. However, the study suggests that both urban and rural households may receive welfare gains due to improved real incomes but this may not be sustainable in the short term (Okodua and Alege, 2014). This is supported by Cockburn et al (2010) who shows that trade liberalization improves welfare for rural households. This is despite the fall in their incomes as they get benefits from price savings on goods from initially protected agri-cultural sectors. A study was done by Le (2014) to examine the impact of trade liberalization on welfare. The study used microeconomic analysis based on data obtained from rural households. Findings show that wel-fare improved in areas where there were high institutional reforms and trade openness. Welfare improve-ments were registered as a result of improved access to land and lower charges. Similarly, Omolo (2012) found that trade reforms had a positive effect on household welfare since their incomes and consumption levels increased. The impact of trade liberalization was enhanced by presence of foreign direct investment in the model. On the contrary the study shows that welfare for urban households was higher than that for their rural counter-parts. This is consistent with results by Cockburn et al (2006) which showed that trade lib-eralization has little impact on welfare and poverty. The study also shows that industrial sectors benefit more than agricultural sectors and on the other hand urban households benefit more than rural households. However, Talukder and Chile (2014) show that agricultural trade liberalization brings positive effects on wel-fare. The effect of liberalization on welfare is weakened by poor institutional factors and socio-economic fac-

 tors. This study shows the importance of reforms that are complementary to trade liberalization. A study was

done by Rahman (2014) to assess the effect of trade liberalization on welfare. Using computer general equi-librium analysis the study shows that abolition of tariffs increases exports but output falls in mineral and social services sectors. The levels of consumption were found to improve in all sectors with exception of service and financial sectors. The study is consistent with previous by suggesting that trade liberalization improves welfare (Cisse and Fofana, 2013).

However, according to Menendez et al (2009) the impact trade liberalization on welfare depends on the measures of the later that have been employed. The study shows that liberalization increases poverty and inequality in urban centers while rural folks experience a fall in these measures of welfare. On the contrary Natsios (2005) suggests that trade liberalization does not improve welfare in the short run. It may reduce poverty in the long term by improving the rate of growth of the economy. The study further shows that trade liberalization create both winners and losers. Trade liberalization only benefits countries in the long term. Evidence show that it should be supported by structural reforms and policy changes meant to counter its negative effects in the short term (de Acade et al 2014).

4. Data and Methodology

The study uses unbalanced panel data, for the period 1975-2014, sourced from World Bank (2016). Data employed is for twelve countries based on data availability and economic stability. The study employs welfare as a dependent variable being defined as household consumption expenditure (hce) (Duval and Wolff, 2013, Moratti and Natali, 2012). Previous studies (Deaton and Zaidi, 2002, Deaton and Grosh, 2000) show that consumption is a better measure of welfare as it reflects long term income and it is not easily affected by short term changes in the economy. Welfare is measured as the market value of all goods and services purchased by households over GDP. Trade liberalization (to) defined as total import plus exports as a percentage of GDP (Omolo, 2012). Remittances (rem) are made up of personal transfers and compensation of employees. They are composed of current transfers received by resident households from outside the coun-try in form of cash or kind. Foreign direct investment (fdi) represents the net inflows of investment to acquire a lasting management interest in a firm operating in an economy other than that of the investor. It is meas-ured as new investment inflows minus disinvestment in the reporting economy from foreign investors divid-ed by GDP. Physical capital (gfcf) is measured as purchases and improvements in land, plant, machinery, equipment and construction of roads, railways, residential and commercial properties. The other control vari-ables are growth in GDP (gdpg) measured as annual percentage growth rate of GDP at market prices based on local currency and human capital (ter) measured as total enrollment as a percentage of the population of age group who are eligible for tertiary education after successfully completing secondary education. The interaction term fdi*rem is used to capture the potential non-linearity explaining the effect of foreign direct investment with respect to remittance flows and vice versa.

The generalized relationship is given as:

hce = f(rem, gdpg, fdi, gfcf, ter, to, fdi*rem)

Koenker and Basset (1978) introduced quantile regression as an extension of the classical linear regression model. They used it to estimate conditional quantile functions in which quantiles of the conditional distribu-tion of the response variables are shown as functions of the observed covariates (Koenker and Hallock, 2001). This study uses a similar approach to delineate the effects of determinants of household welfare in different quantiles as opposed to analyzing the effects of mean values for the same variables. This approach analyzes the behavior of different variables in both lower and upper quantiles. Estimations are done at nine quantiles (0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, and 0.90).

Let (y_i, x_i), $i = 1,\ldots\ldots, n$, be a sample from a population where x_i is a Kx1 vector of independent variables.

The conditional quantile regression model, assuming that θth quantile of the conditional distribution of y_i is linear in x_i, can be stated as

$y_i = (x_{it}\,\beta\theta + z\theta i)$,

and

$Quant\theta\ (y_i \setminus x_i) = \inf\{y : F_i\,(y \setminus x)\ \varepsilon\ \theta\} = x_i'\,\beta\theta'$

and

$Quant\theta\ (z\theta i \setminus x_i) = 0$

where $Quant\theta\ (y_i \setminus x_i)$ is the θth conditional quantile of y_i, conditional on the vector of regressors x_i, $\beta\theta$ is the unknown vector of parameters to estimated for different values theta between zero and one and $z\theta$ is the error term which has a continuously differentiable, $Fz\theta\ (y \setminus x)$, and a density function $fz\theta\ (y \setminus x)$ and $Fi\ (y \setminus x)$ represents the conditional distribution function. In tracing the entire distribution of y conditional on x, we vary the values of theta from zero to one. The study employs the design matrix bootstrap method to obtain estimates of the standard errors for coefficients in quantile regression. The method is useful in cases where the sample is small and it is valid under many forms of heterogeneity. Considering the discussions above the study specifies a panel data model, adopted from Koc and Sahin (2016), as follows:

$Quant\theta\ (y_{it} \setminus x_{it}) = \beta_0 + x_{it}\,\beta\theta + z\theta\ it$

where $Quant\theta\ (y_{it} \setminus x_{it})$ is the θth conditional quantile of y_{it}, the dependent variable capturing household welfare, conditional on the vector of regressors x_{it} as represented by the determinants of welfare across countries as defined earlier and the error term is given by $z\theta\ it$.

The study also endeavored to determine the substitutability or complementarity of foreign direct investment and remittances as determinants of welfare. This has been captured using an interaction between the two variables using the fixed effects model. The study employed the fixed effects model as directed by Hausman (1978) tests. It is given as a linear regression model where the intercept terms vary over individual units (Verbeek, 2004). The model employed is given as:

$$y_{it} = \beta x_{it} + e_{it} \qquad (2)$$

Where the error term is composed of two components μ_i and εit in which explanatory variables are assumed to be independent of all εit. The β elements are indexed as β_1 to β_n being coefficients of the explanatory vari-ables. It can be written in the following form

$$y_{it} = \mu_i + x_{it}\beta + e_{it}, \qquad e_{it} \sim IID\ (0, \sigma^2_\varepsilon)$$

5. Results and Discussion

Summary statistics (Table 1) show that the level trade openness was highest (mean value of 91.66%) and levels of net inflows of investment were lowest (mean value of 3.80%). The level of growth of economies is still worrisome with the highest being 23.6% and a minimum of negative 12.67% being realized. The highest variability was experienced in trade openness which can be explained by differences in trade policies across member states while the rate of GDP growth was stable. All variables exhibited normal distribution and they are positively skewed.

Table 1: Descriptive Statistics

	HCE	FDI	REM	TO	GFCF	TER	GDPG
Mean	65.18858	3.800827	10.16020	91.66176	26.65862	5.421280	4.076808
Median	63.10248	1.890932	0.457981	89.75125	24.55677	3.570740	3.732755
Maximum	190.5625	41.80964	106.4773	209.8912	76.69449	39.72569	23.59770
Minimum	-1.423167	-10.77480	0.000434	27.69546	8.078257	0.304580	-12.67379
Std. Dev.	36.82913	6.586465	24.01485	39.32602	12.93861	7.008885	5.147828
Skewness	0.689518	3.355372	2.594554	0.436735	1.473588	2.988707	0.657906
Kurtosis	4.128623	16.47183	8.596506	2.606260	5.932348	12.79067	5.973323
Jarque-Bera	28.18284	2010.403	516.9485	8.147088	153.4001	1167.832	93.82664
Probability	0.000001	0.000000	0.000000	0.017017	0.000000	0.000000	0.000000
Sum	13885.17	809.5760	2164.123	19523.95	5678.287	1154.733	868.3602
Sum Sq. Dev.	287553.6	9196.883	122263.2	327865.6	35490.40	10414.39	5618.028
Observations	213	213	213	213	213	213	213

The method by Levin, Lin and Chu (2002) was employed to test for unit root. It tests the hypothesis that each time series has a unit root against the alternative that the series is stationary. This is done to test for station-arity and avoid having spurious results. All the variables were stationary at levels except for variable for remit-tances (as indicated with *). The results (Table 2) show that the null hypothesis is rejected at 1% level for all variables except for welfare and human capital.

Table 2: Panel Unit Root Test

Variable	p-value
Hce	0.0340
Rem	0.0000*
Gdpg	0.0000
Fdi	0.0000
To	0.0000
Ter	0.0400
Gfcf	0.0027

Source: Authors compilation from e-views

The study tested for the presence of multicollinearity among the variables. Results (Table 3) show both positive and negative relationships among variables. Results suggest a negative relationship between human capital development and the measure for welfare employed. Remittances and foreign direct investment have a negative association which may indicate the substitutability between the two variables. There is no multicollinearity among variables because coefficients are less than 0.80, hence there are no modeling problems using this data set.

Table 3: Correlation Analysis

	hce	fdi	rem	to	Gfcf	ter	Gdpg
Hce	1						
Fdi	0.0525	1					
Rem	0.6518	-0.0019	1				
To	0.5084	0.1676	0.6425	1			
Gfcf	0.3432	0.3889	0.5344	0.6487	1		
Ter	-0.1593	-0.0400	-0.2014	0.1256	-0.0625	1	
Gdpg	0.0197	0.0188	0.0552	0.2614	0.2597	-0.0888	1

Results Using Fixed Effects Model

Estimations using panel data were made using both fixed and random effects models. The choice for the best model was done using Hausman's test (Table 4). The aim was to determine the substitutability or com-plementary between foreign direct investment and remittances on welfare. Results showed that the fixed effects model was appropriate since the p-value using Hausman test was significant.

Table 4: Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	31.801805	7	0.0000

Panel data analysis provides results based on the fixed effects model (Table 5). Evidence shows that house-hold welfare is explained by the level of remittances, trade openness and foreign direct investment. Specifically, the study shows that a one percent increase in the level of remittances results in a 5.22% increase in welfare. This suggests that the more workers remit monies to their home countries the higher the chances of improvement in welfare for recipients. The levels of remittances were highest in Lesotho reach-ing levels of between fifty and hundred percent while the rest of the members received less than ten percent of GDP. These findings provide evidence on disparities in welfare levels for residents in different member states. These results are consistent with the apriori expectation as well as a number of available studies. The findings are consistent with previous studies (Awan et al, 2015, Thapa and Acharya, 2017, Borci and Gavoci, 2015, Anghel et al, 2015) which show that recipients of remittances experience improved welfare which can be reflected by high expenditure in education, health and consumption. This may suggest that non-consump-tion recipient households experience a fall in welfare. In the context of SADC member states improved remit-tances are useful in reducing poverty among households. This is also underpinned by the motivation to remit among those working abroad and policies directed at promoting the same.

The study shows that household welfare is improved as the economy remains open. A change in the level of openness by one unit results in an increase in welfare by 0.15 units. This suggests that improvements in trade within SADC have the potential to reduce poverty as residents have more choices on products and services. The more the economy is opened up then the higher the growth rates which effectively increase welfare. When an economy opens up the flow of imports and exports improves which have a direct effect on consumption and income patterns for households. This is supported by lower prices due to low import costs. In the case of SADC the level of trade openness shows an upward trend under the review period. Member states experience levels of between 50 and 150% of GDP. Findings are consistent with previous studies (Okodua and Alege, 2014, Omolo 2012, Cisse and Fofana, 2013, Rahman, 2014) which show the trade openness increases real incomes and hence improved consumption levels for all households. However, the study fails to explain effects of trade liberalization under different institutional arrangements that may prevail among member states. The study does not account for different policy and structural reforms necessary to enhance contribution of trade openness on welfare. For example de Arce et al (2014) argues that trade lib-eralization has negative effects in the short term and positive effect in long term and this is not accounted for in this study.

Evidence suggests that the flow of foreign direct investment (FDI) has an adverse effect on welfare. In the context of SADC the inflows of FDI are less than ten percent in all member states and in some cases coun-tries experienced negative flows. Findings suggest that one unit increase in FDI results in a fall in welfare by

0.42 units. The contribution of FDI to an economy differs across countries and the economic environment. According to Kurtishi-Kastrati (2013) this can be explained by differences in levels of education, health, tech-nological advancement, regulatory frameworks and the level of openness. In the case of SADC, according to this study, the impact of economic growth, education and physical capital on welfare is insignificant. They are failing to complement FDI flows which may be the reason for the later to have an adverse effect. This view gains support from Kurtishi-Kustrati (2013) who show the importance of these factors in supporting FDI's impact on welfare. They also show that FDI has a negative effect on household welfare. On the con-trary some previous studies (Agarwal and Atri, 2015, Nyankweli, 2012) show that FDI flows improve welfare. This is possible as government revenues improve as a result of improved worker incomes and improved cur-rency flows but this is not consistent with results from SADC member states.

The study shows that foreign direct investment and remittance flows act as substitutes in explaining the level of household welfare. This is explained by the significant and negative coefficient for the interaction term used in the model. Both variables have an additional marginal and negative effect on welfare. For example the average level of remittances was 10.16% during the period. At this level, holding other factors constant, an increase in FDI by one percent would result in a fall in household welfare by 2.591%. Again, holding other things constant, an increase in remittance levels by one percent result in an increase in welfare by 0.2912%

. The marginal effect of FDI on welfare outweighs that of remittances and this has an impact on the type of policies affecting the two variables within the SADC member states.

Table 5: Estimates based on Fixed Effects Model

Dependent Variable: HCE
Method: Panel Least Squares
Date: 05/27/17 Time: 14:21
Sample (adjusted): 1975 2014
Periods included: 40
Cross-sections included: 10
Total panel (unbalanced) observations: 208

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	48.84409	6.606095	7.393792	0.0000
D(REM)	0.521597	0.229057	2.277150	0.0239
FDI	-0.416832	0.213111	-1.955938	0.0519
GDPG	0.098450	0.217088	0.453505	0.6507
GFCF	0.190944	0.123141	1.550615	0.1226
TER	-0.128141	0.268749	-0.476804	0.6340
FDIREM	-0.213652	0.084838	-2.518359	0.0126
TO	0.150990	0.067680	2.230951	0.0268

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.872502	Mean dependent var	65.48407
Adjusted R-squared	0.861821	S.D. dependent var	37.02334
S.E. of regression	13.76247	Akaike info criterion	8.159965
Sum squared resid	36176.49	Schwarz criterion	8.432745
Log likelihood	-831.6364	Hannan-Quinn criter.	8.270263
F-statistic	81.69111	Durbin-Watson stat	0.354918
Prob(F-statistic)	0.000000		

28) Δhce = -0.0417 - 0.214 *(10.16) = -2.591%

29) Δhce = 0.522 + 0.214 *(3.80) = 0.2912

Results Using Quantile Regression Analysis

Quantile regression was employed to examine the behavior of the key determinants, identified using the fixed effects model, as household consumption levels move among different quantiles. Findings in Table 6 and Figure 1 show that the effect or remittances on household welfare is positive and significant up to the 70th quantile. Remittances have a negative and insignificant effect from the 80th quantile upwards. The result changes the conclusion reached using the fixed effects model. This result suggests that at higher quantiles remittance flows are diverted from consumption to other uses like taking advantage of investment opportunities. Findings from quantile regression suggest that FDI has significant and positive effect between 50th and 60th quantile. This result is different from the conclusion reached using fixed effects model that FDI has a negative effect on welfare. Results suggest that moderate FDI flows are beneficial to households. This may be possible as the structure of FDI flows change during the short to medium term (Fauzel et al, 2015). The behavior of FDI can be explained by Nyankweli (2012) as being caused by changes in the way resources are employed in the economy in productive and non productive activities. Findings using fixed effects show that the level of human capital has no effect on welfare. However, Table 6 and Figure 1 show evidence of non-linear behavior of human capital across the quantiles. Human capital has a positive effect on welfare between the 20th and 40th quantile and a negative effect at higher quantiles. Results suggest that as the level of human capital improves, households spent more on consumption up to the 50th quantile. Beyond this level the expenditure patterns of households changes as they focus on other forms of expendi-ture like investments. Thus household consumption expenditure cannot be improved by changing the levels of human capital at higher quantiles. Similar results are obtained, using fixed effects model and quantile regression, on the effect of trade liberalization on welfare. The coefficient of trade liberalization increases in size at higher quantiles. Thus the more economies improve the trade volumes then the more households benefit from wider choices.

Table 6: Quantile Regression Estimates

	FE	10^{th} Quant	20^{th} Quant	30^{th} Quant	40^{th} Quant	50^{th} Quant	60^{th} Quant	70^{th} Quant	80^{th} Quant	90^{th} Quant
REM	0.522 (0.024)	1.134 (0.000)	1.050 (0.000)	1.004 (0.000)	0.953 (0.000)	0.831 (0.000)	0.720 (0.000)	0.615 (0.000)	-0.083 (0.782)	-0.419 (0.106)
FDI	-0.417 (0.051)	-0.0258 (0.598)	-0.074 (0.827)	-0.034 (0.935)	0.258 (0.666)	0.691 (0.049)	0.664 (0.075)	0.774 (0.143)	-0.222 (0.880)	-1.247 (0.160)
GDPG	0.098 (0.651)	0.173 (0.820)	-0.045 (0.939)	-0.173 (0.802)	-0.177 (0.817)	-0.676 (0.362)	-0.626 (0.456)	-0.116 (0.924)	-0.153 (0.890)	0.294 (0.605)
GFCF	0.191 (0.123)	-0.039 (0.824)	-0.085 (0.614)	-0.152 (0.471)	-0.213 (0.389)	-0.146 (0.593)	-0.490 (0.157)	-0.355 (0.462)	0.792 (0.452)	0.643 (0.474)
TER	-0.128 (0.634)	-0.638 (0.355)	0.731 (0.002)	0.792 (0.001)	0.712 (0.010)	0.493 (0.948)	-0.077 (0.824)	-0.459 (0.280)	-1.391 (0.019)	-2.095 (0.000)
TO	0.151 (0.027)	0.266 (0.000)	0.340 (0.000)	0.394 (0.000)	0.445 (0.000)	0.498 (0.000)	0.740 (0.000)	0.804 (0.000)	0.960 (0.016)	1.282 (0.000)
F-Test Time Dummies	2.17**	2.08**	4.06***	6.14***	3.81***	10.9***	2.04**	2.88**	3.02**	5.29***

****significant at 1%, **significant at 5%, p-values in (.)*

6. Conclusions and Policy Implications

The study examines the key drivers of household welfare using macro-level data. Specifically, it establishes the key determinants of household welfare for selected SADC member states for the period 1975-2014. Conditional quantile regression was employed to examine the changing distribution of household welfare across countries over time. More so, the study employed panel least squares approach to establish the sub-stitutability between foreign direct investment and remittances as sources of household welfare. The paper provides evidence that remittances and trade openness have a positive effect on household welfare. By con-trast, the rates of growth of GDP, physical and human capital have no effect on welfare. The study shows that FDI and remittances act as substitutes when evaluated as potential sources of household welfare which comes with important policy implications.

Empirical results from this study also show that the impact of remittances on welfare is positive at lower quantiles. The effect turns out to be negative thereafter suggesting that households move receipts to other alternative uses like investment. Surprisingly FDI has a positive effect on welfare in the middle of the distribution. Thus low to moderate FDI flows are useful in improving welfare levels. These results are not consistent with those found using fixed effects and this shows the benefit of quantile regression in supporting policy generation. Consistent with fixed effects model, results using quantile regression show that the effect of trade openness on welfare improves as countries move from low to high distributions.

The study supports the altruistic motives which explain workers' behavior at first and the portfolio approach that dominates behavior at higher levels of the distribution. The study is in support of the trade openness led welfare hypothesis and the remittance led welfare hypothesis. These findings have important implications on strategies for improving household welfare in SADC member states. The study favors policies that are direct-ed at improving remittances and reducing disparities among member states. This can be in the form of reduc-ing the cost of sending money home by workers and developing investment opportunities in their home coun-tries. Such an initiative can be supported by improvement in other factors like quality of institutions and strengthening property rights. Policies favoring a differentiated approach to influence the effect of remit-tances on welfare are desirable. Reduction of trade barriers improves the flow of products in local markets. This can be done by eliminating unreasonable transaction costs and improving factor movements across member states. This increases choices available for consumers which increase welfare through different lev-els of the distribution. Policies aimed at improving human and physical capital enhance the contribution of FDI towards welfare gains for households. The substitutability between FDI and remittance flows suggests that policies aimed at improving the flow of remittances may help in weakening the negative impact of FDI on welfare.

References

Abbas, K, Sabir, H, M, Shehzadi, A. and Abbas, Q. (2014) 'Impact of worker remittances on household welfare in District Jhang: A case study of Tehsil 18 Hazari', Journal of Finance and Economics, 2(4), pp. 131-135.

Agarwal, M. and Atri, P. (2015) 'Foreign direct investment and poverty reduction: India in regional context', Regional and Information System for Developing Countries, Discussion Paper No. 200

Akanle, O. and Adesina, J, O. (2017) 'Remittances and Household welfare in Nigeria', African Population Studies, 31(1), pp. 37-48.

Andersson, L. (2014) 'Migration, remittances and household welfare in Ethiopia', United Nations University, Working Paper Series, 2014-004.

Anghel, R, G, Piracha, M. and Randazzo, T. (2015) 'Migrants' remittances: Channeling globalization', IZA Discussion paper No. 9516.

Assaminew, E, Ahmed, G, Aberra, K. and Makonnen, T. (2010) International Migration Remittances and Poverty Alleviation in Ethiopia, Ethiopian Economics Association, Working Paper No. 1

Awan, M, S, Javed, M. and Waqas, M. (2015) "Migration, remittances and household welfare: Evidence from Pakistan", The Lahore Journal of Economics, 20(1), pp. 47-69.

Beyene, B, M. (2012) The effect of international remittances on poverty and inequality in Ethiopia, Memorandum, Department of Economics, University of Oslo, No. 13/2012. Available at: https://www.econstor.eu/bit-stream/10419/90752/1/690165994.pdf [Accessed on 30 June 2017]

Biyase, M. (2012) The relationship between poverty and remittances in South Africa, Strategies to overcome poverty and inequality, Towards Carnegie III, University of Cape Town, 3 – 7 September.

Bollard, A, McKenzie, D, J. and Morten, M. (2010) 'The Remitting Patterns of African Migrants in the OECD', World Bank Policy Research Working Paper No. 5260. Available at SSRN: https://ssrn.com/abstract=1585039 [Accessed on 12 June 2017]

Borci, A. and Gavoci, M. (2015) "The impact of remittances on households well-being: Evidence from Albania", International Journal of Economics, Commerce and Management, III(11), pp. 80-103.

Christiaensen, L, Demery, L. and Paternostro, S. (2002) Growth, Distribution, and Poverty in Africa: Messages from the 1990s. World Bank Policy Research Working Paper No. 2810. Available at SSRN: https://ssrn.com/abstract=636093

Cisse, F. and Fofana, I. (2013) The growth and poverty impact of the West African Free Trade Agreement with the European Union, CRES. Available at: www.merit.unu.edu/ [Accessed on 12 June 2017]

Cockburn, J, Decauluwe, B. and Robichaud, V. (2006) Trade liberalization and poverty: Lessons from Asia and Africa. http://citeseerx.ist.psu.edu/viewdoc/ [Accessed on 12 June 2017]

Cockburn, J, Corong, E, Decaluwe, B, Fofana, I. and Robichaud, V. (2010) The gender and poverty impact of trade lib-eralization in Senegal, CIRPEE, Working Papers 10-13.

Deaton, A. and Grosh, M. (2000) 'Consumption', Chapter 5 in M. Grosh and P. Glewwe (eds.), Designing Household Survey Questionnaires for Developing Countries: Lessons from Ten Years of LSMS Experience, Washington, DC: World Bank.

Deaton, A. and Zaidi, S. (2002) 'Guidelines for Constructing Consumption Aggregates for Welfare Analysis', World Bank LSMS Working Paper 135.

De, P, K. and Ratha, D. (2012) "Impact of remittances on households income, asset and human capital: Evidence from Sri Lanka", Migration and Development, 1(1), pp. 163-179.

de Acade, R, de Vicente, S, Mahia, R. and Medina, E. (2014) 'Trade liberalization and poverty reduction in Africa: Computable general equilibrium models approach. Literature Review', International Journal of Political Science and Development, 2(5), pp. 90-96.

Donkoh, S, A, Alhassan, H. and Nkegbe, P, K. (2014) "Food expenditure and household welfare in Ghana", African Journal of Food Science, 8(3), pp. 164-175

Duval, L. and Wolff, F, C. (2013) Consumption enhancing effect of remittances: Evidence from Kosovo, The WIIW Balkan Observatory, Working Paper No 107 (2013).

Edwards, L. and Stern, M. (2006) Trade and poverty research project in South Africa: Lessons and policy recommendations, Trade and Poverty Project, Southern Africa Labour and Development Research Unit, University of Cape Town.

Efobi, U, Asongu, S, A, Okafor, C, Tchamyou, V, S. and Tanankem, B. (2016) 'Diaspora Remittance Inflow, Financial Development and the Industrialisation of Africa', African Governance and Development Institute WP/16/037. Available at SSRN: http://dx.doi.org/10.2139/ssrn.2846249 [Accessed on 01 May 2017]

Fauzel, S, Seetanah, B. and Sannassee, R, V. (2015) Foreign direct investment and welfare nexus in Sub Saharan Africa, Australasian Conference on Business and Social Sciences, Sydney.

Gohou, G and Soumaré, I. (2010) Does Foreign Direct Investment Reduce Poverty in Africa and are there Regional Differences? Working Paper; World Development. https://ssrn.com/abstract=2594133 [Accessed on 10 July 2017]

Gubert, F, Lassourd, T. and Mesple-Somps, S. (2010) Do remittances affect poverty and inequality? Evidence from Mali. Available at: http://www.dial.prd.fr [Accessed 01 June 2017]

Gyimah-Brempong, K. and Asiedu, E. (2009) Remittances and Poverty in Ghana, 4th African Economic Conference (AEC), Addis Ababa, November 2009.

Hausman, J, A. (1978), "Specification Tests in Econometrics," Econometrica 46, 1251–1271.

Im, H. and Mclaren, J. (2015) Does foreign direct investment raise income inequality in developing countries? A new instrumental variables approach, Department of Economics, University of Virginia, USA.

International Monetary Fund (2005), - World Economic Outlook April 2005: Globalization and External Imbalances – 2005, Washington D.C, USA,

Jidoud, A. (2015) Remittances and Macroeconomic Volatility in African Countries (March 2015). IMF Working Paper No. 15/49. Available at SSRN: https://ssrn.com/abstract=2594133 [Accessed on 13 June 2017]

Kiiru, J, M. (2010) Remittances and Poverty in Kenya, Poster Session, 'New Faces for African Development', Dakar, Senegal, 27-30 June.

Koc, U and Sahin, H. (2016) Cash-flow and investment: A panel quantile approach, Ankara University, MPRA.

Koenker, R. and Bassett, G. (1978) 'Regression quantiles', Econometrica 46 (1), pp. 33–50.

Koenker, R. and Hallock, K. F. (2001) 'Quantile regression', Journal of Economic Perspectives, 15(4), pp. 143–56.

Kurtishi-Kustrati, S. (2013) 'The effects of foreign direct investments for host country's economy', European Journal of Interdisciplinary Studies, 5(1), pp. 26-38

Le, M, S. (2014) 'Trade openness and household welfare within a country: A microeconomic analysis of Vietnamese households', Journal of Asian Economics, 33(2014), pp. 56-70.

Levin, A, Lin, C, F. and Chu, C. (2002), 'Unit Root Test in Panel Data: Asymptotic and Finite Sample Properties', Journal of Econometrics, No. 108, pp. 1-24.

Mabugu, R. and Chitiga, M. (2007) South Africa trade liberalization and poverty in a dynamic microsimulation CGE model, Department of Economics, University of Pretoria, Working Papers series, 2007-18.

Menendez, M, Sztulman, A. and Castilho, M. (2009) 'Trade liberalization, Inequality and Poverty in Brazilian states', Paris School of Economics, Working Paper No 6. Available at: https://www.parisschoolofeconomics.eu/IMG/pdf/WP6-GmonD-TradeLBrazil.pdf [Retrieved 31 May 2017]

Moratti, M. and Natali, L. (2012) Measuring household welfare, UNICEF, Office of Research, Working Paper WP-2012-No.4.

Mugumisi, N. (2014) 'Microeconomic Determinants of Migrant Remittances into Zimbabwe: A Survey of Zimbabweans in Botswana and South Africa', International Journal of Economics, Commerce and Management, II (9), pp. 45-54.

Natsios (2005) 'The impact of trade liberalization on poverty', Trade Liberalization and Poverty, USAID, Woodrow Wilson Center for International Scholars, April 15.

Ndikumana, L. and Blankson, M, T. (2015) 'Financing Domestic Investment in African Countries: Does the Source of Financing Matter?' Journal of African Development, 17 (2), PERI Working Paper No. 391. Available at SSRN: https://ssrn.com/abstract=2647160 [Accessed on 01 June 2017]

Nwaru, J, C, Iheke, O, R. and Onyenweaku, C, E. (2011) 'Impact of migrant remittances on the welfare of arable crop farm households in South Eastern Nigeria, Human Ecology Review, 18(2), pp. 159-166.

Nweke, K. and Nyewusira, V. (2015) 'African Diaspora and Poverty Alleviation in Africa' OIDA International Journal of Sustainable Development, 8 (1), pp. 61-68.

Nyankweli, E, N. (2012) 'Foreign direct investment and poverty alleviation: The case of Bulyanhulu and Geita gold mines, Tanzania ', African Studies Centre, Netherlands.

Okodua, H. and Alege, P. (2014) 'Households welfare impact of trade liberalization in Nigeria: A computable general equi-librium model', Journal of Economics and Sustainable Development, 5(28), pp. 41-52.

Okodua, H. (2015) 'Migrant Workers' Remittances and Private Investment in Sub-Saharan African Countries' European Journal of Social Sciences Vol. 36 No 3 January, 2013, pp. 451 - 461.

Omolo, M, W, O. (2012) The impact of Trade policy reforms on households: A welfare analysis for Kenya. Unpublished PhD thesis. University of South Africa.

Quartey, P. (2006) The impact of migrant remittances on household welfare in Ghana, AERC Report, Nairobi, Kenya.

Rahman, Z. (2014) 'The impact of trade liberalization on poverty reduction in Bangladesh: A computable general equi-librium (CGE) analysis', Asian Journal of Empirical Research, 4(4), pp. 240-253.

Ratha, D, Mohapatra, S. and Plaza, S (2008) 'Beyond Aid: New Sources and Innovative Mechanisms for Financing Development in Sub-Saharan Africa', World Bank Policy Research Working Paper Series, Vol. 1, pp. 22-33. Available at SSRN: https://ssrn.com/abstract=1149112 [Accessed on 15 June 2017]

Sayeed, R, M, Ahmed, M. and Sheikh, N. (2014) 'The impact of personal remittances on Household welfare: A case of selected developing countries in Asia (1995-2013)', SZABIST-Dubai Working Paper Series No. MS/FS15/01.

SADC (2011). Desk assessment of the regional indicative strategy development plan 2005-2010, SADC council, November 2011. Available at: http://www.sadc.int/documents-publications/shows/ [Accessed 21 June 2017]

Soraya, J, S. (2007) Overseas workers, remittances and household welfare in the Philippines, 6th PEP Research Network General Meeting, Lima, Peru, 14-16 June.

Ssozi, J. and Asongu, S, A. (2016) 'The Effects of Remittances on Output Per Worker in Sub-Saharan Africa: A Production Function Approach', South African Journal of Economics,84(3), pp. 400-421

Talukder, D. and Chile, L. (2014) 'Agricultural trade liberalization and welfare of rural households in Bangladesh: A com-plementary policy framework', Journal of Economic and social policy, 16(2), pp. 1-38.

Thapa, S. and Acharya, S. (2017) 'Remittances and household expenditure in Nepal: Evidence from cross section data', Economies, 5(16), pp. 1-17.

United Nations News Centre (2013). Number of international migrants rises above 232 million, UN reports [Webpage]. Retrieved from: http://www.un.org/apps/news/story.asp?NewsID=45819#.UleA3IZkNSk [Accessed 25 May 2017].

Verbeek, M. (2004) A guide to modern econometrics (2nd ed), United Kingdom: John Wiley & Sons ltd.

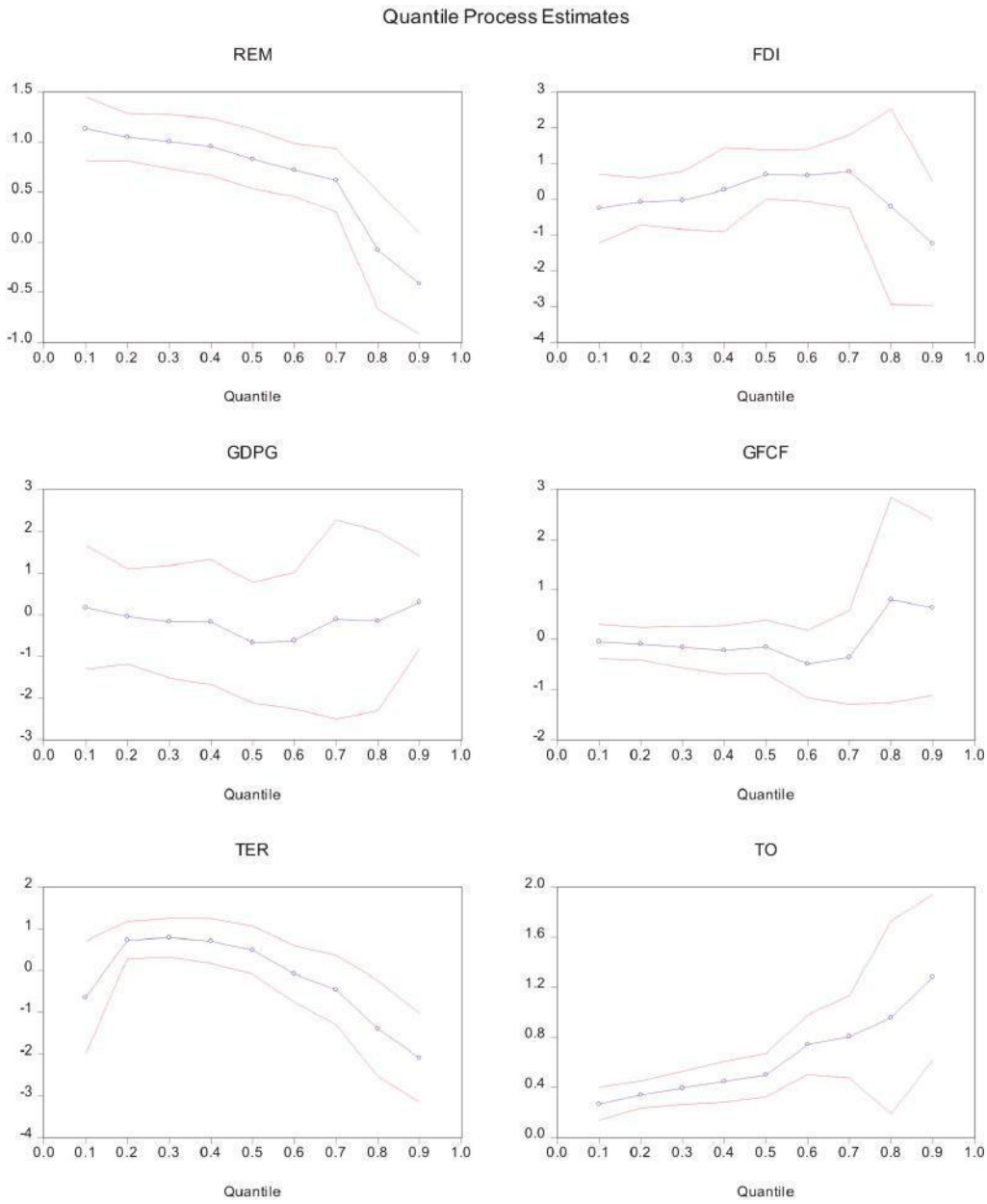
Wells, Jr. L, T. (1986) 'Evaluating Foreign Investment', In Theodore H. Moran, ed., Investing in Development: New Roles for Private Capital? Washington DC: Overseas Development Council.

World Bank (2015) Prospects: Migration and remittances [Webpage]. Retrieved from: http://econ.worldbank.org/BSITE/EXTERNAL/EXTDEC/EXTDECPROSPECTS/0,,contentMDK:21121930~menuPK:3145470~pagePK:64165401~piPK:64165026~theSitePK:476883,00.html [Accessed 01 June 2017].

World Bank (2016). World Development Indicators, World Bank. Available at: http://data.worldbank.org/data-catalog/world-development-indicators (Accessed 09 June 2016).

Appendix:

Figure 1: Quantile Regression



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SYMMETRIC AUCTIONS: FINDING NUMERICAL SOLUTIONS BY USING AUCTION SOLVER

Dushko Josheski[30]

Abstract

This essay theoretically investigates symmetric types of auctions and provides simulation for the different types of statistical distributions that bidders follow in order to determine the maximum bid, Expected revenue for the auctioneer, Expected payment by bidders, Expected utility of the bidders, probability that item is unallocated. In addition, the subject of interest of this paper are three types of auctions: FPA (first price auction, Dutch type, SPA (Second price auction, English auction, Vickrey auction), APA (all-pay auctions)

Introduction

Symmetric auctions are widely used in practice. These are types of auctions where bidders submit sealed bids, and the highest bid is winning.[31] The payments are determined as an anonymous function of bids, (Deb &Pai 2016).Symmetric auctions are having rules, which are anonymous and non-discriminatory, which is why they are so popular in practice, despite the fact that they do not achieve seller's revenue maximisation when buyers are heterogeneous. For instance, first price auctions(FPA) are more profitable than the second price auctions (SPA) in a case of risk averse buyers and when risk aversion coefficient is higher the difference is larger. So it is plausible that FPA is more profitable than SPA, (Klempeper 1999).Klemperer asserts that in second price or ascending bid auction, winner pays a price set by a runner-up (second best), and by rev-enue equivalence, must bid the expectation of this price in a first price auction. So the price is fixed in FPA and random but with the same mean in SPA. This means that the price is riskier in SPA. Therefore, risk averse seller prefers first-price auction to a second sealed-bid auction, and prefers the second price sealed-bid auction to an ascending open auction.

30) Dushko Josheski, PhD Assistant professor, University Goce Delcev-Shtip, +389(75)954602, dushkojosheski@gmail.com Subject to being greater than reservation bid.

31) Subject to being greater than reservation bid.

Interactions between markets and institutions-The case of auctions

McAfee and McMillan (1987), define auctions as market institutions with an explicit set of rules that are deter-mining resource allocation and prices on a basis of bids from the market participants.

On the other hand institutions are rules that define conditions by which market messages (offers, demands, and accepts) are being traded, and lead to allocation of resources and process, (Smith2001).If in the economy there exist n agents , i.e. $i = 1,2 \ldots n$ and each of them chooses a message $\propto i$, than the allocation of the resources x_i towards agent i is defined as :

Equation 1

$$x_i = \eta\,(m_1, m_2, \ldots m_i, \ldots m_\eta)$$

In the previous expression η are the rules of allocation. Rules of allocation are institutionally defined rules. As an example one can take auctions and their rules. Let's suppose that bidder i outs a highest bid. In such case following applies:

Equation 2

$$x_i = \eta\,(m_1 > m_i > m_\eta) = 1,\ x_k = 0;\ \forall k \neq 1$$

In this case m_1 is the highest bid, and agent $i = 1$ puts a highest bid. Henceforth, agent 1 will win the auction. At first when agent 1 will make the bid, nobody knows who will win the lot (An item or set of items for sale in an auction). But the other on-site bidders know, that none of the other k agents will not like to raise the bid, so that the rules of the institution tell us that $x_1 = 1$ and $x_k = 0$. Some of the most successful inter-net auction houses such as eBay and Amazon are using second price auctions, by which bidder with high-est bid will win the lot., but pays a price equal to the small increment (growth) on top of a second highest bid. On-site bidder can offer and "reserve price", which is a maximum price and which is used to compete the others with prices. Some auction houses such as eBay have fixed closing time, while on Amazon closing time is continued as long as few minutes pass without bid (ten minutes on Amazon). In the eBay type of auc-tion model there exist n bidders, $i = 1,2,\ldots n$. Minimal offer is m (reserve price), and the least increment is ζ, which is assumed to be constant.[32] Reserve price should be higher than the current price , and the last reserve price (*"Hammer price"*) established by the last bidder, *i.e.* bidder cannot lower its last reserve price which was set, (Ockenfels&Roth 2003). Highest reserve price is not revealed. Auction history shows the last price and shows the time when price was put by the bidder. Auctioneer can bid at any time $t \in [0,1] \cup 1$. Reaction time of other bid of second bidder $t' < 1$. Earliest time of reaction is set with t_n and $t_n > t'$, and is close to one, and so $t' < t_n > 1$. On the eBay auctions there are no dominant strategies. Bid caller (auctioneer), in this auctions can pay some value v_j, distributed by some known distribution.[33] Auctioneer who will win the auction with some price p, earn the difference between the price he likes to pay, and the price that actually wins the auction $v_j - p$, auctioneer who does not won, does not gets zero. In the eBay auctions that are *second price of the auctioneer* type of auctions not with private value auctions v_j, there are no dominant strategies $v_j > m+\zeta$. The number of auctioneers is 2, $i = 2$, and by assumption if $i > 2$, other auctioneers do not auction. There is no dominant strategy for the player j who has value $v_j > m+\zeta$, which is best response for any strategy of the player j, which is the best response to any strategy of the player i. Let's suppose that the strategy, i, is to set minimal bid m when $t = 0$, i.e. at the beginning of the auction, and to bid furthermore always when there is highest bid, but if he is not the auctioneer with the highest bid than he will set bid $b > v_j + \zeta$. Contrary to this strategy, best response of the player j is not to bid at any time peri-

32) *i.e.* , $\frac{\partial \zeta}{\partial p} = c$, where, c is constant.

33) This strategy for value which the player could bid immediately applies only for the beginning of the auction, or in any time between the beginning and the end of the auction.

od, $t < 1$, and not to bid v_j when $t = 1$. Result from this strategy for player j, $p\ (v_j - m - \zeta) > 0$, which means that no other strategy when $t = 1$ cannot contribute to higher result to j. But, if we assume that the strategy of the player i is not to bid in any of the times offered, than the strategy of the player i who answers the bid only when $t = 1$, that will provide him the expected result $p\ (v_j - m) < v_j - m$, which is a result that j could achieve from the strategies offered v_j when $t = 0$, or at any given period of time when $t < 1$.

Best strategy for the player i is $p\ (v_j - m - \zeta) > 0$, which is a strategy of player j, because best strategy of j was not to bid if $t \bar{} 0$. Consequently, this is a proof that there is no dominant strategy. In a standard auction model of the eBay institution, it has been specified minimal opening bid, but not the price, which is a seller's reserve price. Seller can choose public bid but also additional reserve price below which he can-not sell. In the previous example reserve price is lower so that the post-sale negotiation be avoided.[34]

First price auction (sealed first bid auction strategically equivalent to Dutch auctions)

In this auction scheme each buyer submits a bid $b\ \varepsilon\ 0$ for the object. The bids are sealed, and no bidder has information about the bids of other opponents. The object is allocated to the bidder with the highest bid. Highest bidder pays the bid; other bidders pay nothing. Variance in the *Dutch* auctions is

For the Dutch type of auctions variance of price is:

Equation 3

$$\sigma^2_{pd} = \int (p_d - \bar{p}_d)^2 dp(v) = \int_0^1 \left(\frac{n-1}{n} v - \frac{n-1}{n+1}\right)^2 n v^{n-1} dv$$
$$= \int_0^1 \frac{n^2-1}{n^2} v - \frac{(n-1)(n+1)}{(n+1)^2} n v^{n-1} dv = \frac{(n-1)(n+1)}{n^2} v$$
$$- \frac{(n-1)(n+1)}{(n+1)^2} n v^{n-1} |_0^1 = \frac{\frac{n-1-n^2(n-1)}{n^2}}{n+1}$$
$$= \frac{(n-1)(n+1)(1-n)}{n^2(n+1)} = \frac{(n-1)(1-n)}{n^2}$$

In the Dutch model of auction, buyers gain is $v_{\text{L}} - p \equiv v - \frac{v}{n-1} v =$, where v is the highest drawn value, range of possible gains is from 0 to $\pm$. While, in the English type of auction gain could vary from 0 to 1, Vickrey (1961)

Vickrey type of auction (sealed-bid)

This auction scheme is different in the one presented in (Vickrey1961), which is used by Google and Yahoo in their *on-line* advertisement programs. Vickrey (1961) auction scheme, is different from the type of scheme of *proxy auctions* on eBay, by the fact that bids are not closed, i.e. *current highest bid*[35] is always public. In Vickrey type of auction, bidders submit their bids sealed, without knowing other members in the auction bids, and in this type of auction highest bid wins, but the price paid is second highest bid. This result is Pareto

34) On this way there is incentive agent not to bid above its own bid if he is the highest bid caller because of the fear reserve price not to exceed his initial bid.

35) Current highest bid is equal to the second best bid plus increment change, i.e. $m + \zeta$

optimal. This auction is efficient because the winner is the auctioneer for whom the lot has highest value. Achievement of Pareto optimal result on imperfect markets is difficult. Market imperfection in Vickrey model is in the fact that buyers and sellers are very few in number to ignore consequences of their actions on price but on the other hand there are not enough participants in the market in overt or tacit (collusions) market actions. Vickrey in his model describes one marketing agency, through which all sales of goods and procure-ments must be done. If we imagine homogenous rectangular distribution of the auction in limits 0 to 1, and even though number of players is $i > 1, 2,...n$, from which for all of them there exist corresponding value in the distribution v_t and are biding one price, while probability for first $n - 1$ players to draw corresponding value for them is $[0, v]$ while the n-thplayer would draw corresponding value between $[v, v + dv] = v^{n-1} dv$,

this value is from the value $dp1\ (v) = nv^{n-1}$. Price of every bid is given as $\left(\frac{n-1}{n}\right)v$. Expected price in this case is given with the following expression:

Equation 4

$$\bar{p}_d = \int_0^1 p dp_1(v)dv = \int_0^1 \left(\frac{n-1}{n}\right) v\, nv^{n-1} dv = \frac{(n-1)(vnv^{n-1})}{n} dv = \frac{n-1}{n+1}$$

Previous case is when one has definite integral, i.e. distribution goes from 0 to 1, and the result applies if $n > -1$, if there is unlimited distribution than the result is:

Equation 5

$$\bar{p}_d = \int p dp_1(c)dv = \int \frac{(n-1)(vnv^{n-1})}{n} dv =$$
$$\frac{(n-1)n}{n}\int vv^{n-1}dv = \frac{(n-1)n}{n}\int v^n dv = \frac{(n-1)n}{n}\frac{v^{n+1}}{n+1} + C = \frac{(n-1)\,nv^{n+1}}{n+1} + C$$

Probability that the second best price val between $[v, v + dv]\ n\ (n-1)\ v^{n-2}$ will be realized is $\frac{n}{n+1}$, and the probability that this price is in the inter-$(1\text{-}v)dv$, meaning that the average price is:

Equation 6

$$\bar{p}_c = \int v dp_2(v) = \int_0^1 n(n-1)(v^{n-1} - v^n)dv = (n-1) - \frac{n(n-1)}{n+1} = \frac{n-1}{n+1}$$

Again expected value of the bidders is the expected value of the excess $\frac{n}{n+1}$, and the value of lot won by the successful bidder $\frac{n}{n+1}$. This applies for progressive type of auctions , and for Dutch auctions.[36] But the price variance is different in both types of auctions.[37] For the SPA (second price auction theory) variance is

Equation 7

$$\sigma_{c_d}^2 = \int_0^1 \left(v - \frac{n-1}{n+1}\right)^2 n(n-1)(v^{n-2} - v^{n-1})dv$$
$$= \left(v - \frac{n-1}{n+1}\right)^2 n(n-1)(v^{n-2} - v^{n-1})\Big|_0^1 = \left(1 - \frac{n-1}{n+1}\right)^2 n(n-1)$$
$$= \left(1 - 2\frac{n-1}{n+1}\right)^2 n(n-1) = \left(1 - 2\frac{n-1}{n+1} + \frac{n^2-2n+1}{n^2+1}\right)n(n-1)$$
$$= \frac{[2(n+1)(n+1)^2 + n^2 2(n+1) - 4n(n+1) + 2(n+1)]n(n-1)}{2(n+1)(n+1)^2}$$
$$= \frac{n + 2[(n+1)^2 + n^2 - 2n + 1]n(n-1)}{(n+2)(n+1)^2}$$
$$= \frac{(n+2)n(n-1)[(n+1)^2 - (n-1)^2]}{(n+2)(n+1)^2} = \frac{2(n-1)}{(n+2)(n+1)^2}$$

36) English auctions are such type where it is begun with lowest (reserve prices) and it is going to higher price. English auctions are of open type.

37) Dutch type of auction. is a type of auction, that begins with highest bid that decreases until some auctioneer does accept the price, or accepts proposed reserve price.

Variance in the gain is even larger from Dutch to English model of auction. *Revenue equivalence theorem* is a central topic in the auction theory. This theory confirms that if there are n risk neutral agents, that do inde-pendent and personal evaluation of some auction good , and valuation follows cumulative distribution $F(v)$, which is ascending probability distribution of a continuous set of choices (v, v_{--}). Than every auction mecha-nism (every institution auction), in which lot will be allocated towards the agent for which it has highest value v_{--}, and every agent with a valuation of good v has utility 0, generates exact same revenue, which lead every bidder to make the same payment. Mechanism of lot allocation taken into consideration here is following: expected value of lot for the agent i is $u_i(v_{--})$, while the probability that the agent i will win the auction is

$P_i(v_{--})$, in the equilibrium of the auction (when the lot is saled), and afterwards it follows the agents strategy v_{--}, this strategy is given by a following expression:

Equation 8

$$u_i(\bar{v}) = \bar{v}P_i(\bar{v}) - E(payment\ \bar{v}_i)$$

This means that the utility of agent , is dependent on the average value by which he values lot, which is mul-tiplied with the probability that he will win the auction minus the average value of agents i payment, which he will do for the selected lot. In the equilibrium:

Equation 9

$$u_i(v) \geq u_i(\bar{v}) + (v - \bar{v})P_i(\bar{v})$$

v type agent, values the lot with v - v_{--}, more than agents v_{--} lot valuation. Inequality applies because the devi-ation must be non-profit , i.e. v - $v_{--} \varepsilon$ 0, here one it can be written that

Equation 10

$$v^{--} = v + dv$$

Where dv is some marginal value, and v_{--} value is larger than v for some marginal value. If in the previous expression $u_i(v) \varepsilon u_i(v^{--}) + (v - v^{--}) P_i(v^{--})$ one replaces v^{--} with $v^{--} = v + dv$, one could get :

Equation 11

$$u_i(v) \geq u_i(v + dv) + (v - v + dv)P_i(v + dv)$$

With the rearrangement one can get:

Equation 12

$$u_i(v) \geq u_i(v) + dvP_i(v)$$

Value of the utility for the agent i for v valuation, one can get as a sum of utility $u_i(v)$, plus the sum from probability that lot x will be allocated to him, which is equal to $P_i(v_{--})$, ie.:

Equation 13

$$u_i(v_i) = u_i(v) + \int_v^{v_i} P_i(v)dv$$

Because there are two possible outcomes of the auction, agent wins the lot and agent does not win the lot, (0,1), i.e. as it is said in the theorem at the beginning (v, v_{--}), meaning that the agent of type v will never won the game, and his utility will be zero $u_i(v) = 0$. Furthermore, every player has equal probability that will win the lot in the two type of auctions (English and Dutch) $P_i(v_i)$. From the equation, $u_i(v^{--}) = v^{--} P_i(v^{--})$ - *E(pay-ment* $v^{--}{}_i$), for the *i-th* agent we have :

Equation 14

$$u_i(v_i) = v_i P_i(v_i) - E(payment\ v_i)$$

This means that expected payoff in the two mechanisms (v, v^{-}), is equal and amounts to $E(payment\ v_i)$.

Symmetric model case

This case applies when coefficient of risk aversion is zero. Whether one chooses Constant relative risk aver-sion (CRRA),[39] or Constant absolute risk aversion (CARA),[38] if the risk aversion coefficients are zero, and *reservation price* ($r = 0$) revenue equivalence holds. In this case expected revenue $E(R)$, from the auc-tionto the auctioneer is the same in the First price auction (*Dutch auction*) and in the Second price auction (*English auction*, Vickrey type of auction). So in the case where revenue equivalence holds (risk neutral case), utility to the bidders is:

Equation 15

$$U(c) = c$$

In the previous expression c represents consumption, and in the risk neutral case such as this bid functions (symmetric equilibrium bid functions) are:

Equation 16

$$b(v) = \left(\frac{n-1}{n}\right)v$$

In the case of a pure strategy equilibrium, where player 1 (bidder) reveals, bidder's valuation is common knowledge, so the rival bidders can anticipate bid of player 1. This bid will be denoted as $v_0 > 0$, unless $v_1 = 0$. Best response of the closest rival (*i-th* bidder) top the bidder 1 rival will be to bid as in an auction with n - 1 bidders, and a common knowledge reserve price b_0 which will be equal to v_0. The equilibrium bidding strategy with n - 1 bidders and a reservation price of b_0 and reservation value $v > b_0$, is given as:[40]

Equation 17

$$b(v_i) = v - \frac{1}{F^{n-1}(v)}\int_r^v F^{n-1}(s)\,ds$$

$b_0 < v < 1$ or zero otherwise. In the previous integral s is a signal;

In the previous expression $b(v_i)$ represents buyers I valuation of the object bid that wins the object and in such a case v_i represents bidders i reservation value. And the bidding strategy is strictly increasing function of his reservation value, v represents the private values of the bidders, x represents private information that buyer i has obtained about the objective monetary valuation of the object $F^{n-1}(x)$ is buyers probability of winning the lot, while $F^{n-1}(v)$ represents a highest bid. In such a situation winning bid in general is given as: $b(v) = p(v)/F^{n-1}(v)$. In the previous expression $p(v)$ represents expected payment which is equal to: $p(v) = v\,F^{n-1}(v) - \int F^{n-1}(x)\,dx$. If $v^* = v$ than in FPA and SPA, expected revenue is the same. That is only the case if reservation price is zero. Otherwise the seller will always announce reservation price strict-ly greater than his personal valuation *i.e.* $v^* > v$, so : $v^* = v_0 + 1 - \frac{F(v_0)}{F'(v_0)}$. . Where v^* is a minimum auction re - servation value and below this reservation value is not worthwhile bidding, $F(v^*)$ is a probability function

38) This is also known as Arrow–Pratt measure of relative risk aversion. See in (Carl&Blume1994)

39) This is also known as Arrow-Pratt measure of absolute risk aversion.

40) See (Riley & Samuelson 1981)

that bidder with valuation $F'(v*)$, will win the lot, and is a first derivative of the probability function. By rewriting and simplifying, we will find bidding function first, we will solve the integral:

Equation 18

$$\int_r^v F^{n-1}(s)\,ds = \int_r^v s^{n-1}\,ds$$

Since signal s=v, Indefinite integral is [illegible]. So to solve definite integral one may apply:

Equation 19

$$\left(\frac{v^n}{n}\right)|(v=v) = \frac{v^n}{n} \text{ and } \left(\frac{r^n}{n}\right)|(v=r) = \frac{r^n}{n},$$

In general solution to the definite integral is :

Equation 20

$$\int_r^v \frac{v^n}{n}dv = \frac{v^n}{n} - \frac{r^n}{n}$$

Bidding function in the risk averse case where a=0, and r is set is given as:

Equation 21

$$b(v_i) = v - \frac{1}{v^{n-1}} * [\frac{v^n}{n} - \frac{r^n}{n}]$$

Or in general case for non-uniform distributions bidding function in FPA according to Krishna (2010) is given as:

Equation 22

$$\beta(v) = x - \int_0^v \frac{F(y)}{F(x)}dy$$

And $F(y) = 1 - F(x)$ (F(x) is a CDF of a function), x signal are drawn from private values distribution v so

x $i = v_i e$

Now in the CRRA case, RRA coefficient can take values between zero and 1, utility is given as $(c) = c^{1-a}$, where a is the coefficient of RRA and $a \in (0,1)$. Than the Nash-equilibrium bidding functions will have the following form:

Equation 23

$$b(v_i) = v - \frac{1}{F^{\frac{n-1}{1-a}}(v)}\int_r^v F^{\frac{n-1}{1-a}}(s)\,ds$$

And $b_0 < v < 1$ or zero otherwise.

One general Nash equilibrium biddingstrategy (CRRA case and where r=0) in FPA is given as:

Equation 24

$$b(v_i) = \frac{n-1}{n-1+a}(v_i)$$

And where r>0 i.e. auction is set with the reserve price bidding function is given as:

Equation 25

$$b(v_i) = v - \frac{1}{F^{\frac{n-1}{1-a}}(v)} \int_r^v F^{\frac{n-1}{1-a}}(s)\, ds$$

To solve this we find the indefinite integral solution ($F(v)=v$) which is :

Equation 26

$$\int v^{\frac{n-1}{1-a}}(x)dx = \frac{v^{\frac{a-n}{1-a}+1}}{(a-n)}(a-1)+C$$

Namely if $n \neq \frac{n-1}{1-a}$ than $\int v^n dv = \int v^{n+1} dv + C : n \neq -1$.

Equation 27

$$\int v^n dv = \frac{v^{\frac{n-1}{1-a}+1}}{\frac{n-1}{1-a}+1} + C = \frac{v^{\frac{a-n}{1-a}}}{(a-n)} * (a-1) + C$$

Now to evaluate integral at the endpoints

Equation 28

$$\frac{v^{\frac{a-n}{a-1}}}{(a-n)} * (a-1) \Big| (v = v) = \frac{v^{\frac{a-n}{a-1}}}{(a-n)} * (a-1)$$

$$\frac{v^{\frac{a-n}{a-1}}}{(a-n)} * (a-1) \Big| (v = r) = \frac{r^{\frac{a-n}{a-1}}}{(a-n)} * (a-1)$$

So $\int_r^v v^{\frac{n-1}{1-a}} dv = \frac{v^{\frac{a-n}{a-1}}}{(a-n)} * (a-1) - \frac{r^{\frac{a-n}{a-1}}}{(a-n)} * (a-1)$

So the general bid function in this case when a>0 and r>0 is given s:

Equation 29

$$b(v_i) = v - \frac{1}{F^{\frac{n-1}{1-a}}(v)} * \left[\frac{v^{\frac{a-n}{a-1}}}{(a-n)} * (a-1) - \frac{r^{\frac{a-n}{a-1}}}{(a-n)} * (a-1)\right]$$

If the coefficient of risk aversion is CARA (Constant absolute risk aversion),ie. $u_i(c) = 1 - e^{-ac}$, where $a > 0$, than the bidding function is given as:

Equation 30

$$b(v_i) = v + \frac{1}{a}\ln\left(1 - \frac{e^{-av}}{F^{n-1}(v)} \int_{e^{ar}}^{e^{av}} [F(a^{-1}\ln w]^{N-1} dw\right.$$

Or when reserve price and absolute coefficient of risk aversion is set:

Equation 31

$$b(v_i) = v + \frac{1}{a}\ln(1 - \frac{e^{-av}}{v^{n-1}} * \frac{1}{2a} * (e^{2av} - e^{2ar}) * \log(v)^{n-1})$$

Where w presents wealth of the bidder. Approximately wealth is approximated by his valuation of the object which is subject to biding at the auction.

All-pay auctions

In all –pay auctions every bidder pays their bid whether they win or not. In all pay auctions Nash-equilibria (in the case of risk neutrality) mixing strategies of the bidders means that expected sellers revenue is equal to the common value of the prize,[41] are approximately given by the expression:

Equation 32

$$F(b) = \left(\frac{b}{100}\right)^{\frac{1}{n-1}}$$

Previous expression is valid for all b, if $0 \ \delta \ b \ \delta \ 100$, in that expression F(b) also denotes c.d.f of the equi-librium bidding strategy ; see (Gneezy&Smorodinsky 2006)

In general, in risk neutral case and there is no reserve price set bidding function for All-pay auctions is given as:

Equation 33

$$b_{(all-pay)} = v^{n-1}\left[\left(\frac{n-1}{n}\right) * v\right]$$

Or $b_{(all-pay,r=0)} = v^{n-1} * E[v]$, where $E[v]$ denotes FPA bid-First price auction bid. If the reserve price is set i.e. r>0 and bidders are risk neutral a=0 than the bidding function in APA auctions is given as:

Equation 34

$$b_{(all-pay,r>0)} = v^{n-1} * v - \int_r^v v^{n-1}dv$$

i.e.

Equation 35

$$b_{(all-pay,r>0)} = v^{n-1} * v - \left[\frac{v^n}{n} - \frac{r^n}{n}\right]$$

in the case where CRRA coefficient is being set bid function in APA auctions takes the following form:

Equation 36

$$b_{(all-pay,r>0)} = v^{n-1} * \left[\frac{n-1}{n-1+a}(v_i)\right]$$

If r>0 and a>0 i.e. there is RRA coefficient set and reserve price at the same

41) See Baye et all (1996)

Equation 37

$$b(v_i) = v^{n-1} * \left[v - \frac{1}{\frac{n-1}{F^{1-a}(v)}} * \left[\frac{\frac{a-n}{v^{a-1}}}{(a-n)} * (a-1) - \frac{\frac{a-n}{r^{a-1}}}{(a-n)} * (a-1) \right] \right]$$

In CARA case

Equation 38

$$b(v_i) = v^{n-1} * \left[v + \frac{1}{a} \ln\left(1 - \frac{e^{-av}}{v^{n-1}} * \frac{1}{2a} * (e^{2av} - e^{2ar}) * \log(v)^{n-1}\right)\right]$$

In general in the previous case with risk averse bidders, bidding functions are approximations the problem of optimization is as follows (according to the software creator Richard M.Katzwer), consider an all pay auction where n bidders draw IPV from some distribution with cdf on $[v_l, v_h]$. And let $\beta:[v_l, v_h] \to \mathbb{R}$ denote the symmetric Nash bid function. Bidders are risk averse with utility index u: and initial wealth W. A bidder tries to maximize:

Equation 39

$$\max_b \quad u(W + v - b)[F(\beta^{-1}(b)]^{n-1} + u(W - b)(1 - [F(\beta^{-1}(b)]^{n-1})$$

The First order necessary condition (FONC)here is given as:

Equation 40

$$\begin{aligned} 0 = {} & u'(W + v - b)[F(\beta^{-1}(b)]^{n-1} \\ & + u(W + v - b)(n-1)[F(\beta^{-1}(b)]^{n-2} F'(\beta^{-1}(b)) \frac{1}{\beta'(\beta^{-1}(b))} \\ & - u'(W - b)(1 - [F(\beta^{-1}(b)]^{n-1}) - u(W \\ & - b)(1 - [F(\beta^{-1}(b)]^{n-2}) F'(\beta^{-1}(b)) \frac{1}{\beta'(\beta^{-1}(b))} \end{aligned}$$

Or since $\beta^{-1}(b) = v$

$$\begin{aligned} 0 = {} & u'(W + v - b)[F(v)]^{n-1} + u(W + v - b)(n-1)[F(v)]^{n-2} F'(v) \frac{1}{\beta'(v)} \\ & - u'(W - b)(1 - [F(v)]^{n-1}) - u(W - b)(1 - [F(v)]^{n-2}) F'(v) \frac{1}{\beta'(v)} \end{aligned}$$

This is a complicated ODE to solve.

Expected revenue (expected payoffs in auctions)

In the first price auctions expected revenue for the auctioneer for every bid is given as expected payment multiplied by the number of bidders n, i.e.:

Equation 41

$$\hat{E}(p, b_i, v_i) = (v_i - b_i) \frac{(b_i)^{n-1}}{\left(\frac{n}{n-1}\right)^{n-1}}$$

$E(p, b_i, v_i)$ is the expected payoff, where v_i are independent private values, and revenue is given as:

Equation 42

$$E(R, b_i, v_i) = E(p, b_i, v_i) * N$$

When CRRA coefficient is being set i.e. when bidders are not risk neutral the corresponding expected pay-offs (and corresponding revenue) of the bidders are given as:

Equation 43

$$E(R, b_i, v_i) = v_i * \frac{(b_i)^{n-1}}{\left(\frac{n-1}{n-1+a}\right)^{n-1}}$$

Where is CRRA coefficient in general when bids for the corresponding probabilities are known (calculated) the expected payoffs (expected revenues for every bidder) are given as:

Equation 44

$$E(R, b_i, v_i) = v_i * \frac{(b_i)^{n-1}}{\alpha^{n-1}}$$

In the previous expression $\alpha = \left(\frac{n}{n-1+a}\right)^{\frac{1}{n-1}}$ this is because $b_i = \alpha * v_i$. This is true also when reserve prices is set and coefficient of risk aversion. In the Second price auctions (SPA) the CDF of the revenue functions is calculated as[42]:

Equation 45

$$Revenue_{(SPA, r=0, a \in \mathbb{R}^+)} = F(y)^n + nF(y)^{n-1}\left(1 - F(y)\right)$$

$$= nF(y)^{n-1} - (n-1)F(y)^n$$

When reserve price is set in SPA auction, revenue function below reserve price looks like this:

Equation 46

$$Revenue_{(SPA, r \in \mathbb{R}, a \in \mathbb{R}^+)} = r * r^{n-1} + F(y)^n + nF(y)^{n-1}\left(1 - F(y)\right)$$

$$= r * r^{n-1} + nF(y)^{n-1} - (n-1)F(y)^n$$

While when independent private values exceed reserve price the functional form of revenue CDF looks same as in the case with no reserve price.

In all pay auctions in general case expected payoffs of the bidders are given as **Equation 47**

$$E(payment_{APA}) = \int \beta(v) dF$$

Expected revenue in APA is given as:

Equation 48

$$E(revenue_{APA}) = n * \int \beta(v) dF$$

42) See Kunimoto (2008)

From the revenue one need to find the private values function first and that is :

Equation 49

$$v = \left(\frac{\beta(v)}{\left(\frac{2}{3}\right)} \right)^{\left(\frac{1}{3}\right)}$$

Results from auction solver

Next, here are presented the results obtained by use of auction solver. Richard M.Katzwer wrote this soft-ware. In the First table, we present the results obtained for the risk neutral case and in the second Table, we provide results for the case of risk neutral bidders.[43]

Table 1 Risk neutral bidders, with reservation price zero, number of biiders=3

Risk averse case CRRA=0.4 ;CARA=4.0 and reservation price=0.4; number of bidders n=3						
Type of private values distribution	Auction type	maximum bid (right endpoint of bid distribution b_bar	Expected revenue for the auctioneer (E[R] = E[m] * N)	Expected payment by bidders E[m]	Expected utility to bidders E[u	probability item is unallocated (all bids below reserve) P_0
Standard normal (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7346317	0.5233480	0.1744493	0.1028037	0.0943964
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4798612	0.1599537	0.1131171	0.0943964
	APA(all-pay auctions)	0.7346317	0.0819876	0.0273292		
Standard normal (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.7263772	0.5102678	0.1700893	0.1534737	0.0943964
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4798612	0.1599537	0.1534737	0.0943964
	APA(all-pay auctions)	0.7263772	0.0756754	0.0252251		
Log normal (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.8649665	0.7540914	0.2513638	0.0828988	0.0002989
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.7077322	0.2359107	0.0966421	0.0002989
	APA(all-pay auctions)	0.8649665	0.1718317	0.0572772		
Log normal (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.8384763	0.7290578	0.2430193	0.1297647	0.0002989
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.7077322	0.2359107	0.1297647	0.0002989
	APA(all-pay auctions)	0.8384763	0.1559933	0.0519978		
Beta (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7735836	0.5761506	0.1920502	0.1036646	0.0640000
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5256000	0.1752000	0.1156296	0.0640000
	APA(all-pay auctions)	0.7735836	0.1036405	0.0345468		

43) CRRA and CARA are being used as measures of neutrality or aversity of bidders.

Beta (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.7598812	0.5603228	0.1867743	0.1567281	0.0640000
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5256000	0.1752000	0.1567281	0.0640000
	APA(all-pay auctions)	0.7598812	0.0952758	0.0317586		
Uniform (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7735836	0.5761506	0.1920502	0.1042956	0.0640000
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5256000	0.1752000	0.1163464	0.0640000
	APA(all-pay auctions)	0.7735836	0.1036405	0.0345468		
Uniform (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.7598812	0.5603228	0.1867743	0.1576778	0.0640000
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5256000	0.1752000	0.1576778	0.0640000

Next, in Table 2 are presented the results in the risk averse bidders case.

Table 2 Risk averse bidders (CRRA=4.0,CARA=4.0), with reservation price 0.4,number of bidders=3

	APA(all-pay auctions)	0.7598812	0.0952758	0.0317586		
Triangular (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.6901554	0.5442205	0.1814068	0.0892794	0.0327680
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5077239	0.1692413	0.0997395	0.0327680
	APA(all-pay auctions)	0.6901554	0.0679635	0.0226545		
Triangular (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.6722348	0.5252554	0.1750851	0.1349865	0.0327680
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5077239	0.1692413	0.1349865	0.0327680
	APA(all-pay auctions)	0.6722348	0.0584859	0.0194953		
Kumaraswamy (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7372686	0.5892777	0.1964259	0.0925610	0.0255160
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5456206	0.1818735	0.1046092	0.0255160
	APA(all-pay auctions)	0.7372686	0.0912166	0.0304055		
Kumaraswamy (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.7165197	0.5682720	0.1894240	0.1420239	0.0255160
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.5456206	0.1818735	0.1420239	0.0255160
	APA(all-pay auctions)	0.7165197	0.0799332	0.0266444		
Gamma (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.5756602	0.2727609	0.0909203	0.0719515	0.4180305
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.2592612	0.0864204	0.0748882	0.4180305
	APA(all-pay auctions)	0.5756602	0.0203123	0.0067708		
Gamma (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.5922903	0.2713597	0.0904532	0.1018825	0.4156601
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.2593647	0.0864549	0.1018825	0.4156601
	APA(all-pay auctions)	0.5922903	0.0208872	0.0069624		
Weibull (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7011976	0.4704638	0.1568213	0.1001409	0.1418659
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4335800	0.1445267	0.1086913	0.1418659

	FPA(first price auction , Dutch type	0.7011976	0.0651847	0.0217282		
Weibull (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.6992714	0.4607301	0.1535767	0.1473960	0.1418659
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4335800	0.1445267	0.1473960	0.1418659
	FPA(first price auction , Dutch type	0.6992714	0.0610630	0.0203543		
Power (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.6575730	0.3854263	0.1284754	0.0932573	0.2529822
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.3578528	0.1192843	0.0992482	0.2529822
	FPA(first price auction , Dutch type	0.6575730	0.0460285	0.0153428		
Power (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.6666767	0.3811101	0.1270367	0.1344171	0.2529822
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.3578528	0.1192843	0.1344171	0.2529822
	FPA(first price auction , Dutch type	0.6666767	0.0451887	0.0150629		
Reverse Power (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.9139690	0.7795748	0.2598583	1.8465012	0.0114520
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.7123353	0.2374451	Infinity	0.0114520
	FPA(first price auction , Dutch type	0.9139690	0.2064959	0.0688320		
Reverse Power (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.8877422	0.7553769	0.2517923	2.9094572	0.0114520
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.7123353	0.2374451	Infinity	0.0114520
	FPA(first price auction , Dutch type	0.8877422	0.1904224	0.0634741		
Exponential (CRRA=0.4,r=0.4)	FPA(first price auction , Dutch type	0.7384851	0.5237630	0.1745877	0.1034777	0.0977777
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4796241	0.1598747	0.1138245	0.0977777
	FPA(first price auction , Dutch type	0.7384851	0.0836569	0.0278856		
Exponential (CARA=4.0,r=0.4)	FPA(first price auction , Dutch type	0.7305809	0.5111237	0.1703746	0.1543483	0.0977777
	SPA(Second price auction, English auction, Vickrey auction)	1.0000000	0.4796241	0.1598747	0.1543483	0.0977777
	FPA(first price auction , Dutch type	0.7305809	0.0775855	0.0258618		

Conclusion

Hugo Sonnenschein, in his 1983 inaugural Nancy Schwartz Memorial Lecture, argued that is very important to understand how incentives work, i.e. how to create institutional arrangements that induce individuals to behave in certain way so that certain outcome prevails. In 1990s and later, economists have been recog-nized to the design of several auction like mechanisms such as: US FCC spectrum auctions, 3G auctions in Europe, the allocation of property rights on land at the airports, etc. So, the market design, or market archi-tecture depends on a game theory, in particular games of incomplete information, but most important insights come from auction theory, Menezes, Flavio, M. , Monteiro ,Paulo K.,(2008). Auction mechanism is also very important since it is market clearing mechanism that equates supply and demand. In auctions price forma-tion is explicit, i.e. the rules that determine price formation are well known to all parties involved. This paper provided a theoretical insight how bids are formed in symmetric auctions case, in the three types of auctions FPA, SPA, APA.

Appendix 1. Distributions in Auction solver software

Standard Normal distribution function

In this case c is cumulative distribution, than standard normal function with CDF ($c(x)=\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{x} e^{-(z)^2/2}dz$ and $z=\frac{x-\mu}{\sigma}$ z is standardized normal value ;in this case of standard normal distribution z=x) given as :

$$F(x)=\frac{\Phi\left(\frac{x-\mu}{\sigma}\right)-\Phi\left(\frac{a-\mu}{\sigma}\right)}{\Phi\left(\frac{b-\mu}{\sigma}\right)-\Phi\left(\frac{a-\mu}{\sigma}\right)}$$

In our case we used standard normal distribution function where $\omega_L=0$ and $\omega_H=1$ and $\mu=0$ and $\sigma=1$.So this gives :

$$F(x)=\frac{\Phi\left(\frac{x-0}{1}\right)-\Phi\left(\frac{a-0}{1}\right)}{\Phi\left(\frac{b-0}{1}\right)-\Phi\left(\frac{a-0}{1}\right)}=\frac{\Phi(x)-\Phi(a)}{\Phi(b)-\Phi(a)}$$

Also ω_L is the lowest boundary of support where F=0 , and ω_H is the highest boundary of support where F=1. Also, $F(x)$ this is a cumulative function of a distribution .This CDF should be differentiable and strictly increasing function on some interval (ω_L,ω_H) is a subset form points in the interval $[0,\infty]$.And, $f(x)$ is the probability density function of a distribution, that is derivative of cumulative distribution function $f=F'$:

$$f(x)=\frac{\frac{1}{\sigma}\phi\left(\frac{x-\mu}{\sigma}\right)}{\Phi\left(\frac{\omega-\mu}{\sigma}\right)-\Phi\left(\frac{-\mu}{\sigma}\right)}$$

since in our case $\mu=0$ and $\sigma=1$ we can simplify the previous expression as:

$$f(x)=\frac{\phi(x)}{\Phi(\omega)}$$

Inverse function of the CDF is given as:

$$F^{-1}(x)=\mu+\sigma\Phi^{-1}\left(\left[\Phi\left(\frac{a-\mu}{\sigma}\right)-\Phi\left(\frac{a-\mu}{\sigma}\right)\right]+\Phi\left(\frac{a-\mu}{\sigma}\right)\right)$$ or in our case:

$$F^{-1}(x)=\Phi^{-1}\left(x[(b)-\Phi(a)]+\Phi(a)\right)$$

Log normal distribution

In this distribution μ is a location parameter and it should be >0 , and $\sigma>0$ this is a scale parameter, and a and b parameters should be points drawn as subset for the set of real numbers $[a,b]\subseteq R$, than CDF of the function would be:

$$F(x)=\frac{\int_a^x \frac{1}{z\sigma\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz-\mu}{\sigma}\right)^2\right]dz}{\int_a^b \frac{1}{z\sigma\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz-\mu}{\sigma}\right)^2\right]dz}$$

in our case $\mu=0$ but $\sigma=0.5$ so the last expression can be simplified as:

$$F(x)=\frac{\int_a^x \frac{1}{z*0.5\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz}{0.5}\right)^2\right]dz}{\int_a^b \frac{1}{z*0.5\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz}{0.5}\right)^2\right]dz}$$

And the probability density function given as:

$f(x)=\frac{\frac{1}{x\sigma\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnx-\mu}{\sigma}\right)^2\right]}{\int_a^b \frac{1}{z\sigma\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz-\mu}{\sigma}\right)^2\right]dz}$ or in our case:

$f(x)=\frac{\frac{1}{x0.5\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnx}{0.5}\right)^2\right]}{\int_a^b \frac{1}{z0.5\sqrt{2\pi}}exp\left[-\frac{1}{2}\left(\frac{lnz}{0.5}\right)^2\right]dz}$ and z=x also could be simplified in the last expression.

Beta distribution

In the Beta distribution it should be $\alpha,\beta>0$ so in our case $\alpha=\beta=1$ (uniform distribution) our distribution support values between 0 and 1, support=[0.000,1.000].The Beta function is a power function on *x* and its reflection *1-x* , and it is defined as:

$$B(a,b)=\int_0^1 x^{a-1}(1-x)^{b-1}dx;a>0,b>0,0\leq x\leq 1$$

And CDF of this function can be written as:

$$F(x)=\frac{1}{B(a,b)}\int_{\omega_L}^{v(x)} x^{a-1}*(1-x)^{b-1}dx;$$ where $v(x)=\frac{x-\omega_L}{\omega_H-\omega_L}$

PDF of the function is given as:

$$f(x)=\frac{1}{\omega_H-\omega_L}\frac{v(x)^{a-1}(1-v(x))^{b-1}}{B(a,b)}$$

With $\alpha=\beta=1$ our Beta distribution turns into standard uniform distribution

$$\frac{1}{B(a,b)}x^{a-1}(1-x)^{b-1}$$

Uniform distribution

In the uniform distribution $\omega_H>\omega_L$ and in our case this distributions is supported in the range [0,1].Cumulative distribution function for uniform distribution is given as:

$$F(x)=\frac{x-\omega_L}{\omega_H-\omega_L}$$

Probability distribution function is given as:

$$f(x)=\frac{1}{\omega_H-\omega_L}$$

Inverse function is given as:

$$F^{-1}(x)=\omega_L+x[\omega_H-\omega_L]$$

Triangular distribution

In our case in the triangular distribution parameters were set as follows: $a=0$, $b=1$, and $c=0.5$.Requirement here is that $a \leq c \leq b$.Also $\psi \in [0,1]$ this is parameter of uniformity (vertex-common endpoint of two or more rays of line segments). In our case $\psi=0$.

Cumulative distribution function here is:

$F(X) = \psi x + (1-\psi)\frac{(x-a)^2}{(b-a)(c-a)}$ for $x \in [a,c)$ or

$F(X) = \psi x + (1-\psi)\left[1 - \frac{(b-x)^2}{(b-a)(b-c)}\right]$ for $x \in [c,b)$,

In our case since $a=0$, $b=1$, and $c=0.5$ this distribution is a distribution of $x=\frac{(x_1+x_2)}{2}$, x_1 and x_2 are two independent random variables. So previous expression in our case would become:

$F_{(0,\dots,0.5)}(X) = \frac{(x)^2}{(0.5)} = 2x^2$ if $0 \leq x \leq 1/2$ or

$F_{(0.5,1-0.0.5)}(X) = 1 - \frac{(\dots)^2}{0.5} = (2x-1)^2$ and for the part $1/2 \leq x \leq 1$ it becomes

$F_{(0.5,\dots,1)}(X) = 1 - \frac{(1-x)^2}{0.5} = 2x^2 - (2x-1)^2$

$$F(x) = \begin{cases} \frac{(x)^2}{(0.5)} = 2x^2 & if\ x \in (0,\dots,0{,}5) \\ 2x^2 - (2x-1)^2 & if\ \ x \in (0.5,\dots,1) \end{cases}$$

4x-(4x

Probability distribution function or PDF is a first derivative of the CDF so

$$f(x) = F'(x) = \begin{cases} 4x & if\ x \in (0,\dots,0{,}5) \\ 4-4x & if\ \ x \in (0.5,\dots,1) \end{cases}$$

Kumaraswamy or double bounded distribution

In our case for Kumaraswamy distribution lower and upper bound are $a=0$ and $b=1$ and $a=0$, $b=2$. Requirement fulfilled here is that $a, B > 0$, and $a, b \in \mathbb{R}$. .The CDF of the Kumaraswamy distribution is defined as:

$F(x;a;b) = 1-(1-x^a)^b$

And the probability density function is a first derivative of the previous expression:

$f(x;a,b) = F'(x;a;b) = abx^{a-1}(1-x^a)^{b-1}$, for $x \in [0,1]$ and $a, b > 0$

Gamma distribution

In our case shape parameter in this distribution $k=0.5$ and scale parameter $\theta=1$ and $a=0, b=1$ so distribution support is $x \in [0.0, 0.1, 0.0]$. The Gamma function is defined as:

$\Gamma(x) = \int_0^\infty x^{k-1}e^{-x}\,dx;\ k \in (0,\infty)$ (*this is also called lower incomplete Gamma function*)

CDF of Gamma distribution is given as:

$F(x;k) = \frac{\Gamma(k,\frac{x}{b})}{\Gamma(k)}\ x \in (0,\infty)$, or CDF is given as

$$F(x) = \frac{\int_0^\infty x^{k-1}e^{-x}\,dx}{\Gamma(k)}$$

While the probability density function is given as :

$$f(x) = \frac{1}{\theta^k \Gamma(k)} x^{k-1}e^{-\frac{x}{\theta}}$$

Or in terms of shape parameter *k* and scale parameter *b*, PDF of Gamma distribution can be written as:

$f(x) = \frac{1}{b^k\Gamma(k)} exp\left[(k-1)\ln(x) - \frac{1}{b}x\right] x \in (0,\infty)$ or if we simplify:

$f(x) = \frac{1}{b^k\Gamma(k)} * x^{k-1} * e^{-\frac{x}{b}}$ in our case where k=0.5, b=1 the last expression would become:

First $\Gamma(\frac{1}{2})\sqrt{\pi} = \sqrt{3.14^{-16}} = 1.7725 \approx 1.8$

$$f(x) = 1.8 * \frac{1}{\sqrt{x}} * e^{-x} = 1.8 * \frac{1}{\sqrt{x}} * \frac{1}{e^x} = \frac{1.8}{e^x * \sqrt{x}}$$

Weibull distribution

This is continuous probability distribution. In our case $\omega_L = 0$ and $\omega_H = 1$ and $k = 1$ which means that the failure rate is constant over time, and $\lambda = 1$ this is the scale parameter .And after the Rayleigh distribution $\lambda = \sqrt{2\sigma^2}$ since in our case $\lambda = 1\sqrt{2\sigma^2} = 1$ and $= 1\sqrt{2}$. Cumulative distribution function of Weibull distribution is given as:

$F(x,k,\lambda) = 1 - e^{-(\frac{x}{\lambda})^k}$ or alternatively

$$F(x) = \frac{1 - exp\left[-\left(\frac{x-\omega_L}{\lambda}\right)^k\right]}{1 - exp\left[-\left(\frac{\omega_H-\omega_L}{\lambda}\right)^k\right]}$$

Probability density function is given as:

$$f(x) = \frac{\frac{k}{\lambda^k}(x-\omega_L)^{k-1} * exp\left[-\left(\frac{x-\omega_L}{\lambda}\right)^k\right]}{1 - exp\left[-\left(\frac{\omega_H-\omega_L}{\lambda}\right)^k\right]}$$

Uniform distribution

This distribution is $U(a,b)$ in our case a=0, b=1, this are minimal and maximal value. This distribution supports $b > a$ i.e. $1 > 0$.

So CDF of a uniform distribution is:

$$F(x) = \frac{x-a}{b-a} \; a \leq x \leq b$$

PDF of uniform distribution is given as:

$$f(x) = \frac{1}{b-a}$$

Power distribution

This is distribution that is frequently used to model income, financial variables and others. In our case $a=0, b=1, c=0.5$ .CDF of this distribution[1] is given as:

$$F(x) = \frac{\eta}{\alpha+1}\left[(x+a+c)^{\alpha+1} - c^{\alpha+1}\right]$$

PDF of this distribution is given as:

$$f(x) = \eta\,(x+a+c)^{\alpha}$$

In the previous expressions $\eta = (\alpha+1)/(b+c)^{\alpha+1} - c^{\alpha+1}$

Reverse power distribution

Parameters are the same as in power distribution namely $a=0, b=1, c=0.5$. And also $[a,b] \subseteq \mathbb{R}$, and $\alpha \geq 0$ this is a shape parameter.

CDF of this probability distribution is given as:

$$F(x) = 1 - \left(\frac{b-x}{b-a}\right)^{\alpha}$$

PDF of this distribution is given as:

$$f(x) = \frac{\alpha(b-x)^{\alpha-1}}{b-a}$$

Exponential distribution

In our case parameters are set as $\omega_L = 0$ and $\omega_H = 1$ and $\lambda = 0.5$ .CDF of this probability distribution is given as:

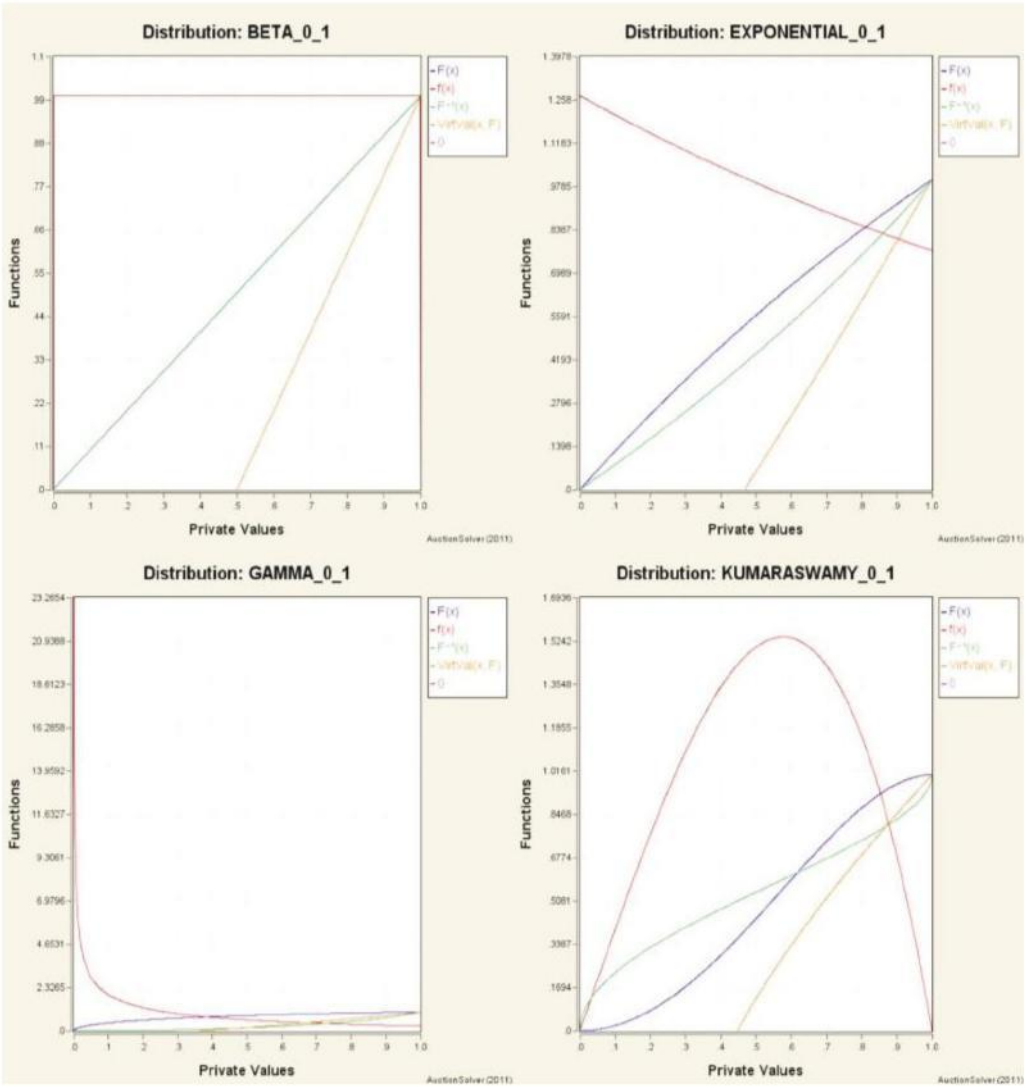
$$F(x) = \frac{1-\exp(-\lambda(x-\omega_L))}{1-\exp(-\lambda(\omega_H-\omega_L))}$$

PDF of this distribution is given as:

$$f(x) = \frac{\lambda\exp(-\lambda(x-\omega_L))}{1-\exp(-\lambda(\omega_H-\omega_L))}$$

Appendix Parametrized distributions in auction solver

[1] See, Katzwer (2011)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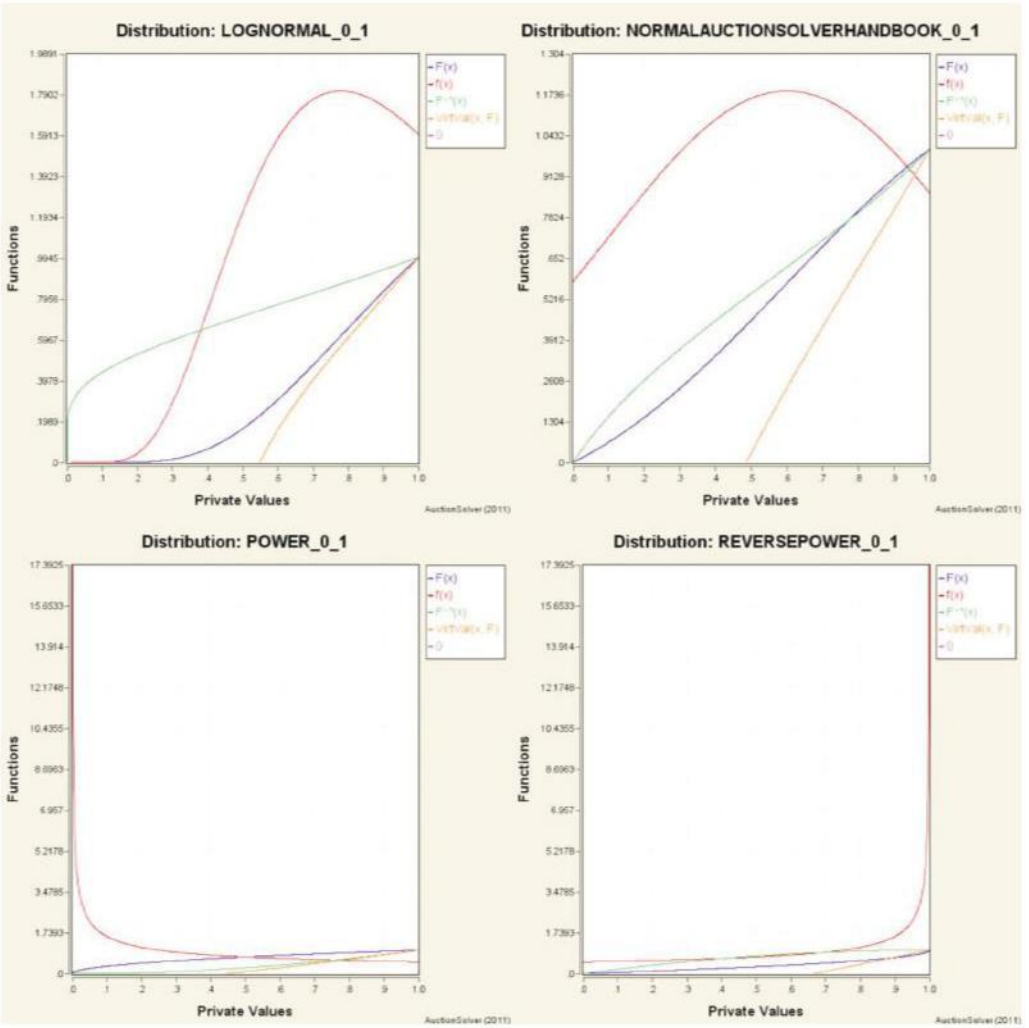
Functions
Private Values
AuctionSolver (2011)
Distribution: EXPONENTIAL_0_1
Functions
Private Values
AuctionSolver (2011)
Distribution: GAMMA_0_1
Functions
Private Values
AuctionSolver (2011)
Distribution: KUMARASWAMY_0_1
Functions
Private Values
AuctionSolver (2011)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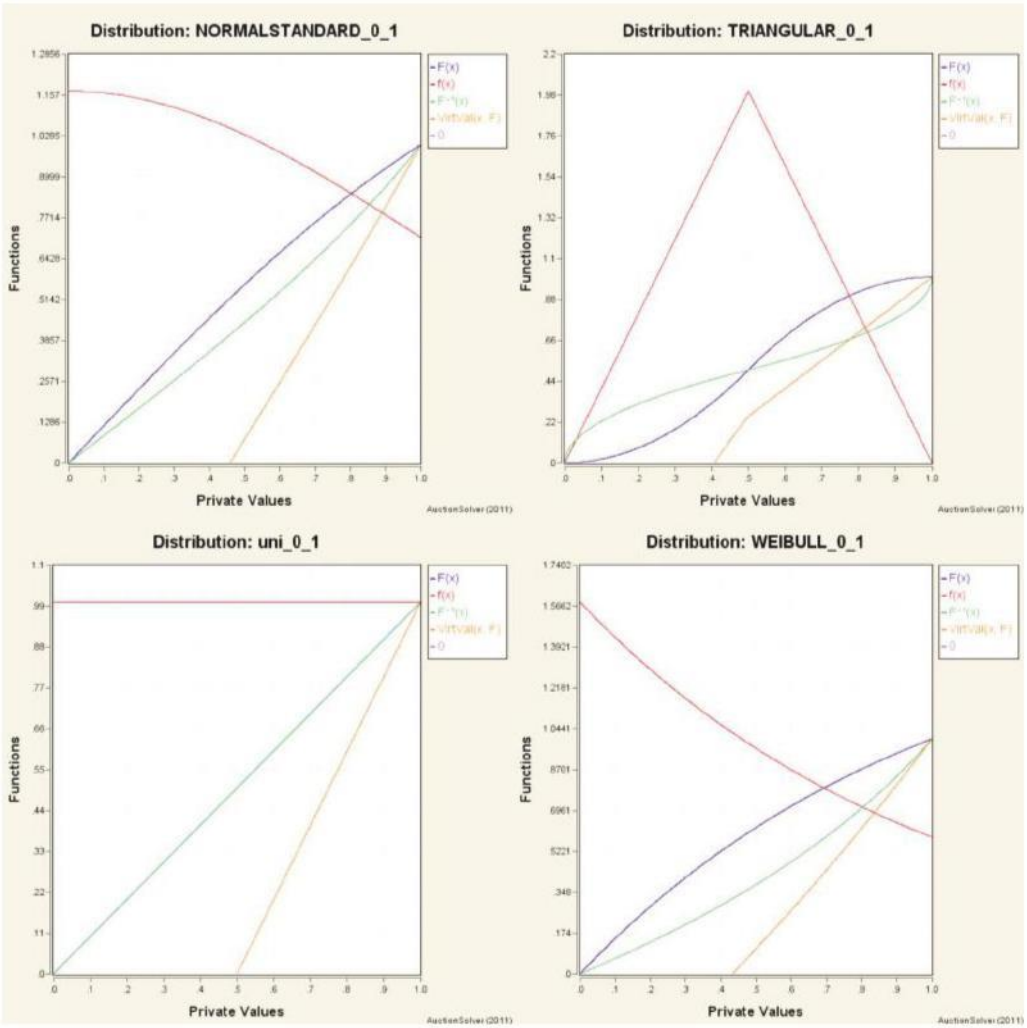
Distribution: POWER_0_1
Distribution: REVERSEPOWER_0_1
Functions
Private Values
F(x)
f(x)
0
AuctionSolver (2011)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Distribution: TRIANGULAR_0_1
Distribution: uni_0_1
Distribution: WEIBULL_0_1
Functions
Private Values
F(x)
f(x)
AuctionSolver (2011)

References

Baye, M.R., Kovenock, D., de Vries, C.G., 1996. The all-pay auction with complete information. Economic Theory 8, 291–305.

Carl,S.,andBlume,L.,(1994), Mathematics for Economists (Student ed.). Viva Norton. p. 363. ISBN

978-81-309-1600-2. Deb,R.,Pai,M.,M.,(2016), Discrimination via symmetric auctions, working paper

Gneezy, U. &Smorodinsky, R. (2006). All-Pay Auctions – An Experimental Study. Journal of Economic Behavior and Organization, 61, 255-275.

Klemperer, P. (1999), Auction Theory: A Guide to the Literature, Journal of Economic Surveys, 13, 227–286.

Krishna, V.(2010): AuctionTheory, AcademicPress, SanDiego, 2010 (2nd edition).

Kunimoto,T.,(2008), Lecture note on auctions, Department of Economics , McGillUniversity

McAfee,P.,R., and McMillan,J., (1987),Auctions and bidding, Journal of economic literature, Vol.XXV,pp.699-738

Menezes, Flavio, M. , Monteiro ,Paulo K.,(2008), An Introduction to Auction Theory, Oxford University Press

Pardina,-Martinez,I.,(2006), First-price auctions where one of the bidders 'valuations is common knowledge, Review Economic Design 10(1):31-51

Riley, G., J., Samuelson,F.,W.,(1981),Optimal auctions, The American Economics Review,Vol.71,No.3.

Smith, L.,Vernon (2001), Markets, Institutions, and Experiments, Encyclopedia of cognitive science, University of Arizona, Tucson, Arizona, USA

Vickrey, William (1961). Counterspeculation, Auctions, and Competitive Sealed Tenders. The Journal of Finance 16 (1): 8–37.

Ockenfels,E.,Roth,A,E, (2003), Late and multiple bidding in second price internet auctions: theory and evidence concern-ing different rules for ending an auction, CESIFO working paper no. 992

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ASPECTS OF THE NAME DISPUTE BETWEEN MACEDONIA AND GREECE: SYMBOLS, CONFLICT AND ECONOMIC COSTS

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Abstract

The Republic of Macedonia and Greece have a symbolic dispute that lasts for almost three decades. In the centre of the dispute is the term "Macedonia" that Greece claims to be exclusively Greek, at the same time deny-ing the right of the neighbouring country to freely use the name. The paper examines several aspects of the dis-pute. By utilizing the theoretical framework given by the ethnosymbolic school of nationalism (predominantly Smith and Hutchinson), it explains the theoretical aspects of symbols and their use in nation building process-es. Furthermore, it examines the conflict itself and its background, trying to establish the precise kind of sym-bolic conflict it belongs to, and the possible outcomes given the asymmetric power relation between the two actors. Finally, it analyses the costs of the economic embargo imposed to the Republic of Macedonia by Greece, as a direct consequence of the symbolic dispute between the two countries.

Key words: ethnosymbolism, name dispute, national symbols, economic costs.

Introduction

Nation building processes are complex and often entail conflicts among different nations and ethnic groups, that are not just territorial, but can also be symbolic. Symbols, such as toponyms, flags, anthems, architec-ture can represent territory where neighbouring nations dispute their national ownership. Disputes of this kind can lead to different outcomes that could extend from armed conflicts to economic embargos. Punitive actions on both sides could be overcome, which heavily depends on the power positions of the dyad in ques-

tion, leading to different possibilities within such disputes. Moreover, such disputes create economic costs, that directly affect the economic wellbeing on the side to which punitive action is being imposed.

The Republic of Macedonia and Greece have a symbolic dispute that lasts for almost three decades. In the centre of the dispute is the term “Macedonia” that Greece claims to be exclusively Greek, at the same time denying the right of the neighbouring country to freely use the name. As a result, Greece imposed an economic embargo to Macedonia in the early nineties, and has vetoed Macedonia’s accession to the NATO at the Bucharest summit in 2008. This has complicated heavily the relations between the two countries that was additionally burdened with provisions in the Macedonian Constitution from 1991 relating to national minori-ties in neighbouring countries as well as the flag of the country (until its change in 1995) that included the sun of Vergina, also claimed by Greece as an exclusive Greek symbol.

The paper examines several aspects of the dispute. By utilizing the theoretical framework given by the ethnosymbolic school of nationalism (predominantly Smith and Hutchinson), it explains the theoretical aspects of symbols and their use in nation building processes. Furthermore, it examines the conflict itself and its background, trying to establish the precise kind of symbolic conflict it belongs to, and the possible outcomes given the asymmetric power relation between the two actors. Finally, it analyses the costs of the economic embar-go imposed to the Republic of Macedonia by Greece, as a direct consequence of the symbolic dispute between the two countries. The analysis answers the question: what is the essence and type of the dispute, what are possible outcomes in the event of unevenly powerful players as well as what are the economic costs of the dispute. The methodological approach utilizes process tracing as well as economic data analysis.

The nation and its symbols

Understanding of nation building and consequently state building differs greatly among the schools of nation-alism present in current academic literature.[45] Primordialists (Geertz, Shills, van den Berghe) put an accent of primordial ties and organic relations among members of ethnic communities while the modernists (Brass, Gellner, Anderson, Hroch, Hobsbawm) refer to a more complex set of mechanisms that enabled shaping of the nation, situated in the modernizing process of historical developments, an interplay of economic, cultur-al and political factors that under specific circumstances led to nation and state formation. Notwithstanding that modern approaches such as the feminist approach (Yuval-Davis), post-colonial (Chaterjee) or discursive approach (Calhoun) have all influenced the contemporary academic discourse on nation building, it seems that the richest instrumentarium in explaining the connection between symbols and nations is offered by the ethnosymbolists, which perceive symbols as one of cornerstones of the nation building process.

National symbolism presents a fundamental mechanism through which the nation creates, recreates ad solidifies itself. Symbolic ethnicity, as Gans observes, can be “expressed in a myriad of ways” (Gans,1979) where people project their wish “to create a symbolic tradition” (ibid) enabling them to create a connecting point for all members of a given community. On these lines, the founders of the ethnosymbolic approach, Anthony D. Smith and John Hutchinson, relate to ethnicity as a category that is “more homogenous” (Ozkirimli, 2010) compared to primordialists and modernists; meaning that they connect it to pre-modern eth-nic composites that over time transform into modern day nations, with the tendency to be more stable than modernists would presume. In its effort to explain the concept of the ethnic core and bureaucratic incorpo-ration in nation building, Smith refers to two types of nation building: lateral and vertical (Smith, 1989). The lateral nation building approach presumes that national elites have “grafted new ethnic and cultural elements on to their common fund of myths, symbols and memories, and spread them out from the core area and down through the social scale” (ibid). The symbols and the myths are the fundamental mechanisms through which all social layers and geographical regions are attached to the ethnic core thus enabling not mere sur-vival of the nation, but its cohesion and structuring.

45) For a detailed overview of the most influential academic currents in theory of nationalism see Özkirimli, U. (2010). Theories of Nationalism (second edition). Palgrave MacMIllan, London.

In a similar tone, John Hutchinson refers to the nation as a “moral community that binds individuals into a "timeless" society evoked by "unique" myths, memories and culture, so that they overcome contingency and death”(Hutchinson, 2003). The mythical use of symbols comes as a modus operandi of transforming the pre-modern ethnies into modern nations where nation builders try to “endow the nation of their dreams with a common history, based on shared ethnic memories; as well as a sense of common destiny, emanating from those shared memories” (Smith, 1994). This symbolic and mythical terrain must be ordained towards caus-ing ethnic solidarity whereas “symbols in themselves have no efficacy unless they evoke a sense of a con-crete collectivity” (Hutchinson, 2003).

This seems to be the very fundament of the ethnosymbolic approach to nation building which “emphasizes the role of myths, symbols, memories, values and traditions in the formation, persistence and change of eth-nicity and nationalism” (Smith in Ozkirimli, 2010). In a nutshell Smith proposes that the ethnosymbolic approach:

> *“…stresses the need for an analysis of collective cultural identities over la longe duree, that is a time span of many centuries; the importance of continuity, recurrence and appropriation as different modes of connecting the national past, present and future; the significance of pre-existing ethnic communities, or ethnies, in the formation of modern nations; the role of memories of golden ages, myths of origin and ethnic election, cults of heroes and ancestors, the attachment to a homeland in the formation and persistence of national identities; the different kind of ethnic groups that from the basis of various kinds of nations; and the special contribution of the modern ideology of nationalism to the dissemination of the ideal of the nation” (ibid).*

The ethnosymbolic approach stresses the cultural elements of the nation building process and the longitudi-nal dimension of the process, placing symbols in the center of its cohesive potential and mobilizing capaci-ty. As Ichijo and Uzelac (2005) rightfully observe the ethnosymbolic approach “clearly defines nations as cul-tural, symbolic communities (…) embodied in a myth of descent, shared historical memories and ethnic sym-bolism.”

Why symbols?

Ethnosymbolism and modernist theories treat national identity as a constructed category with respective dif-ferences in the mechanisms and the factors that contribute to its emanation and maintenance. Ethnosymbolism accentuates utilization of symbols and myths by political elites, either through vertical or lat-eral mobilization. In this regard “national identity is not an innate quality in human beings, neither is it acquired naturally (…) national identity has to be learnt” (Kolst, 2006) and “that is why national symbols (flags, coats of arms, national anthems) play such a crucial role in nationbuilding and nation-maintenance” (ibid). As fundamental symbolic markers, group symbols from flags to national anthems originate from the feudal period and serve several functions and. As Cerulo (1989) explains “every nation creates and adopts national symbols (…) a long tradition in which groups or ruling houses used banners, crests, fanfares, etc. as a form of announcement and identification.” Ever since medieval times, symbols were used as signs of recognition and in belonging to a certain community and in the age of modernism “political leaders have cre-ated and used national symbols (flags, anthems, mottos, currencies, constitutions, holidays) to direct public attention, integrate citizens, and motivate public action” (ibid). Besides the function of representation and recognition symbols also have a mobilizing and motivational role, which makes them an even more sensi-tive terrain for negotiations and bargaining.

Additionally, recognizing somebody as a part of one’s ethnic community through symbols can even have eco-nomic consequences meaning that “another way of reducing the costs of identifying a potential cooperating partner is to look for insignia-the external markings or symbols of group identity (…) coats-of-arms, blazons,

flags, totems, clothing and decorations, and so on." (Carr and Landa, 1983). As the study of Carr and Landa shows, even economic relations can be in-group determined and exclude members of other communities, and in-group recognition is developed through recognition of familiar symbols used by groups, ethnic groups included.

However, already established and relatively newly established nations do not undergo identical challenges when it comes to use of symbols and their utilization. If symbolism in already established nation is reduced to everyday symbolic routines, or what Billig (1995) calls "banal nationalism" then newly established states often undergo failures of introducing national symbols, that can be either divisive or disputed by other groups. Kolst explains the challenge in front of which new states are put up against:

> *"The reasons behind the frequent failures of national symbols in new or newly re-established states are several. One is resources. New states normally are weaker than established states, institution-ally and economically. Another reason is that the national symbols of new states have to fulfil a much more difficult task. They must not only keep alive, but create a national identity and an allegiance to a state that did not exist before." (Kolst, 2006)*

Kolst, without a specific intention, created a context for discussion regarding the symbolic dispute between the Republic of Macedonia and Greece. The conflict itself transcends the name dispute over the term "Macedonia" and enters the symbolic territory of flags and historical figures, as fundaments over which any nation are being built. In its efforts to strengthen its national identity, the Republic of Macedonia has utilized symbols that Greece claims exclusive rights over, being forced to change its flag and several constitutional articles from its 1991 Constitution; lately requests are becoming louder concerning alterations on the contro-versial architectonical project "Skopje 2014" if the two neighbors are to continue the dialogue over their infa-mous name dispute. Understanding the finesses of this symbolic conflict (and later proceeding in analyzing its costs) requires knowledge of the essence and the history of the dispute. However, the question of ethnic boundaries seems vital to the both the theoretical approach to symbolic dispute as well as the concrete case under scrutiny.

The question of boundaries

Not only symbols are crucial to nation building and cohesion. Symbols are one of the fundamental instruments through which the nation is established and maintained by it is the boundaries that safeguard it from intrusions and delineate a territory (geographical, cultural and even symbolic) within which the nation exists. Boundaries also help set a clear line between ingroup and outgroup members, and inform us on the end of "our" group outreach and the commencement of someone else's.

The very point of existence of an ethnic boundary is that it "canalizes social life - it entails a frequently quite complex organization of behavior and social relations" where "the identification of another per-son as a fellow member of an ethnic group implies a sharing of criteria for evaluation and judgement (…)and this means that there is between them a potential for diversification and expansion of their social relationship to cover eventually all different sectors and domains of activity." (Barth, 1969). Or as Anderson in his "Imagined communities" explains:

> *"The nation is imagined as limited because even the largest of them, encompassing perhaps a billion human beings, has finite, if elastic,* ***boundaries, beyond which lie other nations****. No nation imagines itself coterminous with mankind. The most messianic nationalists do not dream of a day when all the members of the human race will join their nation in the way it was possible, in certain epochs, for, say, Christians to dream of a wholly Christian planet." (Anderson, 1983)*

The imagined community beyond its borders has another imagined community. The two have to strictly be delineated, and no confusion must exist in this straightforward relation. This means that in geographical, cul-tural and symbolical terms, the two entities (nations) have to be separated, clearly defined and outlined with boundaries. On these lines Wimmer (2008) locates two dimensions of ethnic boundaries:

1. **Categorical dimension** - refers to acts of social classification and collective representation. Divides the social world into social groups - into “us” and “them”;

2. **Social or behavioral dimension** - refers to everyday networks of relationships that result from indi-vidual acts of connecting and distancing. Offers scripts of action - how to relate to individuals classi-fied as “us” and “them” under given circumstances.

Both the categorical and behavioral dimension refer to a clear distinctiveness between members of two groups, that must not be confused on matters of their belonging as well as symbolic “ownership”. Boundaries serve exactly that given purpose being that they facilitate the “dichotomization of others as strangers, as members of another ethnic group” (Barth, 1969) which “implies a recognition of limitations on shared understandings, differences in criteria for judgement of value and performance, and a restriction of inter-action to sectors of assumed common understanding and mutual interest” (ibid).

However, boundary maintenance when symbols are involved can be far more complicated than maintaining geographical borders. Especially if the symbols based on which a nation is being constructed overlap or are shared with another group, that is supposed to be clearly distinct. Such is the case with Macedonia and Greece, where both nation building efforts clearly draw from identical symbolism, be it the very term “Macedonia”, Alexander the Great as a founding hero, or the symbol of the Vergina (Kutles) star as a nation-al symbol. In this specific case, symbolic boundaries are blurred, indistinct and confusing, which creates spe-cific political consequences on both sides, and on the long run – costs. Since not all symbolic conflicts are identical, it is appropriate to identify the type of symboli conflicts, in order to precisely place the analyzed Macedonian-Greek dispute, as well to briefly discuss the game theory determining the bargaining positions on both sides.

Types of symbolic conflict and the possibility of compromise

Not all symbolic conflicts have the same origin, neither is there a universal pattern for their solution. Contested symbolic territory among different nations may or may not result in direct political action on one or the other side, i.e. it might be contained in latency or manifested more aggressively, depending on a num-ber factors. Having this in mind, and in order to discuss the potential cost of a given symbolic conflict, one needs to see the typology of symbolic conflicts in order to establish its very nature.

In its analysis of group identities and conflicts arising among persisting group identities, Harrison (1995) dif-ferentiates between four groups of symbolic conflicts:

1. **Valuation contests.**

   In the first type of symbolic conflict, the issue at stake is the ranking of symbols of the competing groups' identities; their ranking, that is to say, according to some criterion of worth such as prestige, legitimacy or sacredness. All that may therefore change as a result of the contest is the relative posi-tions of these symbols along some scale of value;

2. Proprietary contests.

These relate to the fact that groups often claim, proprietary rights in their distinguishing symbols, and treat attempts by other groups to copy them as hostile acts. A proprietary contest is a dispute over these rights and, at its simplest, takes the form of a struggle for the monopoly or control of some impor-tant collective symbol or symbols;

3. Innovation contests,

Essentially 'schizmogenic' processes of competitive differentiation. This type of status rivalry is per-haps particularly likely to occur when groups are seeking to establish or accentuate their distinctive-ness from each other. An extreme form of these processes of group differentiation is schism or fission. An internal conflict splits a group in two, or a faction within some larger group seeks independence. To establish a separate identity in this way, a seceding group must generate a distinct set of symbol-ic representations of that identity;

4. Expansionary contests.

In this, a group tries to displace its competitors' symbols of identity with its own symbols. In other words, within some given field of social relations two or more group identities are competing for sur-vival. A feature of an expansionary contest is that it can result in the disappearance of the defeated side's identity symbols. Because the symbolic inventories of groups can be partly or wholly destroyed in these contests, they are the opposite of innovation contests, in which these inventories are gener-ated. In short, both sorts of contest alter the universes of symbolism in which they occur. After an inno-vation contest or an expansionary contest, the total assemblage of group symbols has changed because some symbols have been created or lost.

In the specific case of the Republic of Macedonia and Greece, which will be analyzed further on in the text, it is clear that there is a clear case of proprietary contests, where the legacy of antiquity and its symbolism results in mutual accusation of who holds exclusive rights over the term “Macedonia” and the specific period of antiquity, with the accentuated accusations by Greece to the Republic of Macedonia as a side that attempts copying Greek history and falsifying historical facts for its own symbolic and nation building benefit.

When it comes to discussing possible outcomes of symbolic conflicts, academic literature suggests that the outcomes depend on at least two factors: the actions of each of the sides in the conflict as well as their rel-ative power positions. Lawler and associates (1988) give two opposing theories when it comes to the possi-ble gameplay in context of conflicts:

1. Bilateral Deterrence Theory.

The basic prediction of bilateral deterrence theory is as follows: Given equal power, higher levels of total power in the dyad (i.e., the sum of the actors' coercive capabilities) will produce a lower frequen-cy of punitive tactics by both actors. An extension of bilateral deterrence theory to the power inequal-ity issue leads to the following prediction: Unequal power will produce a higher frequency of punitive tactics than equal power on the part of both actors.

2. Conflict Spiral Theory.

This theory’s predictions which directly opposite to those of bilateral deterrence: 1) Given equal power, higher levels of total power in the relationship will increase the use of punitive tactics by both actors;

and 2) Unequal power will produce a lower frequency of punitive tactics than will equal power.

It is obvious that these two theories stand in grave mutual contrast and that the outcome is context bound. On a similar note, Michener and associates in an earlier research (1975) on factors affecting concession rates in individual bilateral conflict negotiations, accentuate the position of power of the dyad involved in the negotiations. In this regard "a bargainer's power position is an important determinant of his reaction to concessions by the other" (Michener et al., 1975) since in situations where "where the participants do not have direct power capabilities (…) negotiators exchange bids and counterbids, but their tactical responses are lim-ited to acceptances or vetoes of one another's offers" (ibid). However, in situations of unequal power posi-tions the disbalance of power presents a serious gamechanger:

> *"When power capabilities are present, they provide an important backdrop against which concessions are gauged, especially when negotiators differ in the resources they control. If a bargainer occupies the strong position within the negotiations (and his opponent to occupies the weak position), a concession by the opponent may be interpreted as no more than an admission of weakness and may result in a stiffening of the bargainer's demands and aspirations. But if the tables are reversed and the bargainer occupies the weak position (and the opponent the strong position),a con-cession by the opponent takes on different meaning because it must be interpreted in light of what the opponent could do if he chose to resist. Here, a concession cannot be construed as a sign of softness and it should not lead the bargainer to raise his level of aspiration. If anything, it will be seen as a move toward cooperation that had best be reciprocated. The general point, then, is that the meaning of a concession reconciliatory action depends on the alternative actions available to, but foregone by, the opponent." (ibid)*

The interplay between the actions of one of the stakeholders in the dyad and the position of power of the concessioner determines the scenario of the outcome. In the concrete example analyzed, the Republic of Macedonia is the weaker side in the negotiations being that Greece can exercise its veto power both in the NATO and in the EU, two organizations that the Republic of Macedonia aspires to join. Besides the possible outcome (which is pending due to negotiations over the name dispute) the symbolic conflict between the two sides produces costs for both sides. These costs increase as negotiations are prolonged, as do costs of opportunity in terms of a scenario where the Republic of Macedonia joins the EU and NATO. However, if one is to discuss the costs, one has to firstly know the disputed content between the two countries.

The Greek-Macedonian dispute – the name and its symbolic power

Disputed symbolic features of nations are not a novelty in the nation-building debate nor are they a novelty in the academic debate. However, the Republic of Macedonia presents a unique example of a country that has contested symbolic features by neighboring Greece. This unconventional dispute that the Republic of Macedonia is engaged in at the moment is the name dispute with neighboring Greece, vastly concentrated on the usage of the noun "Macedonia" and the adjective "Macedonian", although this is far from being the only problematized aspect. Namely Greece "opposes the application of the name 'Macedonia' to any other place than what to them is Macedonia, namely, northern Greece, and denies the existence of any Macedonian national minority, claiming instead that those who call themselves Macedonians are Slavophone Greeks" (Engstrom, 2011). In a broader context one might also say that the origins of the dispute "lie in the differing perspectives on the history of the region and challenges which both nations perceive to their respec-tive identities" (ICG, 2009) i.e. that "one dimension of the name dispute concerns the use of ancient names and symbols" (Seraphinoff, 2007) whereas "both Macedonia and Greece would like to extend their roots back to include ancient glory" (ibid). Additionally, "the name issue is part of a historically deep and emotion-ally charged inter-society dispute, and using the name - Macedonia is a question of national honor and dig-nity in the first place for both sides, especially Macedonia" (Ivanovski, 2013). This emotional issue has a very rich historical background and has a spurred an even richer exchange of arguments on both sides involved.

Taking the historical aspect in consideration, many authors agree that the name dispute is just a reflection of burdened historical relations between the two countries. Although some authors take the whole dispute back to ancient times of King Philip and its conquest of ancient Greece or the medieval dispute between Tsar Samuel and Byzantine Emperor Basil (Seraphinoff, 2007) one must underline that "dispute primarily stems from much more recent history" (ibid).

The root of the problem regarding the name dispute lies in the aftermath of the Second Balkan War in 1913 that had Bulgaria on side, and Serbia, Greece, Montenegro and Romania on the other. However, the division of the region of Macedonia is not the only disputed historical moment burdening the relations between the two countries. The aftermath of the WWII in Greece witnessed a civil war between the communists and the government whereas the Slavic Macedonian minority aligned its forces with the Democratic Army of Greece (DAG) i.e. the communist forces. As the communists lost the civil war in 1949, and the Slavic Macedonians found themselves on the wrong side of the conflict, it is not hard to predict what has been the outcome of the civil war. The International Crisis Group summarizes the problem:

> *"The key to Greek sensitivity over Macedonian identity lies in the Greek Civil War of the 1940s. During that conflict, "Slav Macedonians" in the northern part of the country made up a substantial part of the communist-led partisans. In line with the policy Tito inherited from the Comintern in the inter-war period, they fought to unite the Yugoslav, Greek and Bulgarian parts of Macedonia in an autonomous, communist Macedonia within Yugoslavia. Following the communists' defeat in Greece, tens of thousands of partisans fled, including many Slavs who settled in Yugoslav Macedonia. Their properties in Greece were confiscated, and while ethnic Greek communist refugees were later allowed to return, Slav Macedonians were not. For Greeks, the notion of a distinct Macedonian nation was an artificial creation of Tito, with the aim of pressing irredentist claims against Greece, and the Macedonian language is just a local dialect of Bulgarian. According to this view, the only true Macedonians are Greeks" (ICG, 2009).*

The existence of more than one "Macedonian" identity burdened the relations between the Yugoslavia and Greece for almost half a century. However, it was not until the independence of the Republic of Macedonia when Greece objected to the name of the newly formed state. The arguments against the usage of the name "Republic of Macedonia" are not just historical. Namely, alongside the Greek argumentation one should also mention the core arguments given lately in the debate and aside from the abovementioned historical con-text. In a position paper prepared by ELIAMEP's analyst and advisor to the Greek Government, Evangelos Kofos, gives two main objections to the free usage of the name Macedonia by the ethnic Macedonians liv-ing in the Republic of Macedonia (Kofos, 2009):

1. The geographical region of Macedonia, which includes the entire region of "Greek Macedonia", is not and cannot be considered the "tatkovina" (fatherland) of the *Makedonski* people living in FYROM;[46]
2. Slav Macedonians need to realize that their newly conceived ethnogenetic dogma, extending to classical antiquity, encroaches upon the Hellenic cultural heritage and the identity of their Greek neighbours to the south. As such, **it threatens to ignite a clash of identities in the region as a whole**. The use of the Macedonian name as a state appellation in no way confers the right to appropriate everything and anything derived from or pertained to the entire region of Macedonia. This needs **to be legally clarified and remain binding** *erga omnes*.

Additional to these arguments Greece has also had specific security concerns when it comes to the name dispute (see Agnew, 2006) as well as many additional concerns and objections (see Floudas, 2002). Several

46) The acronym means the Former Yugoslav Republic of Macedonia (FYROM). This is the provisional name under which the Republic of Macedonia has been admitted into the UN under Greek pressure.

issues raise suspicion in regard to the claim that Macedonia presents territorial threat to Greece: a) upon Greece demand, Macedonia has amended its Constitution to accommodate its objections (see Amendment I to Article 3 and Amendment II to Article 49), b) it has signed an Interim Accord with Greece by which both countries confirm "their existing frontier as enduring and inviolable (Article 2 of IA), and c) no report issued by international organizations like EU evidence such claim.

However, by far the most important move made by the Macedonian side has been the changing of the flag of the country to which Greece objected in the first place, being that the flag entailed a symbol (the sun of Vergina) that Greece considers an exclusively Greek symbol. In the Law on the Flag of the Republic of Macedonia (1995), the country accepted a new symbol, also a sun, but considerably altered. This means that Macedonia has made a number of concessions so far to the Greek side. However, these concessions by no means connote that the arguments of the other side are less numerous or weaker. In the most general sense the arguments of the Macedonian side are that:

> *"…for Macedonians, the choice of their name is more than just a basic human right. It is about their very existence as a people. Just as the Greek national mythology stresses continuity between the ancient Hellenic world, including ancient Macedonia, and the modern Greek state, Macedonians see their identity as being crucially bound up with and inseparable from their name. The difference is that, while the Macedonian heritage is only one part of the Greek identity, for Macedonians there is no other. As Macedonians sometimes point out, the name "Macedonia" is in their national songs. If they are not Macedonians, then what are they? Are they amorphous Slavs, or, given the linguistic simi-larity, perhaps Bulgarians?" (ICG, 2009).*

Two additional arguments are posed in the response of a Skopje-based think tank (IDSCS) to Kofos' posi-tion paper whereas the authors point out that (IDSCS, 2009):

1. The constitutional name of the country is not simply "Macedonia" - it is the "**Republic of** Macedonia". There is a clear political qualifier ("**Republic of**") preceding the noun "Macedonia". If the Republic of Macedonia wanted to use the name "Macedonia", without any qualifiers, then this might give rise to confusion or monopolization. However, this is clearly not the case.
2. In Greece there is **no region simply called "Macedonia" nor is there an "EU region of "Greek Macedonia**" as Kofos has erroneously claimed. In Greece, there are **three** separate administrative regions or "Peripheries" which use the noun "Macedonia" in their name.

The political developments in the Republic of Macedonia since 2006 have further complicated the situation. The Government led by the conservative VMRO-DPMNE party has added a new layer to the symbolic dis-pute over the name by introducing the "Skopje 2014" project, which entails erecting monuments that Greece considers part of their "symbolic territory". As Vangeli (2011) states:

> *"The attempt to revise official history and to alter the image of the national-self among ethnic Macedonians has negatively affected the dynamics of the name-dispute with Greece, worsened the internation-al position of the country, and also shook its fragile multicultural grounds and even producing tensions among ethnic Macedonians themselves. (…) Antiquization's materialist display, Skopje 2014, is about to revamp the city centre. It has been carried out at a fast rate and with lots of fervor, being one of the rare governmental projects that are brought to reality. This leads us to conclude that tales of glory and pride are not to be underestimated even today. The Macedonian government, inspired by myths of the antiquity of the Macedonian nation, has engaged in a major nation building (or nation re-building) process that is yet to be studied and analyzed by scholars in the field." (Vangeli, 2011)*

The confusion created in the attempt of symbolic boundary creating between the two countries is three-fold: the name “Macedonia”, the historical symbolism of antiquity (previous flag included) as well as the “Skopje 2014” project as an architectonical expression of symbolic identity in the midst of the disagreement between the two countries, that Greece considers a vast provocation. In this regard, the symbolic dispute between the two countries continues and a possible solution builds up incrementally and over a long period of time, with obvious setbacks. This prolonged process, create costs on both side, with Macedonia obviously being in the less favorable position, due to the veto power of Greece in the EU and the NATO.

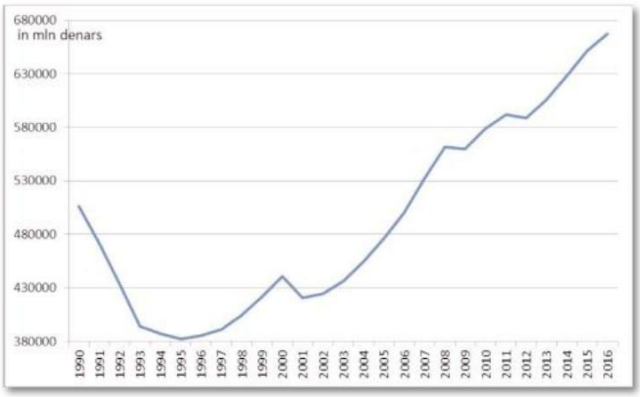
Evaluation of economic losses caused by the embargo imposed by the Republic of Greece against Republic of Macedonia

Within the former Yugoslavia, Macedonia[47] was part of the Less Developed Regions (LDR) benefiting from the subsidies from the More Developed Regions.[48] The World Bank (1993) stated that Yugoslavia was con-tinually plagued by macroeconomic instability, in part because of the subsidisation of LDRs, poorly perform-ing enterprises[49] and the tolerance of disintegrative tendencies. Further, accommodating its vast ethnic, reli-gious and cultural differences Yugoslavia became a federation of six republics (World Bank, 1993). It was thought that this would resolve the burning national question and bring prosperity to all ethnic groups and decrease regional disparities.

Macedonia gained its independence on 8 September 1991. Macedonian currency was issued in the form of coupons with an exchange rate of 1:1 between the Yugoslav dinar and the Macedonian denar on 26 April 1992. At that time, the inflation rate was growing by two digits per month (by the end of 1993 it was already 229.6%) and a fixed exchange rate regime was selected to stabilize the economy (Nikolov 2013). From 10 May to 30 November 1993, the substitution of coupons for banknotes took place. On 8 April 1993, Macedonia became a member of the UN. Accordingly, it became a member of the World Bank in March 1993 and a member of the International Monetary Fund in April 1993. In 1994, the inflation rate at the end of the year was 55.4% and it was 9.2% in 1995.

Macedonian privatization started in 1993 with the Law on the Transformation of Enterprises with Social Capital (Official Gazette of the Republic of Macedonia, no. 38/93). The transition in Macedonia (like in other transitional countries) has led to a U-shaped response of output. Figure 1 illustrates the GDP in 1990 prices. It was only in 2008 that Macedonia reached the 1990 level of GDP.

Figure 1.
GDP in Macedonia in 1990 prices for the period 1990–2016 (in million denars)



Source: State Statistical Office Republic of Macedonia, Author’s calculations.

47) According to the last census in 2002 the Republic of Macedonia has little over 2 million inhabitants.

48) Under a federal law from 1965, the LDRs in Yugoslavia included: Bosnia and Herzegovina, Macedonia, Montenegro and Kosovo and Metohija, comprising 40% of the Yugoslav territory and 30% of the Yugoslav population.

49) The poor performance of surviving Macedonian enterprises from former Yugoslavia continued even in the transition period. According to Zalduendo (2003), there are substantial differences in performance between surviving old firms and more agile new ones.

The blockade imposed by the Republic of Greece against Republic of Macedonia on 16 February 1994 has additionally worsened the economic conditions in Republic of Macedonia, multiplying already existing dam-age caused by implementation of the UN Security Council Resolutions No. 757, 787 and 820 against the Federal Republic of Yugoslavia. As a result of the blockade by Republic of Greece, railroad transportation has been completely disrupted, which especially adversely effected enterprises that had no option of substi-tuting the railroad transportation by another means.

This situation was especially unfavorable for the industry sectors: energy, iron and steel, chemical industry, textile industry and other areas that provide raw materials and place their final products only by railroad transportation through the Thessalonica port. This situation along with other current problems caused rapid decrease of the GDP of the total economy, especially in the industry.

The blockade also affected the agricultural production, especially products of seasonal character (spring vegetables, lamb meat) that are traditionally placed on the markets of Western Europe and Near East through the Thessalonica port.

The following facts directly caused the damage for the economy of the Republic of Macedonia that occurred as a result of the trade and transportation embargo imposed by the Republic of Greece:

- goods stuck in the Thessalonica port;
- reduced production or complete stop of operation of the capacities due to disrupted provision; of raw materials and placement of products;
- unrealized import of goods and lost markets;
- increased transportation costs for optional roads and transportation means;
- damage to railroad transportation due to unused transportation capacities.

Based on Ministry of finance data, the direct damage for the Republic of Macedonia caused by the blockade imposed by the Republic of Greece within a one-month period has been estimated to approximately $62 mil-lion. The total amount of damage caused by the transportation and economic embargo amounts to over $1,200 million in 1994 and 1995. This amount was equals to around 14% of the annual GDP of Macedonia for that period. Note that the effects of the lost markets and other long run economic effects were not con-sidered in these calculations.

Conclusion

Disputed symbolic territory between two nations in itself can speak on the importance of use of symbolism in nation building processes. Ethnosymbolists putt strong accent on the importance of symbols in the process of nation building, and additional academic interest occurs in situations where such symbols are dis-puted. The attention given to such disputes is not important only from the perspective of nation building, but also from the perspective of conflict theory and economic costs that occur as a consequence of political processes centered around symbolic disputes. Rather than staying on its symbolic ground, symbolic dis-putes affect economic life as well and can lead to direct economic damages to one of the parties of a cer-tain dispute.

One of the most well-known symbolic disputes in Europe is the name dispute between The Republic of Macedonia and Greece centered around the use of the name “Macedonia”. Greece claims the term to be exclusively Greek and denies its northern neighbor the possibility to use it as and ethnic and state marker. The conflict has also had concrete political consequences – Macedonia was denied NATO membership in 2008 and had undergone an economic embargo imposed by Greece in the early nineties.

On these lines, the paper has analyzed the name dispute as merely symbolic placing in the group of propri-etary conflicts. Furthermore, it has shown that the asymmetric balance of power between the two sides changes the framework through which the dispute should be perceived i.e. that in situation of uneven oppo-nents in the conflictual dyad, bilateral deterrence theory and conflict spiral theory clash and give different out-comes of further action. These actions produce concrete costs, and an analysis of the embargo imposed by Greece to Macedonia (as a form of punitive action) shows that these costs can seriously affect the econom-ic wellbeing of a country.

Bibliography

Agnew, J. (2006). “No Borders, No Nations: Making Greece in Macedonia”. Annals of the American Geographers, 97(2), 398-422.

Anderson, B. (1983). Imagined Communities. Verso, London/New York.

Barth, F. (1969). Ethnic Groups and Boundaries. Little, Brown and Company, Boston.

Billig, M. (1995). Banal Nationalism. Sage Publications, London.

Carr, L.C. and Landa, T.L. (1983). “The Economics of Symbols, Clan Names and Religion”. The Journal of Legal Studies, 12, 135-156.

Cerulo, A.K. (1989). “Sociopolitical Control and the Structure of National Symbols: An Empirical Analysis of National Anthems”, Social Forces 68(1). 76-99.

Constitution of the Republic of Macedonia. at https://www.sobranie.mk/the-constitution-of-the-republic-of-macedonia.nspx (accessed 19 December 2017).

Engstrom, J. (2011). “The Power of Perception: The Impact of the Macedonian Question on Inter-ethnic Relations in the Republic of Macedonia”. The Global Review on Ethnopolitics, 3(1). 3-17.

Floudas, D. A. (2002). “Pardon: A Conflict for a Name – FYROM’s Dispute With Greece Revisited”. at http://www.mace-donianhistory.org/research--documents/pardon-a-conflict-for-a-name-fyroms-dispute-with-greece-revisited. (accessed 19 December 2017).

Gans, H.J. (1979). “Symbolic ethnicity: The Future of Ethnic Groups and Cultures in America”, Ethnic and Racial Studies, 2(1), 1-20.

Harrison, S. (1995). “Four Types of Symbolic Conflict”, The Journal of the Royal Anthropological Institute, 2(1), 255-272.

Hutchinson, J. (2003). “The Past, Present, and the Future of the Nation-State”, Georgetown Journal of International Affairs, 4, 5-12.

Ichijo, A. and Uzelac, G (eds.). (2005). When is the Nation – Towards an Undestanding of theories of Nationalism. Routledge, Abingdon/New York.

IDSCS. (2009). Flawed Arguments and Omitted Truths: a Commentary of the “ELIAMEP Thesis” on the “Name Issue”. Institute for Democracy “Societas Civilis” – Skopje, Skopje. at http://idscs.org.mk/wp-content/uploads/2009/08/flawed_arguments_and_omitted_truths.pdf (accessed 19 December 2017).

International Crisis Group. (2009). “Macedonia’s Name: Breaking the Deadlock”. Europe Briefing N.52, at https://www.files.ethz.ch/isn/95305/b52_macedonias_name.pdf. (accessed 19 December 2017).

Ivanovski, H. (2013). “The Macedonia – Greece Dispute/Difference over the Name Issue: Mitigating the Inherently Insolvable”. New Balkan Politics, 14. 48-80.

Kofos, E. (2009). The Current Macedonian Issue between Athens and Skopje: is there an Option for a Breakthrough?, ELIAMEP, Athens. at https://www.files.ethz.ch/isn/102334/eliamep-thesis-3_2009-kofos.pdf (accessed 17 December 2017).

Kolst, P. (2006). “National Symbols as Signs of Unity and Division”, Ethnic and Racial Studies, 29(4), 676-701.

Law on the Flag of the Republic of Macedonia. (1995). Official Gazette no.47/95 (6.10.1995).

Lawler. E et al. (1988). “Coercive Capability in Conflict: A Test of Bilateral Deterrence Versus Conflict Spiral Theory”, Social Psychology Quarterly, 51(2), 93-107.

Michener H.A. et al., (1975). “Factors Affecting Concession Rate and Threat Usage in Bilateral Conflict”, Sociometry, 38(1), 62-80.

Nikolov M. (2013). “The measurement and impact of fiscal decentralization: The case of Macedonia”, PhD; Faculty of economics, University of Ljubljana.

Özkirimli, U. (2010). Theories of Nationalism (second edition). Palgrave MacMIllan, London.

Seraphinofff, M. (2007). “Dimensions of the Greek-Macedonian Name Dispute” .at http://www.macedonianlit.com/pdfs/personal/Dimensions%20of%20the%20Dispute.pdf (accessed 17 December 2017).

Smith, A. (1994). “Ethnic Nationalism and the Plight of Minorities”, Journal of Refugee Studies, 7 (2/3). 186-198.

Smith, A.D. (1989). “The Origins of Nations”, Ethnic and Racial Studies, 12(3), 349-356.

Vangeli, A. (2011). “Nation-building Ancient Macedonian Style: the Origins and the Effects of the So-called Antiquization in Macedonia”, Nationalities Papers, 39, 13-32.

Wimmer, A. (2008). “The Making and Unmaking of Ethnic Boundaries: A Multilevel Process Theory”. American Journal of Sociology, 113(4), 970-1022.

World Bank. (1993). The costs and benefits of Slovenian independence. World Bank Working Papers WPS 1126. Retrieved December 23, 2017, from http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/1993/04/01/000009265_3961004121321/Rendered/PDF/multi0page.pdf.

Zalduendo, J. (2003). Enterprise restructuring and transition: Evidence from Macedonia. IMF Working Paper No. 03/136. Retrieved May 23, 2009, from http://www.imf.org/external/pubs/ft/wp/2003/wp03136.pdf.

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