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IMPLICATIONS OF BUDGET DEFICIT ON ECONOMIC GROWTH - CASE STUDY OF THE REPUBLIC OF MACEDONIA -

Abstract

Having a balanced budget is very important for achieving long-term and sustainable economic growth in everyone country. Namely, the budget itself is a very powerful and useful tool and instrument for defining and realizing development policies in a country. The usefulness and the efficiency of this instrument is conditioned by its balance (or deficit). Budget deficit cannot be analyzed if abstracted and separated because it influences large number of macroeconomic trends, but it is also under influence of numerous macroeconomic factors.

The causal connection between the deficit and the economic growth can be perceived through the fact that positive economic growth generates additional public revenues. Therefore, the government should choose between pro-cycle or counter-cycle fiscal policy. Negative rate of economic growth causes contraction in the economy, and as a result of this it is certain that the expansive fiscal policy accompanied by large budget deficit is not appropriate in periods of economic growth.

Economic growth has reversible influence on budget deficit. In fact, the best way to decrease budget deficit is to promote economic growth. If economy is in progress, then it is real to expect increased tax revenues, without having the necessity to increase tax rates. Therefore, boosting economic growth is the least painful way to decrease budget deficit. Having all that in mind, governments

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should be careful when planning public revenues and expenditures i.e. when planning the budget deficit level, all for the purpose of creating preconditions for reaching the aimed level of economic growth.

Key words: balanced budget, budget deficit, economic growth, Republic of Macedonia.

JEL classification: E20, H30, O11

Introduction

Budget represents a plan for all incomes and expenditures of a certain institution or state. When the actual costs are in line with the planned ones, then the process of planning in an organization is considered useful. The budget may be in deficit or surplus. It is in deficit in situations where the country's expenditures exceed revenues, collected through tax and non-tax sources. However, the deficit may also be a result of delay in revenue collection, i.e. taxes or other sources of incomes.

The basic macroeconomic implications of the budget deficit are: increase the borrowing of the country, increased interest on debt, increased aggregate demand, decrease in the incentives for work, inflation, extrusion of investments in the sphere of the private sector, etc.

1. LITERATURE REVIEW

This problem has been explored by many economists over time. Adama and Bevan¹, analyzing the budget deficit of 45 developed countries, found a close connection between the deficit and economic growth. Reducing the budget deficit by 1.5% of GDP causes a positive impact on the growth rate of GDP. Reducing the budget deficit below this limit will not initiate positive effects on economic growth, but can also be harmful if the reduction is due to substantial fiscal contractions.

Fischer² offered an opposite claim from the previous theoretical predictions. He analyzed a consistent sample of countries, and with a help of the

¹ Adama, C, Bevan D: Fiscal deficits and growth in developing countries, *Journal of Public Economics*, Vol. 89, 2005, p. 570-598.

² Fischer, S: The role of macroeconomic factors in growth, *Journal of Monetary Economics*, Vol. 32, 1993, p. 485-512.

results obtained he showed the reverse cause-effect relationship between the budget deficit and economic growth. Accordingly, the budget deficit leads to a decrease in both the accumulation of capital and the productivity growth, with obvious negative impact on the GDP growth rate.

Gupta and Baldachi³ have shown that the budget deficit which is kept at a reasonable level, it is linked to economic growth in the short and long term.

Over the years, the impact of budget revenues and expenditures, and their implications on the economic growth of the country, has been explored in parallel. Several studies put emphasis on their trends showing that government revenues and expenditures and the role of the public sector has expanded considerably in most countries after the Second World War. This is confirmed by the fact that total government spending in relation to GDP was 30% for developed countries and 25% for developing countries. The expanded role of governments that are mainly financed through tax revenues came as a result of the government's power to allocate resources more effectively than previously.

2. METHODOLOGY

The survey uses secondary sources of data on the budget balance, budget revenues and expenditures, as well as the growth rate of the gross domestic product of the Republic of Macedonia. The analysis covers the period from 2004 to 2015.

We monitor the impact of the budget deficit on economic growth through the influence of budget revenues and budget expenditures. Finally, through a synthetic analysis we make an effort to confirm the significance of the budget deficit for economic growth in the Republic of Macedonia.

In order to determine these impacts on economic growth, we conduct regression analysis. In this analysis we determine what is the impact of certain categories on the rate of growth of the GDP, as an indicator of the economic growth.

In order to test the strength of the model and the relationship between economic growth and the categories of government revenues and expenditures, as well as the budget deficit, we approach the analysis of the variance (ANOVA). When determining ANOVA we get the corresponding statistical value. Our tests are carried out in the confidence interval of 95% (i.e. with an accuracy of 95%), and at the level of significance of 5%. If the results obtained are less

³ Gupta, S, Baldacci E: Fiscal policy, expenditure composition and growth in low-income countries, *Journal of International Money and Finance*, Vol. 24, 2005, p. 440-460.

than the p-value equal to 5%, then we conclude that the model is significant in explaining the connection. Otherwise the model is not significant.

3. INFLUENCE OF COUNTRY REVENUE ON THE ECONOMIC GROWTH OF THE REPUBLIC OF MACEDONIA

Taxes are the country's most important source of public revenue. They are mandatory fees paid by the taxpayers to the government without expecting any direct benefit from them. Taxes collected from the state are further used to provide public goods and services for the benefit of all citizens.

One of the most important roles of fiscal policy is the alignment of government's revenues and expenditures. This role is essential for maintaining price stability and sustainable growth of the production and thereby encouraging economic growth. Fiscal policy through its measures and instruments can be used to prevent or mitigate fluctuations in production, employment and income in the short term. A good understanding of the relationship between government's revenues and economic growth in the economy, especially when dealing with budget deficits, it is crucial in creating consistent fiscal policy.

3.1. The relationship between government revenues and economic growth

Economic growth is often identified with the increase in total output of goods and services produced in one country. When it comes to economic growth, it is meant to increase the quantity of goods and services.

Government revenues influence economic growth by meeting different public needs. By cutting income after tax, taxes reduce the motivation of workers to work and reduce savings and private sector investment.

While taxes generally have disincentive effects, those that reduce the incentive to invest in human and physical capital, as well as in innovation are particularly damaging. Many empirical evidences suggest that the shifting of the emphasis on income taxes and profit taxes on consumption can substantially improve economic growth in one tax system⁴. Consumption taxes can discourage working and investing in human capital, but have little impact on

⁴ Barrios S and Schaechter A: The Quality of Public Finances and Economic Growth, Economic Papers, 337, European Commission, 2008, pp. 48.

the long-term determinants of economic growth, such as education, investment, technical progress, etc⁵.

Although funding the state spending creates difficulties for economic growth, some types of government spending are beneficial to the country's economic performance. Certain government expenditure is a prerequisite for a functioning market economy, such as the private property protection system.

3.2. Research Methodology

In order to determine the relationship between government revenues and economic growth, we conduct a multiple regression analysis. In the analysis we determine if there is and what is the impact of tax revenues and the category of non-tax revenues, on the growth rate of GDP in Macedonia, as an indicator of the economic growth.

Within the category of tax revenues, as the most important are taken in consideration the following: income tax, profit tax and capital gains (as one category), social safety charges, value added tax (VAT), customs and other import duties. These categories participate with the highest percentage in the total budget revenues of the Republic of Macedonia.

3.3. Regression analysis

This segment presents the basic categories of government revenues through their participation in the gross domestic product of the Republic of Macedonia.

⁵ Bassanini A, Scarpetta S and Hemmings P: Economic Growth: The Role of Policies and Institutions. Panel Data Evidence from OECD Countries, [OECD Economics Department Working Paper, No. 283](#), 2001, pp. 70.

Table 1 – Public (government) revenues as a percentage of the GDP in the Republic of Macedonia

Public revenues as a percentage of GDP					
Year	Real growth rate of GDP	Tax revenues (% of GDP)	Non-tax revenues (% of GDP)	Capital revenues (% of GDP)	Transfers and donations (% of GDP)
2004	4.5	0.11	2.36	0.002	0.25
2005	-3.1	18.75	3.87	0.69	2.31
2006	1	28.88	3.78	3.78	5.53
2007	2.2	28.92	8.42	0.38	0.28
2008	4.7	28.56	4.42	0.43	0.79
2009	4.7	27.11	3.74	3.74	0.23
2010	3.4	26.33	2.67	0.92	1.44
2011	2.3	26.27	2.47	0.82	0.34
2012	-0.5	26.13	2.20	2.20	0.74
2013	2.9	24.22	2.37	0.68	0.96
2014	3.5	24.60	1.99	0.39	0.82
2015	3.7	25.23	2.20	2.20	2.94

Source: MK Budget, 2017, available at: <http://mkbudget.org/Drzavni-Opsti-Podatoci/list> (12.02.2017).

In order to detect the link between economic growth i.e. the real GDP growth rate as a dependent variable from one side, and tax and non-tax revenues as independent variables from other side, we conduct a multiple regression analysis. The multiple regression model receives the following form:

$$G = C + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + u,$$

where:

G – GDP growth rate,

C – constant,

β_1 – revenues from income tax, tax on profit and capital gains,

β_2 – revenues from charges on social safety,

β_3 – revenues from VAT,

β_4 – revenues from customs and other import duties,

β_5 – non-tax revenues,

u – residual.

Table 2 – Results from the econometric model

Dependent Variable: GDP_GROWTH
 Method: Least Squares
 Date: 03/21/17 Time: 23:46
 Sample: 2006 2015
 Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	60.80745	14.00629	4.341439	0.0122
CONTRIBUTIONS	-11.15653	1.808620	-6.168530	0.0035
DIRECT_TAXES	1.922032	0.530768	3.621227	0.0223
NON_TAX_REVENUE	-0.685521	0.275044	-2.492405	0.0673
TARIFFS	15.48518	2.799380	5.531645	0.0052
VAT	1.712797	0.758418	2.258380	0.0868
R-squared	0.956467	Mean dependent var		3.200000
Adjusted R-squared	0.902050	S.D. dependent var		2.302655
S.E. of regression	0.720660	Akaike info criterion		2.466410
Sum squared resid	2.077403	Schwarz criterion		2.647961
Log likelihood	-6.332052	Hannan-Quinn criter.		2.267249
F-statistic	17.57679	Durbin-Watson stat		2.853333
Prob(F-statistic)	0.007933			

Source: Authors' calculations with the help of the E-views software.

After presenting the model in the EViews software program, we get the following form:

$$\text{GDP growth rate} = 60.80 + 01.92 \text{ direct taxes} - 11.15 \text{ charges} + 1.71 \text{ VAT} + \\ + 15.48 \text{ customs} - 0.68 \text{ non-tax revenues}$$

Analyzing the model obtained, it can be seen that three of the five non-independent variables have a probability of less than 5%, that is, three independent variables are significant and have a significant impact on the dependent variable. This suggests that our model is well-specified, i.e. it can be concluded that customs revenues, income tax, profit and capital gains and contributions, in our model have the greatest impact on the real growth rate of gross domestic product.

The coefficient of determination (R-squared) explains the extent to which changes in economic growth are explained by changes in independent variables. The value of the determining coefficient in our model is 95.6%, which means that 95.6% of the changes in the GDP growth rate are explained by the changes in the revenues from direct taxes, contributions, VAT, customs and non-tax revenues. The high value of this coefficient suggests that there is a very strong link between economic growth and individual independent variables.

Based on the coefficients of the model obtained, it can be concluded that there is a positive link between economic growth and revenues from customs

and other import duties, value added tax and income tax, profit and capital gains, while the link between economic growth and non-tax revenues and revenues from charges is a negative one.

4. IMPACT OF COUNTRY EXPENDITURES ON ECONOMIC GROWTH

Ensuring sustainable economic growth is a main goal of each government's public expenditures policy. Public expenditure plays an important role in shaping physical and human capital over time. If properly targeted, it can stimulate economic growth even in the short term. Hence, the effect of public expenditure on economic growth can be considered as a comprehensive indicator of the efficiency of government's economic policies. Due to the fact that public sector results are particularly important for economic growth, empirical studies in this area aim to propose appropriate ways to improve the structure of public expenditures

Public investment has a direct impact on economic growth. In some sense, public investment in infrastructure is a prerequisite for accumulating capital in the private sector, while public investment in education and health care, improves human capital. Examining the impact of public expenditure on economic growth is a key step in understanding sources, consequences and future shape of economic growth in the country, and in finding appropriate solutions and recommendations to increase the contribution of various productive expenditures in achieving that goal.

Public expenditure is one of the most important instruments of fiscal policy, especially capital expenditures that can contribute to stimulating economic activity and to achieve the desired level of economic growth when properly targeted.

4.1. Specification of the model

In this segment we examine the impact of public (government) expenditures on the economic growth in Macedonian circumstances. We try to analyze the connection causality between the categories of government expenditures and economic growth.

From a theoretical point of view, in the model, gross domestic product depends on: salaries and allowances, commodity and service expenditures, in-

terest payments, subsidies and transfers, social transfers and capital expenditures. In this case, the appropriate relations and effects on the economic growth in the observed period should be determined. The values ($\beta_1, \beta_2 \dots \beta_6$) are the corresponding partial effects of the independent variables on the dependent variable. So the model linearly gets the following shape:

$$\text{GDP} = C + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6 + \mu,$$

where:

- C - represents a constant. It reflects the level of economic growth at the zero level of government spending.
- β_i ($i = 1, 2, \dots, 6$) - represents a coefficient or variation of the components of government expenditure.
- μ - is a stochastic member that shows the influence of other variables on economic growth, which are not included in the model.

4.2. Data analysis and discussion

With the help of the E-views software program, the regression of gross domestic product depending on the components of government spending is presented.

Table 4 - Model for the impact of public (government) expenditures on economic growth

Dependent Variable: GDP_GROWTH				
Method: Least Squares				
Date: 02/26/18 Time: 22:17				
Sample: 2004 2015				
Included observations: 12				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.33919	10.10963	2.308610	0.0690
INTEREST_PAYMENTS	-0.006859	0.012929	-0.530511	0.6185
CAPITAL_EXPENDITURES	-3.411660	1.360157	-2.508284	0.0539
SALARIES	-3.805101	1.170195	-3.251683	0.0227
SOCIAL_BENEFITS	-1.443291	0.566752	-2.546602	0.0515
GOODS_AND_SERVICES	3.403848	1.021456	3.332350	0.0207
SUBSIDIES_AND_TRANSFE...	0.815634	0.263209	3.098811	0.0269
R-squared	0.887802	Mean dependent var	2.441667	
Adjusted R-squared	0.753165	S.D. dependent var	2.331390	
S.E. of regression	1.158292	Akaike info criterion	3.422968	
Sum squared resid	6.708202	Schwarz criterion	3.705830	
Log likelihood	-13.53781	Hannan-Quinn criter.	3.318242	
F-statistic	6.594038	Durbin-Watson stat	2.075357	
Prob(F-statistic)	0.028115			

Source: Authors' calculations with the help of the E-views software.

After inserting the data in the model, it gets the following form:

$$\text{GDP} = -0.006 \text{ interest payments} - 3.411 \text{ capital expenditures} - 3.805 \text{ salaries and allowances} - 1.443 \text{ social transfers} + 3.403 \text{ goods and services} + 0.815 \text{ subsidies and transfers}$$

From the model we conclude that interest payments, capital expenditures, wages (salaries) and social transfers are in an inverse relationship with the growth of gross domestic product, i.e. they have a negative impact on economic growth. While government expenditures for goods and services, as well as subsidies and transfer payments, are positively correlated with economic growth.

Three of the six independent variables have a probability of less than 0.05, while two variables are close to 5%. Consequently, we can say that our model has a satisfactory level of significance. All monitored variables, except for interest payments, are statistically significant, i.e. they have a significant impact on economic growth.

The results of the model in the segment of the inverse relationship between capital expenditures and economic growth oppose the theoretical claims for the positive impact of this type of expenditure on growth. However, the question here is raised about the structure of capital expenditures and the need for a more detailed examination of the impact of particular types of capital expenditures on the GDP growth rate. This would determine which capital expenditures the government should put more emphasis on and which to minimize them.

The coefficient of determination (R-squared) is 88%, which points out that 88% of the variations in the economic growth are conditioned by the changes in the observed categories of expenditures. In other words, these components of government expenditures are important determinants of the economic growth in the Republic of Macedonia.

Durbin-Watson-Statistics yields 2.07, whereby it is less than the critical value (5.991). This means that the autocorrelation in the model is highly minimized. Accordingly, with a help of the model, one can make valid predictions. Thus, if capital expenditures (as a percentage of GDP) increase by one percentage point (pp), the growth rate of the gross domestic product would be reduced by 3.4 percentage points. The increase in wages and contributions for one pp will cause a decrease in the GDP growth by 3.8 pp, the increase in social trans-

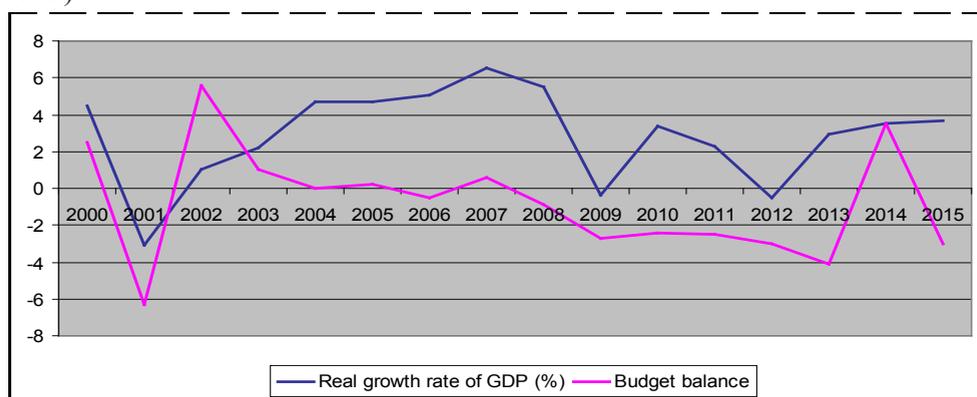
fers for 1 pp will reduce the GDP growth by 1.4 pp, the increase in expenditures for goods and services for 1 pp will increase the GDP growth by 3.4 pp, and the increase in expenditures for subsidies and transfers will cause an increase in the GDP growth rate by 0.8 pp.

5. THE IMPACT OF THE BUDGET DEFICIT ON THE ECONOMIC GROWTH AS A SYNTHETICS OF THE INFLUENCE OF COUNTRY'S REVENUES AND EXPENDITURES

The main idea that governments embraced the budget deficit in order to encourage public investment affecting long-term growth was first promoted by English theorist John Maynard Keynes. His thesis was in fact a recommendation for the governments of the developed countries at that time to overcome the global economic crisis and to provide recovery for the economy.

The evolution of the two macroeconomic indicators in the Republic of Macedonia since 2000 definitely does not emphasize the interdependence between them, which means that other factors have a significant impact on the economic growth of the country. But what can be distinguished from the Figure 1 is that the manifestation of excessive budget deficits is accompanied by a significant decline in gross domestic product. Namely, in 2001 when the budget deficit amounted to 6.3%, of GDP, the growth rate of GDP dropped to 3.1%.

Figure 1 - Evolution of the budget balance and the GDP growth rate (2000-2015)



Source: Ministry of finance of Republic of Macedonia, 2017, available at: <https://www.finance.gov.mk/en/node/771> (12.02.2017).

A large number of empirical studies reveal that the budget deficit above 3% of GDP is hampering economic growth, while the deficit below 1.5% of GDP is neutral, i.e. it has no effect on growth. However, this thesis does not apply in the case of the Republic of Macedonia, since for example in 2003, the budget deficit was 4.1% of GDP, while at the same time the growth rate was 2.9%.

Table 5 - Variance analysis (ANOVA)

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	17.049	1	17.049	2.958	.107 ^b	
Regression	80.701	14	5.764			
Residual	97.750	15				
Total						

a. Dependent Variable: economic growth

b. Predictors: (Constant), budget balance

Source: Authors' calculations with software IBM SPSS Statistics.

Analyzing the results obtained from the ANOVA test, it can be seen that the significance of the model is 0.107, which is significantly greater than the value $\alpha = 0.05$. This suggests that the regression model is not significant in predicting the relationship between the budget deficit and the GDP growth rate.

Based on our analysis, the budget deficit should be greater than 6% of GDP in order to have negative implications for the rate of economic growth. Here, once again we mention that in our case other factors have much greater influence on the rate of economic growth.

Conclusion

The bulk of the budget revenues are collected through taxes. Hence all attempts and difficulties in collecting these revenues, indirectly affect the public (government) expenditures and, hence, the economic growth. Without enough public revenues, the government will not be able to fund various development projects and infrastructure investments that are key elements of economic growth and the development of the country.

It is clear that taxes can create disadvantage effects, especially those that reduce investments in innovation, physical and human capital. To this end, the shifting of the focus from income taxes to taxes on consumption could produce positive results and improve economic growth.

The findings from the study showed that the monitored public revenues as a whole, affect the economic growth by 90.2%, which is a high percentage. Observed individually, tariffs, VAT and direct taxes have a positive impact, while non-tax revenues and contributions have a negative impact on economic growth. From the previous, one can conclude that tariffs have the highest intensity of influence, and the weakest influence comes from non-tax revenues.

This study offers a recommendation for the policy makers to take into account the positive impact of tariffs, VAT and direct taxes in stimulating economic growth. This is particularly effective if capital expenditures are encouraged through these public revenues because they are a key component in achieving economic growth, otherwise consumer or non-productive investments are an obstacle to growth.

From the analysis we have seen that during the last few years the Republic of Macedonia experienced a gradual reduction of customs revenues and revenues from income taxes, profit tax and tax on capital gains. Having in mind the positive relationship between these public revenues and economic growth,

the economic policy makers have to create such a policy that will increase the participation of these revenues in the budget. All this would indirectly influence the stimulation of economic growth.

Based on the results of the research, the following conclusions and recommendations can be drawn:

- Capital expenditures should be mainly directed towards productive economic activities. This would stimulate economic sector activities so that it can override the negative effect on economic growth;
- The Government should consider the size of the public sector. Perhaps the reduction of the public sector and thus the reduction in the volume of wages and benefits in this sector would neutralize the negative impact on economic growth;
- The analysis showed that public expenditures for goods and services have a greater positive effect on growth than other categories;
- It seems active stimulation of subsidies and transfer payments in the economy is needed;

The causality between economic growth and the budget deficit stems from the fact that positive economic growth generates additional public resources. Furthermore, governments will choose whether to adopt a procyclical or countercyclical fiscal policy. Since negative economic growth is caused by reduction in economic activity, it can be concluded that expansive fiscal policy accompanied by a large budget deficit is not appropriate in periods of expansion in the economy.

Governments should efficiently use their resources to overcome problems with budget deficits. In principle, borrowing money to cover state expenditures is not a good solution. On the other hand, printing money for internal use increases the circulation of cash. Also, it will boost the purchasing power of the population, but on the other hand encourages inflation in the country. Finally, this solution is not an appropriate way to cover government expenditures. It would be better for the government to increase the rate of direct and indirect taxes or to introduce a new form of tax as a solution to increase public revenues.

Tax policy makers need to create an effective and efficient policy to improve tax collection. However, it is recommended that the entire taxation process should be under constant control in order to ensure fair and equitable taxation and to reduce the burden borne by the taxpayer. The fiscal policy should be formulated in a way to encourage the taxpayers to pay taxes, that is, through certain incentives to solve the problem of tax evasion.

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