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CAPITAL MARKET AND THE DETERMINANTS OF DEVELOPMENT IN THE REPUBLIC OF MACEDONIA

Abstract

This paper considers the capital market in the Republic of Macedonia. The analysis identifies and explains whether capital market development is influenced by economic growth. The focus of the paper is to determine the effects of different factors on the capital market development in the Republic of Macedonia. For these purpose a multivariate linear regression is conducted using the data from 1997-2013. The analysis indicates that the capital market in the Republic of Macedonia is small and underdeveloped. Therefore the economic growth factors taken into consideration for the research have not shown considerable impact on the capital market due to its underdevelopment.

Key words: Capital Market, Market Capitalization, Calderon-Rossell model, regression, Republic of Macedonia

JEL classification: P340, G10, O16, C3

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Introduction

This paper considers the development of the capital market in the Republic of Macedonia with the attempt for estimating the impact of factors that have influence on its development. Economic development of the country is important factor and precondition for capital market development. Theoretical approach about the development of the capital market and the determination of the factors is the basis for determining their impact for the development of the capital market in the Republic of Macedonia. Therefore, the main goal of the research is to evaluate the influence of economic growth, development of the financial sector, macroeconomic stability, gross investments and gross savings on capital market development in the Republic of Macedonia.

1. LITERATURE REVIEW AND THEORETICAL FOUNDATION FOR THE STUDY

There are a lot of studies that analyze the development of the capital market. Very interesting segment for researchers are the determination of the factors that influence its growth. Every study takes in consideration different aspect of the analysis.

This fact is well acknowledged and a lot of studies that analyze this relationship confirm the existence of a positive and significant relationship between capital market development and economic growth and development. According to Bekaert G. and Harvey C. [1] economic growth in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. The findings from Caporale G., Howelts A. and Soliman M. [2] indicate that a well-developed stock market can foster economic growth in the long run through faster capital accumulation, similar to findings of King and Levine[3] and Levine and Zervos.[4]

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[1] Bekaert G., Harvey C. Emerging Equity Market Volatility, Journal of Financial Economics, Elsevier, 1997, No. 43. 29-77.

[2] Caporale M. Howells G. P., Soliman A.M., Stock Market Development and Economic Growth: The Causal Linkage, Journal of Economic development 33 Volume 29, Number 1, June 2004

[3] King R. G., Levine, R., Finance and Growth: Schumpeter May Be Right, The Quarterly Journal of Economics, Volume 108, Issue 3, 1993p. 717-737.

[4] Levine, R., Zevros, S., Stock Markets, Banks and Economic Growth, American Economic Review, Vol. 88, 1998 pp. 536-558.

A considerable amount of empirical research has been conducted on the effect of stock market on the level of economic growth (Atje and Jovanovic, [5] Demirgue-Kunt and Maksimovic, [6] Levine and Zervos[7]). However according Fink G. Haiss P. and Sirma H., [8] previous literature on the finance growth has largely ignored the bond market despite it being an essential source of external finance.

The most empirical paper on finance growth considered the role of the banking sector in economic growth. Oya and Damar [9] identify that previous studies focused mostly on the size of the financial sector as commercial bank deposits as a percentage of GDP, without making much inference on the role of the capital market as a major contributor to financial sector growth in the economy.

Different authors use different methods for calculating the impact of capital market development on economic development and vice versa, but there approaches often have common features. Usually the studies are focused on the relationship between stock prices and macroeconomic indicators in developed countries like USA, Japan or Italy (Plachý R., Rašovec T., [10]). The common conclusion is that stock market in the developed countries has a very strong relationship with interest rates, both in short-term and long-term.

The majority of the studies that observe the determinant of the capital market development, especially in the emerging economies, draw a common conclusion that the banking sector has dominant influence on the capital market development. In most of the studies the size, the level of development and scope of the banking sector have positive and signif-

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[5] Atje, R., Jovanovic, B., Stock Markets and Development, European Economic Review, 37 (2/3), 1993

[6] Demirgue-Kunt, A. Maksimovic, V. Stock Market Development and Financial Choices Of Firms, The World Bank Economic Review, Volume 10, Issue 2, 1996, p. 341-369.

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[8] Fink G. Haiss P., Sirma H., Credit, Bonds, Stocks and Growth in Seven Large Economies, EI Working Paper No. 70, 2006

[9] Oya P. A., Damar H.E., Financial Sector Depending and Economic Growth: Evidence for Turkey, MPRA Paper No. 4077, 2006 (posted 15 July 2007)

[10] Plachý R., Rašovec T., Impact of economic indicators on development of capital market, International Journal E+M, 102 - 3, XVIII, 2015

icant impact. (Yartey, [11]Kemboi J.K., Tarus, D.K., [12]). But, in the literature there are evidence that the development of the banking sector, the activities of the Central Bank and other financial institutions interacted negatively with market capitalization which implies that the activities of those institutions deterred the development of the capital market.[13]

In the study of Yartey, [14] the author exams macroeconomic and institutional indicator using a panel data of 42 emerging economies for the period 1990 to 2004. The findings from this paper are that macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity are important determinants of capital market development in emerging market countries. The results also show that political risk, law and order, and bureaucratic quality are important determinants because they enhance the viability of external finance.

The capital market development in Republic of Macedonia and the factors that affect it have been the subject of research in the several studies.

In the study of the Hadzi-Mishev R., [15] is constructed a model for the macroeconomic determinants of the trends of the Macedonia Stock Exchange. The study covers and analyses empirical literature and formulates a standard regression equation in which the dependent value that reflects the development of the capital market is the value of MBI-10 and the independent variables that are taken into consideration are inflation, interest rates, industrial production and money supply. The results of empirical analysis confirm the expected positive relation between the value of MBI-10 and the level of industrial production and money supply on one hand, and the inverse relationship between interest rates and inflation, on the other.

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[11] Yartey, C.A., The Determinants of Stock Market Development in Emerging Economies: Is South Africa Different?, IMF Working Paper, WP/08/32, 2008

[12] Kemboi J.K., Tarus, D.K., Macroeconomic Determinants of Stock Market Development in Emerging Markets: Evidence from Kenya, Research Journal of Finance and Accounting, ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online), Vol 3, No 5, 2012

[13] Idowu, A., Babatunde, M.A., Effect of Financial Reforms on Capital Market Development in Nigeria, Asian Journal of Business and Management Sciences, Vol. 1 No. 8, 2012, p. 44-52.

[14] Op. Cit. Yartey, C.A.

[15] Hadzi-Mishev R., Limit of effective portfolios of the Macedonian Stock Exchange, website of the Macedonian Stock Exchange, 2011

Eliskovski M.[16] (2012), in his study analyses the development of the capital market in Republic of Macedonia, through its size and depth, with the effects of the GDP, investment, development of the banking sector and macroeconomic stability. „The results for the first specification indicate that in Republic of Macedonia the gross investment and macroeconomic stability have a major impact on the size of the capital market. It is interesting to emphasize that the development of the banking sector have complementary and not substitutable effect."[17]

The challenge is to attain a sustainable capital market in an emerging economy like Republic of Macedonia, which would lead to a sustainable growth and development. Previously mentioned papers were taken into consideration as a basis for preparing empirical analysis in this paper, considering the macroeconomic indicators that influence and determine the capital market development.

2. DETERMINANTS OF THE DEVELOPMENT OF THE CAPITAL MARKET IN THE REPUBLIC OF MACEDONIA (DATA, METHODOLOGY AND RESULTS FROM THE EMPIRICAL ANALYSIS)

The estimation of the development of capital market usually used Calderon-Rossell behavioral structural model. The basic model considers that the development of the capital market is the function of the GDP per capita and Turnover Ratio. The equitation model is:

$$Market\ capitalization = f(GDP, per\ capita, Turover\ Ratio)$$

The determination of macroeconomic factors that influence the development of the capital market in this paper is done with the extended Calderon-Rossell model. The extended model includes more variables that have influence on the capital market. These variables reflect the relationship among economic growth, national savings and the available capital for investment, macroeconomic stability, development of the financial sector and the capital market. This modification of the model is done in order to get a better specifications and more comprehensive model which

[16] Eliskovski M., Macroeconomic determinants of development of the capital market in the Republic of Macedonia, 2012

[17] Ibid, p. 23

determines the intensity of the influence of the previously stated variables on the development of capital market.

Development of the capital market in the Republic of Macedonia is influenced by the impact of several factors.

Economic growth is considered to be the main precondition for the development of the capital market. The expansion of the economic activity increased GDP. This has positive impact on the company's profits and consequently leads to increase of their value on the capital market. In the long term, the increase in gross domestic product - creates the need for new financial instruments for economic agents in order to fertilize their income at a given level of risk. The variable rate of economic growth used in the regression, represents the economic development in the Republic of Macedonia.

Higher economic growth leads to increased levels of national saving and investments. Increased savings also increas the potential for investment. The increased volume of saving and investment can be channeled through capital market into profitable projects and can have positive influence on the capital market. Empirical models usually evaluate the impact of national savings as % of GDP or gross investment as % of GDP on market capitalization. The regression in this paper estimates the impact of savings and investment on market capitalization using the variable gross savings as % of GDP.

The development of financial sector especially banking sector is very important for the development of capital market. Usually, the indicators of the financial sector development that are used in models are: volume of credits, deposits and monetary aggregates. Banking sector in Republic of Macedonia is considered as dominant part in the financial sector, so it is reasonable that the analysis include these indicators. The developed financial sector allows a wider and diversified range of financial instruments for investment of economic entities. Consequently there is an opportunity for higher diversification risk. Therefore, the development of the financial sector, especially the banking sector has positive impact on development of the capital market. These sectors are complementary and supplement each other. Sometimes the opposite situation is present, so the development of financial sector can have negative implications on capital market as a results of increased competition. The both sectors compete with each other for the prize of mobilizing the free capital of economic entities. In that case they represents substitutes.

In this study the financial sector and his influence on the capital market development is represent by the variable deposits interest rate. As was previously stated the banking sector is considered to be the dominant part in the financial sector in the Republic of Macedonia. Therefore, the deposits interest rate is the key factor that can influence the decision of the economic entities, whether to deposit their financial assets in the banks or to participate and invest in financial instruments in capital market. It can be assumed that the deposit interest rate will have negative impact on the development of the capital market, primarily due to the amount of the deposit interest rate and lower risk of investment in deposits.

Macroeconomic stability is present through the variable inflation rate or interest rate. The effects of macroeconomic stability on capital market development, using these variables can be determined as positive or negative. The inflation rate can be foreseen as appropriate indicator of macroeconomic stability, i.e. if the inflation rate is stabile it has positive influence on capital market development. On the other hand, the high inflation rate can create instability and high risk for the economic entities to participate and invest in the capital transactions. The other aspect is that high inflation rate encourages the speculative actions in trading with financial instruments. This activities can have positive influence on increasing the market capitalization and turnover ratio of the capital market.

These are the theoretically predictions about the expected influence of the variables on the market capitalization of the Macedonian Stock Exchange. After the applied statistical model the results for some of the variables confirm the theoretical prediction, but others defer from it. The conclusion and explanation are shown in the following section.

3. DATA, METHODOLOGY AND RESULTS FROM THE EMPIRICAL ANALYSIS

The development of the Macedonia Stock Exchange is estimates with multivariate linear regressions which determine and measures the influence of the several factors. The regressions are conducted using data from the World Bank for the period 1997-2012. The calculations of statistical parameters are obtained using the software package XLSTAT 2015.

The regression takes into consideration the market capitalization as dependent variable that is the indicator of the size of the Macedonia capital market, expressed as a percentage of GDP. Independent

variables that explain the depended variable taken into consideration in this model are:

Y - Market capitalization (as % of GDP)
X_1 – Gross savings (as % of GDP)
X_2 – Deposit interest rate
X_3 - Inflation Rate (Consumer Price Index)
X_4 - GDP growth;
β_0 – Free article;

The model is transformed into lin-log linear model and the mathematical equitation has the following expression:

$$LnY = \beta_0 + \beta_1 Ln(X_1) + \beta_2 Ln(X_2) + \beta_3 Ln(X_3) + \beta_4 Ln(X_4)$$

The estimation of the parameters of statistical analysis in the model is done using the method of least squares. Significant assumption that is considered in the interpretation of the regression parameters are multicollinearity, heteroscedasticity and autocorrelation statistical errors.

Table 1 Results from the regression

Independent variables - X	(1)
X_1 – Gross savings (as % of GDP)	-1, 612 (-1, 306)*
X_2 – Deposit interest rate	-5, 769 (-6, 259)***
X_3 - Inflation Rate (Consumer Price Index)	0, 080 (0, 338)
X_4 - GDP growth;	-0, 663 (-1, 111)*
Number of observations (n)	16
R^2	0, 873
Adjusted R^2	0, 801
Durbin - Watson	1, 669

*-10% level of confidence; ** - 5% level of confidence and *** - 1% level of confidence
Source: own calculations using the software package XLSTAT, 2015

The method of least squares shows that $R^2 = 0{,}873$ which is considered an acceptable criterion for correctness of the model. The diagram of distribution of residuals shows no presence of heteroscedasticity. (Annex number 1). The equation has the following form:

$$LnY = 18{,}13 - 1{,}61Ln(X_1) - 5{,}77Ln(X_2) + 0{,}080Ln(X_3) - 0{,}66Ln(X_4)$$

The evaluation of the model by the method of least squares R^2 shows that about 87 % (0, 873) of the variation in the dependent variable can be explained by variations of all independent variables included in the model. They have successfully determined the relative dependence of capital market development in the Republic of Macedonia. The results from the criteria for evaluation of the model, correlation matrix, and test for the multicollinearity and the estimated value for the parameters are presented in the annex number 2. The variables considered in the regression analysis passed the p-test for p<5% with the exception of the variable which presents the inflation rate, thus it can be deducted that there isn't any degree of randomization in the link between the four variables and that the bond between them is consistent. Also the regression model between passed the F-test for F-4.93, where the critical value of the F-test was determined to 3.35. The significance of the F-test is 1.59% for F-test significance critical value 5% and thus the bond between the four variables can be determined as significant. All the data presented above showed that there is a significant link between the variables taken into consideration which present the economic development and the capital market development in Republic of Macedonia. This is obvious because the economic growth determinates can directly influence on the development of the capital market. The regression analysis showed that there is a significance link between the variables of economic development and the development of the Macedonia Stock Exchange. Conclusion is confirmed with the consideration that the regression has passed the t-test, for t-test critical value 0.96 and t-test success probability -0.96 to + 0.96.

Gross savings variable, realizes inverse relation with the dependent variable, with the high statistical significance (-1, 306). Therefore, the level of gross savings in the country as a percent of real GDP is of particular importance for capital market development in the Republic of Macedonia. However the relation is with the reverse impact, which means that every increase of the gross savings in the Republic of Macedonia doesn't contribute to the capitalization of the stock market. This is due to the small amount of the transactions that take place on the Macedonia Stock Exchange. It discourage the entities that are interested for investing in financial instrument on the capital market. They rather channel the savings in the banking sector in the form of deposits or in insurance com-

panies and investment funds to diversify the possible risk. This result is not unfamiliar for the emerging economies. The same conclusion was found in the study of the Idowu A. and Babatunde, M.A. [18] which analyzes the effect of the financial reforms on capital market development in Nigeria. The main conclusion about the effect of gross saving on the capital market development in the Republic of Macedonia is that they are very important, but the financial reforms should be toward development of financial instrument that will be considered more attractive for entities and it will encourage them to invest their savings into the stock market, rather than in deposits in the banks.

Another unexpected result is the statistical parameters that reflect the influence of the economic growth. The statistical parameters show statistically significant impact on market capitalization (-1, 111) with the 10 % significance level of confidence, but with negative sign. This means that the trend of the economic growth does not follow the trend line of the market capitalization and stock traded value in the Macedonian Stock Exchange. Appropriate explanation is that the economic growth in the Republic of Macedonia must be sustainable and continuous to reach every sector of the economy, especially the financial sector. The similar result was received in the study of Eliskovski M.[19] Therefore, it is absurd to conclude that economic growth has negative and opposite impact on capital market development in the Republic of Macedonia. This can lead to the conclusion that real economic growth in the Republic of Macedonia is not sufficient for capital market development. Therefore, the recommendations are to stimulate policies measures for higher and more sustainable economic growth. „The quality of growth needs structural reforms and strategies to increase productivity in the economy and thus to facilitate quality economic growth. This parallel should be accompanied by a policy to educate the economic agents in order to realize uses of securities as a means of long-term earnings and dispersion of risk. Thus in the future, this could contribute to alter the negative effect of GDP on development of the capital market in the country."[20]

The most important factor with the 1% of statistical evidence is the variable that presents the deposit interest rate. The result from the regres-

[18] Op. Cit. Idowu, A., Babatunde, M.A.

[19] Op. Cit. Eliskovski, M.

[20] Ibid, p. 23

sion is -6, 259, that confirm the theoretical statement that deposit interest rate is in inversed relation with the indicators of capital market. So, the 1 % percent increase of the deposit interest rate, decrease the market capitalization of the Macedonia Stock Exchange for 6 (percentage point). The higher deposit rates adversely affect on the interest of economic entities to invest in the capital market. With the higher deposit rates investors could reach higher profit with less risk. This will lead to mobilizing the available assets in the bank in the form of deposits, rather than in stocks, bonds and other financial instruments.

In this context Macedonia Stock Exchange needs to develop new financial instruments and follow the world trends in stock exchange operations to attract more subjects to participate in the stock market. „Also, it is important to state that for the development of liquidity of the capital market, the banking sector should exhibit a more active role in the stock market. The banks in Macedonia should create attractive products with competitive prices that will encourage companies to participate in the stock market."[21]

Inflation rate that was considered as independent variable in the statistical model did not evident statistical significance for the market capitalization in the Republic of Macedonia.

Conclusion

The development of the capital market is conditioned by the economic development of a country. This paper deals with the dependence of the capital market in Republic of Macedonia of the economic development of the country. For the purpose of the research a regression analysis was conducted introducing and measuring the impact of series of variables on the capitol market in Republic of Macedonia. The independent variables chosen for the purpose of the research are closely connected and/or influence the economic development as well. Independent variables taken into consideration for the research in this paper are: GDP growth of the country, deposits interest rate, inflation and gross savings as a percentage of the GDP. The purpose of these variables taken into consideration is to determine and explain the dependent variable that represents the develop-

[21] Ibid, p. 23-24

ment of the stock market in the case of this research market capitalization as a percentage of GDP. The research showed that the variables can explain and have impact on the development of Macedonian capital market. However the link between the variables and their effect on the capital market development in Republic of Macedonia differ from some previous findings in this area. This is mainly due to the small and unsustainable economic development of the country, seen by the difference in the trend lines of the GDP and market capitalization growth. Other factors complement this statement such as underdeveloped capital market, dominating banking sector, insufficient offer of products on the stock market etc.

References:

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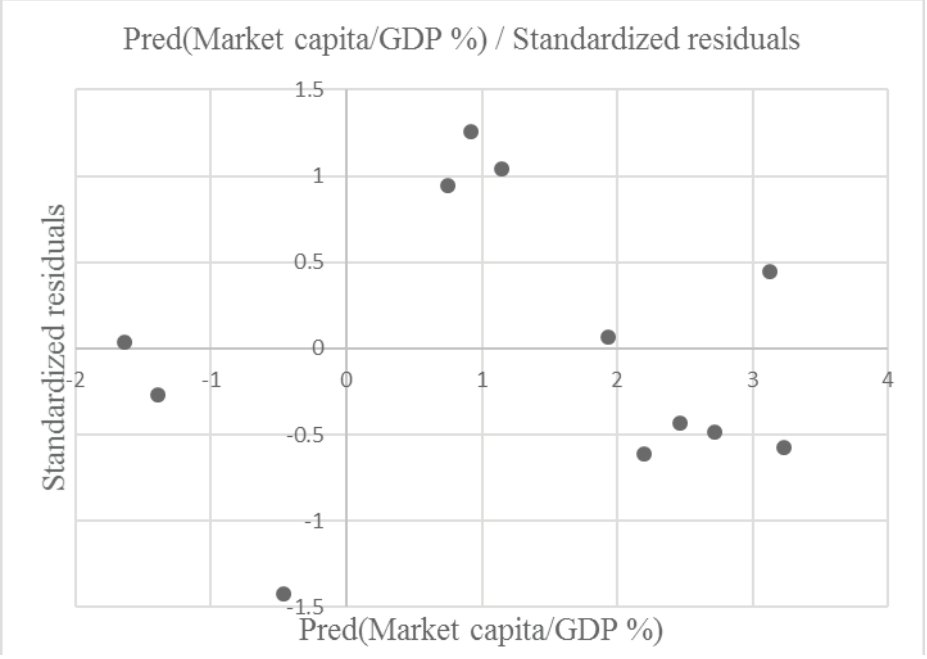
16. World Bank, http://data.worldbank.org/indicator (accessed 12.2.2016)

Annex 1

Figure 1 Test for heteroskedasticity of residual versus predicted values of the dependent variable Y



Source: own calculations XLSTAT 2015

Annex 2

Table 1 Criteria for evaluation of the model

DF	7,0000
R^2	0,8734
Adjusted R^2	0,8011
MSE	0,6435
RMSE	0,8022
DW	1,6695

Source: own calculations XLSTAT 2015

Table 2 Correlation matrix

Variables	Gross savings/% of GDP	Deposits interest rate	Inflation consumer price index	GDP Growth	Market capita/GDP %
Gross savings/% of GDP	**1,0000**	-0,3988	0,2488	0,3467	0,1822
Deposits interest rate	-0,3988	**1,0000**	-0,0473	-0,6019	-0,9013
Inflation consumer price index	0,2488	-0,0473	**1,0000**	0,0922	0,0316
GDP Growth	0,3467	-0,6019	0,0922	**1,0000**	0,4034
Market capita/GDP %	0,1822	-0,9013	0,0316	0,4034	**1,0000**

Source: own calculations XLSTAT 2015

Table 3 Multicollinearity statistics

Statistic	Gross savings/% of GDP	Deposits interest rate	Inflation consumer price index	GDP Growth
Tolerance	0,7746	0,5934	0,9330	0,6229
VIF	1,2909	1,6851	1,0718	1,6054

Source: own calculations XLSTAT 2015

Table 4 Model parameters

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	18,1305	4,5398	3,9936	0,0052	7,3881	28,8728
Gross savings/% of GDP	-1,6117	1,2342	-1,3059	0,2328	-4,5321	1,3086
Deposits interest rate	-5,7690	0,9217	-6,2590	0,0004	-7,9500	-3,5880
Inflation consumer price index	0,0797	0,2360	0,3379	0,7454	-0,4787	0,6382
GDP Growth	-0,6630	0,5965	-1,1114	0,3031	-2,0746	0,7486

Source: own calculations XLSTAT 2015