THE EFFECTS OF BUDGET DEFICIT ON ECONOMIC GROWTH OF REPUBLIC OF MACEDONIA

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Abstract: The relationship between budget deficits and key macroeconomic indicators (such as economic growth, inflation, interest rate, exchange rate and gross investment) presents one of the most discussed topics among researchers and policy makers both in developed and developing countries. The root of the key discussion results from theoretically controversial views between Keynesian economists and Neoclassical economists. While the former stand for the position that there is a positive relationship between budget deficits and economic growth, the latter hypothesize that budget deficits have inverse impact on the economic growth. On the other hand, the Ricardian economists asserted that there is neutral relationship between budget deficit and economic growth. Therefore, the basic aim of this paper is to investigate the impact of the budget deficit on the economic growth of Republic of Macedonia. The modeling of underlying variables (Inflation, Gross Domestic Product, Budget Deficit, Gross Investment, Real Exchange Rate and Real Interest Rate) is used for estimation of the quantitative effect of permanent budget deficit on the rate of economic growth in the country. In this paper, we have taken sample which comprises time series data for the period 1993-2016 in order to identify the relation between budget deficit and economic growth in Republic of Macedonia. GDP is taken as dependent variable and inflation, budget deficit, gross investment, real exchange rate and real interest rate as independent variables. In this paper, ADF test has been applied in order to check the stationarity of the data.
The paper used regression analysis in order to confirm the impact of Budget Deficit on the Gross Domestic Product. The results show that there is a positive relationship between budget deficit and economic growth, but as the budget deficit increases, the impact of economic growth decreases. Therefore, those results support the Keynesian view of budget deficit which points out that the state should use the budget deficit to offset the inadequacy of aggregate demand. The policy of budget deficit should be implemented until a satisfactory level of economic activity is achieved. The conclusion of the research indicates that the government of Republic of Macedonia should rely on prudent financial management within the fiscal policy and enhance revenue collection by the revenue authority, as well as not crowd-out private sector investment by borrowing domestically. In addition, the study recommends reduction of wastage in government public spending and adoption of financial structural transformation.
Keywords: budget deficit, economic growth, OLS.

1. INTRODUCTION

Economic instability has become general structural problem for many developing countries. Although, budget deficit has to be considered as a major problem of the economy. Budget deficit is caused either by impossibility of collecting taxes or excessive government spending or both. According to some researchers, budget deficit may appear in case of delayed collection of revenues from taxes, contributions, sales and other revenues.

From the macroeconomic perspective, there are different views on the usefulness of the budget deficit as a tool that facilitates the promotion of economic growth. Keynesian theory states that there is a positive relationship between budget deficit and economic growth and against it, neo-classical theory claimed that there is a inverse relationship between budget deficit and economic growth. According to Ricardian theory known as Ricardian Equivalence budget deficit would not cause an increase in aggregate demand, which indicates that there is a neutral relationship between budget deficit and economic growth.

On the basis of annual reports data of the National Bank, Republic of Macedonia faced the highest rate of budget deficit in fiscal year 1993, when the share of budget deficit as a percent of GDP was 13.4%. During the following years was recorded decline in the rate of budget deficit, which in 2000 registered a budget surplus of 2.4% of GDP. The rate of budget deficit of Republic of Macedonia continued to fluctuate further and in 2016 reached the level of 2.6% of GDP. In the first years of independence, Republic of Macedonia faces recession with a negative economic growth rate of 7.5% registered in 1993. In 1996, for the first time the growth rate of GDP increased by 1.2%. The highest GDP growth rate of 6.5% was registered in 2007. According to the estimated data, GDP in 2016 increased by 2.4% (Annual Report of NBM, 2016). One of the most common reason for budget deficit may be lack of evidently outlined budget.

The problem statement of the current research paper is: what is the impact of Budget Deficit on Gross Domestic Product growth of Republic of Macedonia? The additional objectives of the study are:

- Examination of the impact of budget deficit on GDP growth.
- Proposals for taking appropriate policy measures to overcome the budget deficit.

The study is planned as follows: the second section includes review of the appropriate literature; the third section includes the used methodology followed by interpretation of the results. Concluding remarks are established in the section five, accompanied with the adequate recommendations.

2. LITERATURE REVIEW

Budget deficit or budget surplus is considered as one of the most significant macroeconomic factor affecting economic growth. Therefore, it may be noted that the budget deficit or surplus is the result of the Government's applied fiscal policy instruments. According to Fisher (1993), it is especially complex task to use the budget deficit as a representative of fiscal policy or to access the impact of fiscal policy effect by using only budget deficit. The budget deficit is one of the most effective indicators influencing economic growth. Many studies indicated that there is a relation between budget deficit and economic growth. Kneller et al. (1999) emphasized that the impact of budget deficit on economic growth is tightly related to the source of the budget deficit. Therefore, in the case when budget deficit is a result of minimal distortionary taxes or increased public expenditures in productive purposes, there is positive impact on the economic growth. Otherwise, if budget deficit occurs as a result of non-productive public spending, the economic growth will be affected negatively.

There is a wide range of empirical studies on the topic of the relationship between the budget deficit and economic growth.

In the study based on the neoclassical approach, Adam and Bevan (2005) examined the relation between fiscal deficit and growth for a panel of 45 developing countries. Their analysis based on a consistent treatment of the government budget constraint, identifies threshold effect at a level of the deficit around 1.5% of GDP, a range over which deficit financing may be growth enhancing.The magnitude of this payoff, but not its general character, necessarily depends on how changes in the deficit are financed (through changes in borrowing or seigniorage) and on how the change in the deficit is accommodated elsewhere in the budget. They also found out evidence of interaction effects between deficits and debt stocks, with high debt stocks aggravating the negative consequences of high deficits. The emergence of the inverse relationship between the budget deficit and economic growth is also confirmed by Fischer's study (1993). The conclusions of the study support the fact that high inflation, large budget deficits and exchange market distortions are associated with lower economic growth. Furthermore, there is particularly robust positive correlation between the budget surplus and growth and strong correlation between the black market exchange premium and growth. The paper by Kurantin (2017) presented a research on the relationship between increased and/or continuous budget deficit on the processes of economic growth, governance and development in Ghana from 1994 to 2014 by using unit root test and Ordinary Least Squares. The obtained results from the paper showed an adverse impact of continued budget deficit on the processes of economic growth and development, as well as the governance structure of the economy.

Ahmad (2013) prepared a study to find out the impact of budget deficit in the economic growth of Pakistan using the time series data for the period of 1971 to 2007. In this study, the GDP of Pakistan was taken as dependent variable, while budget deficit and foreign direct investment as independent variables. Meanwhile is used the Augmented Dickey Fuller test in order to check the stationarity of the variables and the Granger Causality test was employed to test the causality between the variables. The following conclusion is derived from this study: there was bi-directional causality between GDP and budget deficit of Pakistan and positive but insignificant relationship between GDP and budget deficit.

The Keynesian theory was tested in a series of academic papers. The paper on low-income countries implemented by Gupta et al. showed that fiscal consolidations were not harmful for long or short term growth of these countries in the period 1990-2000.The paper indicated that one percentage point reduction in the ratio of the fiscal deficit to GDP leads to an average increase of a half percentage point in growth per capita both in the long and in the short term. Low-income countries with budget deficit which used public expenditures on productive purposes have the acceleration of the rate of economic growth and contrary when they spent public expenditures to non-productive purposes have very limited economic growth. However, in both cases they found out that acceptable budget deficit will result with a positive causal relationship. The study by Odhiambo et al. (2013) based on the dynamic growth model, concluded that fiscal deficits can increase economic growth as it improve productivity by providing infrastructure, health, education and harmonize private and social interest. Therefore, the study indicated a positive relationship between economic growth and budget deficits in Kenya.

A series of studies on the same issue confirmed that there is no significant relation between the budget deficit and economic growth. Schclarek (2005) analyzed the impact of debt on the economic growth for developing and industrial economies and found no relationship between debt and growth of the economy.

3. THEORETICAL FRAMEWORK AND METHODOLOGY

In this study our basic aim is to investigate the effects of budget deficit on the economic growth in Republic of Macedonia. Balanced budget is necessary for providing sustainable economic growth. The budget deficit occurs when the collected revenues are not sufficient to cover the increased spending of the Government. A certain group of economists claimed that there is a positive relationship between the budget deficit and economic growth. Therefore, the budget deficit encourages economic growth if the increased expenditures are due to productive expenditures like education, health, infrastructure etc. On the contrary, other group of economists view that budget deficit and economic growth has negative relationship. GDP is taken as dependent variable and inflation, budget deficit, gross investment, real exchange rate and real interest rate as independent variables.

To model and analyze the impact of increased budget deficit on GDP growth, the study used the model as confirmed by Shojai (1999). Ordinary Least Square (OLS) is employed to ensure the fulfillment of the assumptions thereof. These assumptions include linearity of the model and its non-stochastic characteristic, having a mean value of 0 with equal variance of distribution. According to the research of Tranmer and Elliot (2008) Ordinary Least Square regression could be employed to single and/or multiple explanatory variables as well as categorical explanatory variables. The mathematical expression of the model is as follow:

$$Ln\,(GDP) = \beta_0 + \beta_1 \ln (INF) + \beta_2 \ln (REXCH) + \beta_3 \ln (RIR) + \ln \beta_4 (BDEF) + \ln \beta_5 (GI) + u$$

Where:
GDP = Gross Domestic Product
INF = Inflation
REXCH = Real Exchange Rate
RIR = Real Interest Rate
BDEF = Budget Deficit
GI = Gross Investment
u = Stochastic Error Terms

Note: β_0, β_1, β_2, β_3, β_4, β_5 are the respective beta parameters.

3.1. DATA ANALYSIS

The data-sets for this study is sourced from the time period 1993 to 2016 from the International Financial Statistics, National Bank of the Republic of Macedonia, Ministry of Finance (Republic of Macedonia) and State Statistical Office (Republic of Macedonia). The results presented were obtained by the test process and summarizing the set of data and more importantly for formulating the model as part of iteration that includes regression, unit root and stationarity analysis via Dickey-Fuller test (ADF). A time series data usually show trend with the time. This trend can be removed by differencing. Table 1 below presents the results of ADF test:

Null Hypothesis: **There is unit root;**   *Alternative Hypothesis:* **There is no unit root**
Table 1: Unit Root Test(s)

Variables	Levels			1st Difference		
	Lags	Intercept	Trend & Intercept	Lags	Intercept	Trend & Intercept
INF	0	-64.72860* (-2.9981)	-56.85325* (-3.6220)	1	-6.925101* (-3.0124)	-6.828063* (-3.6449)
GDP	0	-4.294591* (-2.9981)	-3.972144* (-3.6220)	1	-4.098310* (-3.0124)	-4.143506* (-3.6449)
REXCH	0	-1.680250* (-2.9981)	-1.717771* (-3.6220)	1	-5.856412* (-3.0124)	-8.171869* (-3.6449)

BDEF	0	-5.990187* (-2.9981)	-6.215289* (-3.6220)	1	-4.912677* (-3.0124)	-4.771235* (-3.6449)
RIR	0	-2.824463* (-3.0124)	-7.079813* (-3.6449)	1	-5.447712* (-3.0299)	-5.278218* (-3.6736)
GI	0	0.789044* (-3.0404)	-2.618362* (-3.6736)	1	-2.793427* (-3.0522)	-3.176941* (-3.7105)

Note: * The figures given in brackets are table value of Unit Root Test at 5% level of significance
Source: Authors Compilation, (2017).

Table 2: Misc. tests

Tests	Results
Heteroscedasticity Test	0.794 (0,672)
Autocorrelation Test	0,069 (0,967)
Jarque-Bera Test	0,806 (0,668)
Remsey Reset Test	0,316 (0,581)

Source: Authors Compilation, (2017).

Null Hypothesis: There is no significant impact od budget deficit on economic growth

$$H_0: \quad \beta_4 = 0$$
$$H_1: \quad \beta_4 \neq 0$$

Table 3: OLS test, taking GDP as Dependent Variable for the period 1993 – 2016

Variables	Coefficient	Std. Error	t-Statistics	P-Values	R²	DW	F-Statistics
C	19.60118	4.073023	4.812440	0.0001	0.788686	2.000883	24.88195
BDEF	0.736861	0.165057	4.464281	0.0002			
INFL	0.001075	0.011470	0.093737	0.9263			
REXCH	-0.149895	0.038137	-3.930462	0.0008			

Note: * at 1% level significance
Source: Authors Compilation, (2017).

4. INTERPRETATION OF RESULTS

Based on the ADF test results it was concluded that the variables were non-stationary and therefore the need to difference them so as to induce stationarity. The results od ADF on the variables, after differencing in order to make them stationary, indicated that all the variables were stationary at their first difference followed order one process.

The diagnostic tests were performed using E-views. From the assessment of the Durbin Watson (DW) test that has found to be 2.000883, almost as the recommended 2 is indicated there was neither autocorrelation nor heteroscedasticity.

The Breusch-Godfrey serial correlation LM test, a general test for autocorrelation was also performed and suggested the absence of second order correlation as evidenced by LM test statistics of 0.069 being less than its critical of 3.841 (at 5% level). Consequently, the null hypothesis of no serial correlation was accepted.

The absence of heteroscedasticity was supported by autoregressive-conditional homoscedasticity (ARCH) test. Given as F-test with null hypothesis that the model is homoscedastic, the calculated statistics of 0.794 was relatively lower than the critical value of 5.99, supporting the null hypothesis.

The normality test for the computed residual and on the regression variables was performed using Jarque-Bera which confirmed the null hypothesis that the variables are normally distributed.

To test for the structural stability of the model Ramsey Reset test was used. The outcome of Ramsey Reset test for the model was 0.316 for F- calculated (1,19), which showed that there is no apparent non-linearity in the regression equation or that the linear model for the GDP is appropriate.

In order to solve the problem of multicollinearity among the explanatory variables of the regression model we have dropped two of the collinear variables such as gross investment and real interest rate. As a result, two of the three independent variables of the model become significant which proved the validity of the model.

The value of R^2 (i.e. the coefficient of determination) in the model represents 79% of the variations in the dependent variable (i.e. GDP) is due to the independent variables, which suggests that model has significantly high explanatory power and therefore correctly specified and applicable for policy analysis and forecasting.

The real exchange rate (REXCH) as a measure of the macroeconomic stability of the country showed significant negative impact on the economic growth of the economy ($\beta_2 = -0.15$, p = 0.0008) at 1% level of significance. The results indicates that 1% increase in the real exchange rate contributes to 0.15 times decline in growth rate.

Budget deficit was found to have unexpected positive impact on growth of the economy ($\beta_4 = 0.74$, p = 0.0002) at 1% level of significance. It shows that 1% increase in the budget deficit will lead to 0.74 times increase in the growth of the economy. The results validate the findings of Odhiambo et al. (2013) that the budget deficit has positive impact on the economic growth in the country. This could imply that budget deficit crowds-out the private sector investment as a result of the extensive borrowing of the government for domestic financial institutions, increasing the interest rate on investment fund required by the private sector which is esteemed as the accelerator of the economic growth of the country by many economists.

5. CONCLUSION AND RECOMMENDATIONS

The basic aim of this study is to investigate the dynamic association between budget deficit and economic growth of Republic of Macedonia. Henceforth, to achieve this purpose, an application of unit root test and OLS model associated with regression modelling using selected data-sets of budget deficit and output growth for the time period 1993 to 2016.

The obtained results from the modelling showed that fiscal deficits can increase economic growth as a result of improved productivity by providing education, infrastructure, health and reconciling the private and public interest. Therefore, the study confirmed that there is a positive relationship between budget deficit and economic growth of Republic of Macedonia. This conclusion strongly supports the Keynesian formulations that increased government spending can help achieve expansionary fiscal policy because it leads to an increase in domestic production, thus increasing private investors optimism about the future course of the economy and start investing more capital and hence increasing capital accumulation which through the process of multiplication leads to a positive economic growth. The Keynesians strongly suggest that public expenditures increase aggregate demand, which improves the profitability of private investments and further leads to higher level of capitalized investments on the increased aggregate demand of the economy.

The induced correction of budget balance in the short run would require slower growth, but would be positive for further growth and standard of living over the longer run. On the other hand, the induced correction of the external deficits via adjustments of the exchange rate, is likely to be associated with lower short term growth.

The study recommends that the key task of the government economic policy is to find ways of enhancing revenue capacity initially by broadening the tax base in order to enable adequate financing of their expenditures which would increase the multiplier that further generate accelerated economic growth. In addition, it should be determined the optimal level of public expenditures in order to avoid deficits and crowding-out of private investment which is considered as the significant incentive for the economic growth.

The primary policy implications of the study are that stable macro economics, trade liberalization and growth oriented policies are possible if they are complemented with strong legal framework, efficient policy making system, provision of important public services like education, infrastructure, health, social security and a professional government.

The study recommends further research to be done on the impact of individual components of the government expenditures such as expenditure on defense, health, education and other variables on economic growth to confirm the Keynesian formulation that government expenditures boost growth in the economy through multiplier effect.

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