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Covering the Impact of Fiscal Policy on Economic Sustainability

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Abstract
The main goal of this research is to analyze the impact of expenditures and revenues in a certain periods of the year 2004 to 2013. The research includes data on GDP, public spending and revenues.Using the method of simple linear regression and through the application of the method of small squares (OLS), we will test the effects of income and public expenditures in GDP in the Republic of Macedonia.Regarding the impact of income in GDP of the Republic of Macedonia, the results show that the change of income for 1% will cause GDP growth 0.18%. At this point we have made a t-test which is 1.68 and it's bigger than 0.05, so we can confirm that the coefficient has powerful indication.So by this result we prove the hypothesis of the paper submitted at the beginning which says H1: public revenues affect negatively in the economic growth in Republic of Macedonia.From the results of the regression, we found that the eventual change of expenses for 1% will dramatically reduce GDP by 0.9%. Since the t-test shows that t = 14:33, is bigger than 0.05, thus I conclude that the test has indicator, since it is greater than 0.05.

Keywords: *fiscal policy, public expenditures, public income, economic sustainability*

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Introduction

Fiscal policy is one of the most important component of a state economic policy used for macroeconomic purposes. Its goal, is to maintain the economic stability and creating the conditions to enable the economic development. Starting from the problems of fiscal policy in Macedonia, economists have tried to approach the better way to reach planned results for the regulation of this policy. However, the evaluation of the International Monetary Fund (IMF) according to budget minus growth shows that the government of Macedonia deviated from the plan for adjusting fiscal policy. This deviation was introduced by growth of budget minus which from the 297 million euro has risen to 318.7 million euro. Or, otherwise said budget deficit of 3.5% of Gross Domestic Product (GDP) increased to 3.9%. In particular, when it comes to countries in transition, fiscal policy plays an important role in the preservation of macroeconomic stability. Republic of Macedonia as a candidate country, is typical case of a small and open economy. We know that the fiscal policy is destined to play a key role in economic development perspective. This is not simply the fact that the fiscal position is an important determinant of the macroeconomic stability. An essential argument is that the ability of such economies to generate revenues remains highly limited. Income taxes represent the most important channel of generation of the revenues in the Republic of Macedonia. These taxes affect the economic development of the state and also provide financial resources by which the state makes filling of public needs and performs its functions. As fiscal policy instrument it relates directly to public spending because revenues generated by taxes, the state itself puts them in function to create public goods. In most of the cases, it's believed that taxes are reflected in the economic performance and can slow down the growth of the economy. An increase of tax rates reduces the return on investments, which automatically reduces the tendency for investment after tax income impact of other factors related to economic development. Many authors first study the public spending then the public revenues, because first it must set the public expenditure which public needs will be funded and then to appoint the public revenues as a funding source of public expenditure. So public expenditures are spending money that the state make and other entities to fulfill the needs of collective and public interest. Therefore submitted the researching question do they have negative or positive effects on economic growth, revenue and government expenditure? To answer the research question hypotheses assigned - H1: Public revenues have a negative effect on economic growth in the Republic of Macedonia. Finding of hypotheses validity we will apply the method of small squares respectively the analysis of regression. Therefore through the regression analysis concerned hypothesis will be confirmed or dismissed.

Review of the literature

In this section, we will analyze the impact of fiscal policy by analyzing only some of the most important indicators such as: the overall revenues and governmental expenditures. We will show how these indicators impact on the country's economic viability. Also we will analyze the opinions of different authors who have studied in relation to fiscal policy, as the theoretical and empirical aspects, and what arguments and analyzes they have used to reach the conclusion that these indicators have a positive or negative impact in the economic growth of different countries. Discussions related to the effects of fiscal policy are numerous and ongoing, because the development of appropriate fiscal instruments may lead to stable and continued economic growth of one country. So, the purpose of all this analysis will be the connectivity between fiscal policy and economic

sustainability for a small place with open and developing economy as Macedonia. Once it is of interest to understand how public activity has led to stimulate economic growth through taxation and expenditures policies.

A study done by Masood, Sohaid and Syed on economic activities in Pakistan was reviewed by real GDP, household consumption and investment, the data were used for empirical analysis with VAR model by Johansen for the period 1973- 2010. And have found negative effects of tax to gross domestic product for real GDP, the negative effects of tax on investment income and negative effects of the sales tax on household consumption expenditure. And finally, we concluded that the current level of taxation in Pakistan needs to be reviewed carefully as this has a negative impact on economic activity in Pakistan.

Rother (2004) in his study using data for 15 OECD countries in recent years comes to the conclusion that fiscal policy volatility has significantly impacted on the level of inflation volatility with a negative effect on the production level. The author uses GARCH model, and the results show that the change of fiscal policy has obvious negative effects of inflation on the production level. The study by Blanchard (1990) presents a model where the initial level of public debt has an important role on the effects of fiscal policy. Example: Increase of taxes will have two effects: First, tax increases passes a tax burden from future generations to present and reduces current private consumption. Second, an increase of taxes today will avoid an increase of tax in the future, and will reduce the long-term loss of income.

De la Fuente (1997) also studies which analyzes public expenditures and taxation on economic growth by taking data from OECD countries. An empirical results show that fiscal policy affects growth through several channels. Firstly, the government contributes directly to the factors of accumulation through public investments in infrastructure and other assets. Second, public expenditures are collected from private investment, reducing available incomes. Third, does not suggest that taxes and public expenditures generate significant costs of efficiency which should be taken into consideration when we take budgetary decisions. Arnold J. (2008) in a study in OECD countries, shows the correlation between tax structure and economic growth, by analyzing the period from 1971 to 2004, using a model specified with Error-Correction. He comes in conclusion that tax revenues have generally negative correlation versus economic growth. Especially consumption tax and income tax have a larger impact in lowering economic rate. From tax income is the tax on corporations income who have a negative effect on GDP, while property tax and personal tax affect less the economic rate reduction.

According to Shijak and Gjokuta in the scientific work that examines the effects of fiscal policy on economic growth in Albania for the period 1998-2006, based on the Keneller (1999) model that the increase of tax burden weakens the incentives to invest, by reducing the economic growth, conclude that the overall rate of economic growth is negatively affected by public revenues in Albania. They concluded that the taxes have higher negative effects, and that this negative impact is mainly due to the expansion effects through distorting tax policies, which reflects to the behavior of counter-cyclical fiscal policy through increased capital expenditures and payroll. This shows that the increase of expenditures capital has had a positive impact on economic growth, and also has mitigate the negative effects that the global financial and economic crisis had in Albania. A study done by Anastassiou and Drirsaki (2005), tells us about the relation between tax revenue and economic growth rate for Greece, starting from the fact that tax cuts stimulate economic growth and the relation between tax revenue and economic growth. Analyzing

the years from 1965 to 2002, through econometric analysis VAR Model, have reached the conclusion that there is no relation between tax revenue and economic growth, and that the last one does not have an impact in this direction in long term. Meanwhile, Burnside and Dollar says that external borrowing for productive investments creates macroeconomic stability where external debt has a positive effect on domestic savings, investments and economic growth. Using small squares method, which means that foreign savings meet domestic savings for investment requirement care, However, Blavy (2006) shows that the debt reduces economic growth after growing stock including its internal component may discourage private investment due to expectations of higher taxes in the future. The study expands on previous researches with evaluation of the impact of public debt on growth and productivity, he follows the model proposed by Pattillo (2004). While Devarajan and Vinay (1993), used data for 14 developed countries for a period 1970-1990. They took various types of expenditures (education, health, transport, etc.) as explanatory variables and found that transportation, health and communication have positive effects, while education and defense have a negative impact on economic growth of the country. Even the author Widmalm (2001) in an analysis of 23 OECD countries for the period 1965-1990, by not relying on any argument that there is a correlation between tax rates and economic growth, he concludes and support the idea that taxes have a negative effect on economic growth. Also through econometric analysis using UAE model, concludes that long-term taxes are negatively correlated with economic growth and progressive taxes result with higher negative effects in correlation with real GDP, than the flat tax.

Almost all empirical works that analyze the effect of expenditures and income in economic stability, can conclude that empirical analysis that were made are different, where some of them show that there is not any correlation between expenditures, incomes and economic growth, while some of them have opposing opinions. By this work we will try somehow to contribute empirically to analyze expenses, incomes as fiscal policy indicators and their impact on economic stability in Macedonia's case.

Empirical analysis

After we have done the review of the literature with different opinions of the authors about fiscal policy on economic sustainability, now through an econometric model we will test the impact of revenues and governmental expenditures in the economy of the Republic of Macedonia. As a start we will do the specification of the econometric model and estimation method and after specification of the model, we will analyze the data in the empirical work and we will do econometric model calculation and implementation of the outcome. Also, in this part we will analyze and comment on the assumptions that we have given above and their validity.

Econometric model specification and evaluation of small squares (OLS)

Using the method of simple linear regression and through the application of the method of small squares (OLS), we will test the effects of income and public expenditures in GDP in the Republic of Macedonia.

Therefore, the specification of tredeminzional linear regression model is as follows:

$$Y = B_1 + B_2 X_1 + B_3 + u_i$$

Y - represents the dependent variable (the variable that is explained, predicted etc.), in our case pf research as the dependent variable is expenditure and GDP (gross domestic product).

X – represents the independent variable (regresor, which predicts etc.), in our case as the independent variable is income.

B1, B2 and **B3** are called parameters or evaluation ratios (where **B1** is the parameter of constant, while **B2** and **B3** are evaluation parameters of independent variable)

uiis stochastic variable or erorr term, contains all the factors or variables that are not foreseen in the model and is random variable without observation with positive and negative values.

Evaluation of small squares (OLS)

This model is derived from the assumption of error term, assumed that e≈N (0, σ2). In other words, knowing the value of the error term which in the model does not explain anything about the other variables (distribution of error term is independent from other variables), and the error term observations are not correlated with each other. In principle only **e** is normally distributed where E (e) = 0 (error term has an average 0) and a constant change.

And for a given X there is no series correlation between observations, for more the error terms are not heteroskedastic. In another words individual observations over time are different individual observations and such approach may be justified in cases where the sample size from indirect data is very small.

However, ignoring the panel structure of the data assuming that the error term is independent and identically distributed, leads to results that are not appropriate in many models. After the concerns raised by classic linear regression model, effective assessment can be achieved using the method of small squares (OLS).

Despite numerous prejudices, similar to other studies, also in this study the collected data will be evaluated by small squares (OLS) in our empirical analysis.

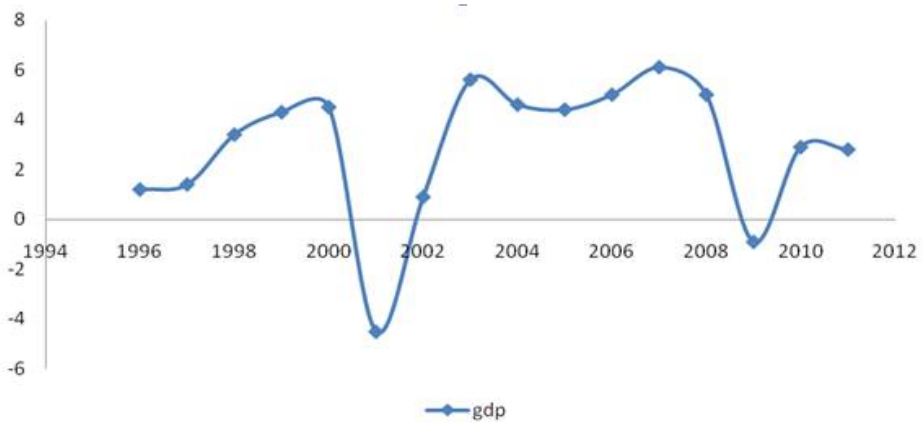
The data of the econometric model

Public expenditure data are taken from the Central Bank and the research was done in the period from 2004 to 2013. By analyzing the data we see an increase in spending from year to year, seeing that from 2011 the overall costs as part of the Gross Domestic Product (GDP) grew from 31% to 34% in 2012 while the primary government budget deficit grew 3.1% of Gross Domestic Product (GDP) in 2012, compared with 1.7% in 2011.

All these data on incomes were received from the Department of Public Revenue. The research was done from 2004 to 2013, unlike those mentioned above, during this period income had also increased and reducted from year to year. Data on GDP are the same period with expenses and incomes, while the data are taken from the National Bank of the Republic of Macedonia.

The variables that we used in the model are: GDP, expenditure and incomes.

Figure 1. Chart of Macedonia's GDP



Source: World Bank

Calculation of the econometric model and interpretation of the results

Now we would assess econometric model in the impact of expenditures and revenue as well as the GDP in the Republic of Macedonia. Through the analysis of regression we aim to examine the validity of the two hypotheses set out at the beginning of this paper. To transform all the variables in relative terms we should put them into log logarithm. The model are included two variables, which are in depended exogenous variables, expenses and incomes, and depended variables, represent, in our case the GDP is concrete. To make its calculation, in the following we will specify the model as multiple and logarithmic regression.

The econometric model we can write as:

1n (GDPi) + B1 + B2 1n *(income*) + B3 1n (*gov.spend*) + u

Y represents GDP or regresant; B1 coefficient of constanta; B2, B3, B4- partial valuation coefficients of income and expenses -regresors and u- standard error.The calculation of coefficients of the evaluation in the function equation of the regression sample we do it through STATA_12 software. With their selection we gain evaluators B1, B2 and B3, which are known as small squares assessors.

After calculating the coefficients of assessment B1, B2 and B3, we may rewrite the equation threedimensional regression, making replacements of corresponding values as follows:

ln GDP = 0.35 +0.18 ln income+0.94 ln gov.spend.

(se)	1.162	0.109	0.065
(t)	0.31	1.68	14.33

Regarding the impact of income in GDP of the Republic of Macedonia, the results show that the change of income for 1% will cause GDP growth 0.18%. At this point we have made a t-test which is 1.68 and it's bigger than 0.05, so we can confirm that the coefficient has powerful indication.So by this result we prove the hypothesis of the paper submitted at the beginning which says H1: public revenues affect negatively in the economic growth in Republic of Macedonia.From the results of the regression, we found that the eventual change of expenses for 1% will dramatically reduce GDP by 0.9%.

Since the t-test shows that t = 14:33, is bigger than 0.05, thus I conclude that the test has indicator, since it is greater than 0.05.From the results above, we have the same opinion with the majority of studies conducted for different countries, Widmalm F. (2001), Arnold J. (2008) Anastassiou and Drirsaki C. (2005).Although revenues in Macedonia represent the main channel of public revenues respectively the most influential voice of revenue of the state budget, for real sector they represent the certain tax burden or a tax which obliges this sector to share a part of revenue and making various payments tax. Having acknowledged the financial sector of Macedonia non profitability production of this government sector i.e. often needed instead of incentives the businesses, it imposes more taxes.

Conclusions

The main goal of this research is to analyze the impact of expenditures and revenues in a certain periods of the year 2004 to 2013. The research includes data on GDP, public spending and revenues. From the results obtained from the assessed model we understand that the income affected negatively in the economic sustainability and we support our formulated hypothesis that public income negatively affected in the economic raising of the Republic of Macedonia. Many authors first are studying about public spending then about public revenues, because first is needed to set public spending which public needs will be funded then public revenues must appointed as a funding source of public spending. Regarding to the impact of income in GDP of the Republic of Macedonia, the results show that the change of income for 1% will cause GDP growth for 0.18%. In this point we did the t-test which is 1.68 and it's bigger than 0.05, so we can conclude that coefficient has powerful indicator. It should be stressed that like any other research, this study also has its limitations because we have not included some other important variables such as public debt, inflation and the others. We think that in future researches, variables would be of particular importance to analyze these variables above.

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Appendix

Data model table

Year	GDP	Income	Government spending
2004	280,786	46,161	55,034
2005	308,447	49,107	56,754
2006	334,804	51,875	60,599
2007	372,889	60,333	63,764
2008	414,890	67,006	75,509

2009	414,622	62,108	79,192
2010	437,296	50,257	83,523
2011	464,187	55,624	84,946
2012	466,703	51,676	86,340
2013	499,599	54,509	93,425

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