

THE INFLUENCE OF TAXATION ON ECONOMIC GROWTH. ECONOMETRIC EVIDENCE FROM ROMANIA

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Abstract:

One of the most frequently discussed issues in economics is how tax rates affect economic growth. A number of studies have examined the effects of taxes on economic growth, however none of them concluded that through the application of higher taxes, economic growth occurs, but on the contrary, they emphasized the negative effects of taxation on growth.

This paper is divided into two parts. The first part presents the theoretical studies on the impact of taxation on economic growth, while the second aims to test the influence of public revenues, especially distortionary and nondistortionary revenues, on growth in Romania. The second part contains a review of the evolution and structure of public revenues of Romanian economy and the econometric tests on the effects of these types of income on growth during 2006-2012, using multiple linear regression.

Keywords: *fiscal policy, growth, taxation, public revenues*

JEL Classification: E62, H72

1. Introduction

Interest on the influence of taxation on economic growth has always existed among researchers. However, their views on the effects of taxes on economic growth are split. Although opinions are divided, most researchers consider that a high levels of taxation harms economic growth. Below are some specific studies which had as complex theme the relationship between public revenues and growth.

Cardia and others (2003) analyzed the impact of changes in income tax rates on the number of hours worked in several countries, including Canada and the United States. They found that a decrease of 10 percentage points in marginal tax rates contribute to increase of weekly hours worked by 4.5% (in Germany) and 18% (the United States). Number of hours worked per week increased by 9.9% in Canada and in United States the range of increase was between 12.8% and 18%.

Christina and David Romer (2010) analyzed the impact of changes in the level of taxation on economic growth. The authors investigated the effects of tax reforms on GDP in the United States. The study found that such tax changes had significant effects on GDP, an increase in the tax to 1% of GDP led to lower production (measured using real GDP) by 2% - 3%.

Brașoveanu and Obreja (2008) and analyzed the relationship between taxation and growth for Romanian economy during 1990-2007 by applying regression and they concluded that the effects of distortionary and nondistortionary taxes on growth are negative.

Burgess and Stern (1993) argue that the structure of taxation in developing countries differs from that of developed countries. For developing countries, about two-thirds of the tax revenue comes from indirect taxes, while for developed countries two-thirds come from direct taxes. They suggest that the tax structure may change over time to maximize the rate of economic growth. Another important finding is that in developing countries there was a relatively weak but significant correlation between tax rate and GDP per capita, but no significant relationship for industrial countries.

Helms (1985) examined the effects of increasing state and local taxes. He argues that a tax increase may stimulate growth if they are used to finance development costs. Helms noted

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that taxes have a negative and significant impact on economic growth, Helms regression coefficient indicating that the tax rate may be positive if tax revenues are used to finance production costs and may be negative if the tax revenues are used to finance social transfers.

Engen and Skinner (1999) have suggested five possible mechanisms by which the taxes may affect the growth, taking into account the decomposition rate of growth based on the contribution factors of production:

(1) investment rate may be inhibited by high taxes, by taxing personal and corporate income as well as taxes on capital gains or reduced deductibility of depreciation;

(2) taxes reduce labor supply by influencing labor-leisure choice for leisure or determination to achieve qualification, training, education;

(3) fiscal policy can affect productivity growth by discouraging effect on research and development expenses, which can boost share capital and labor productivity.

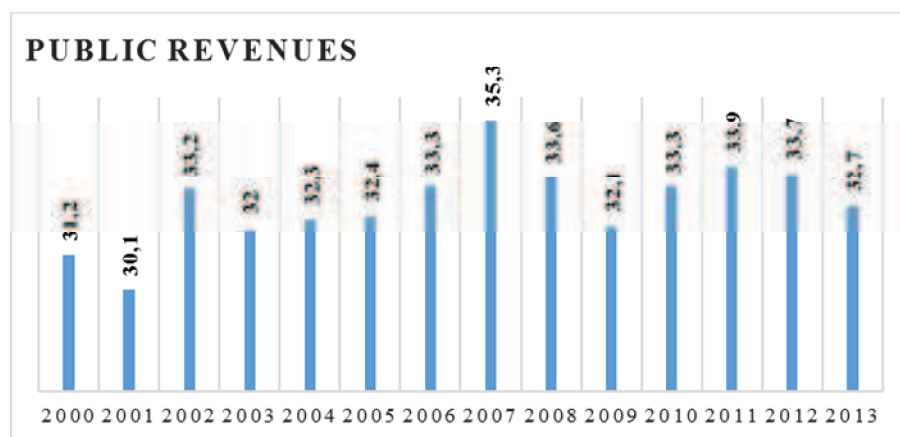
(4) taxes can influence the marginal productivity of capital by targeting investments in a high tax area to another with lower taxes, which have a lower productivity

(5) high taxes on labor supply can distort the efficient use of human capital, discouraging workers to work in areas with high productivity, through high tax burden.

2. Radiography of public revenues in Romania during 2000 – 2013

In the market economy, an important part returns to revenue. A change in share and their structure has consequences on consumption, saving, investment, and the gross domestic product. Therefore, most countries, but particularly developing countries, focus on the constitution of public revenues.

The evolution of Romanian public revenues for period 2000-2013, is presented below (graphic number 1).



Graph number 1. Evolution 2000-2013 public revenues

Source: Eurostat

In the period under review, public revenues fluctuated around 29-33% of GDP. This means that governments have trained for public, almost a third of the sources generated in the economy. For the period analyzed, the maximum was reached in 2011, when revenues were 32.7% of GDP.

In 2013, the growth rate of public Projected Revenues WAS at half the annual growth, budget Revenues Partially mirrored the rise of the economy. This year, Revenues cam to 32% of GDP, highlighting one of the more "gray" years in terms of budget collection in the last decade.

The structure of public revenues restores a more clear and complete image on the distribution of the tax burden in Romania. Below are presented the main categories of income as a share of GDP during 2000-2013 (table number 1).

Table number 1. Structure of public revenues during 2000-2013

%GDP	Income tax	Tax on income and wage	VAT	Excise Duties	Insurance contrib.	Nonfiscal revenues	Amounts from EU
2000	2,5	3,4	6,3	2,6	10,8	1,9	0
2001	1,9	3,2	6,3	2,3	10,7	2,1	0
2002	2	2,8	6,9	2,1	10,7	1,9	0
2003	2,3	2,8	7,2	3,2	9,8	1,7	0
2004	2,6	2,9	6,7	3,2	9,2	2,1	0,7
2005	2,3	2,3	7,8	3,2	9,4	2,2	0,6
2006	2,4	2,9	8,3	3,2	9,8	2,2	1,3
2007	2,7	3,7	8	3,2	9,9	2,1	1
2008	2,8	3,6	8	2,6	9,4	3,2	1,6
2009	2,2	3,8	7	3,2	9,7	3,4	0,4
2010	2	3,5	7,6	3,4	8,8	3,9	1,7
2011	1,8	3,4	8,74	3,4	9	3,5	1,6
2012	1,9	3,6	8,59	3,5	8,8	3,1	1,4
2013	1,74	3,7	8,28	3,4	8,69	2,8	2,1

Source: mfinante.ro

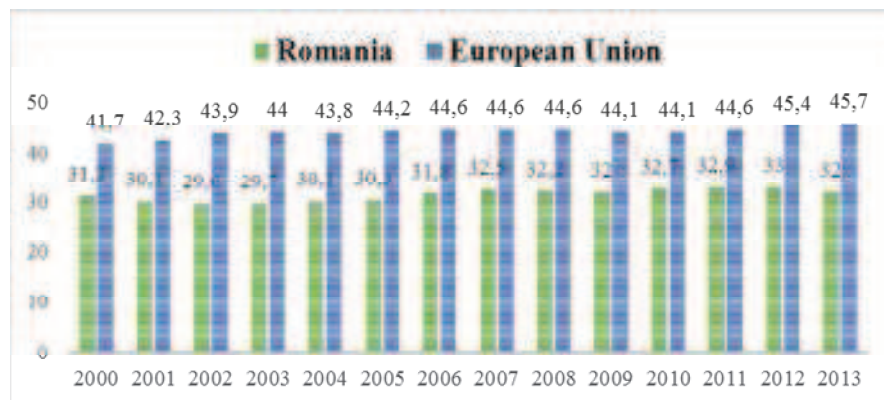
As it can be seen from the table above, in the structure of public revenues in Romania the largest share is held by social security contributions and VAT.

If we analyze the revenues from *direct taxes* it can be said that they have fluctuated during analyzed period. Since 2009, the income tax had a continual downward trend, from 2.2% of GDP to 1.74% in 2013, due to decreasing tax rates related to the tax.

Public revenues from *indirect taxes* are the main source of public income. In the period under review, revenues from these taxes have increased significantly, due to the increase in excise duties and changes in VAT regarding rates applied and the sizing on taxable materials.

Between 2000 -2009, income from social contributions remained around 10.9% of GDP. The big share in GDP can be explained by: (1) increased number of employees in this period, accompanied by increased gross wage; (2) the decrease in contribution rates, achieved gradually, involved reducing the fiscal pressure on both individuals and businesses. Since 2009, revenues decreased due to lower employment levels. During this period, 2009-2013, the unemployment rate increased.

For the analysis to be more extensive and relevant, we considered it would be appropriate to make a comparison of public revenues in Romania with the ones in European Union member states (graph number 2).



Graph number 2. Evolution of budget revenues in Romania and the European Union

Source: Eurostat

The discrepancy between the values recorded in Romania and European ones is significant. Average interval for Romania is 31.43 while the average values for the European Union is 44.11.

According to statistics, our country has one of the lowest shares of revenue in GDP. In 2013 they accounted for only 32% of GDP, meaning 13.7 percentage points of GDP less than the average in the European Union.

There are several reasons why public revenue varies from year to year, as a percentage of GDP. However, in general, the main causes are changes in economic activity (with effects on employment levels, the sale of goods and services) and in tax law (which affects tax rates, tax base, thresholds, exemptions). Economic and financial crisis, along with fiscal policy measures adopted in European countries, had a strong impact on the level and composition of revenues.

3. Testing the impact of taxation on economic growth in Romania

Estimating the influence of public revenues on economic growth is made by determining the regression coefficients, where changes in dependent variable, real GDP growth rate, are expressed by distortionary, non-distortionary and other incomes.

To determine the effect and intensity of the relationship between public revenues and economic growth in Romania, were used quarterly data collected from Eurostat, International Monetary Fund and the Ministry of Public Finances websites, during 2006-2013. Using a series of annual data would have questioned the effectiveness and significance of statistical tests, ie, it is not possible to obtain reliable results.

To better highlight the effects of public revenues on economic growth, revenues were grouped according to the classification made by Barro and Sala-i-Martin, in 1995, given the theoretical impact that they have on the economy.

Thus, distortionary revenues includes income tax, wage tax, social security contributions, non-distortionary revenue category includes value added tax and excise duties and other revenue category consists of other direct taxes, customs duties and other indirect taxes, non-tax revenues, and capital income.

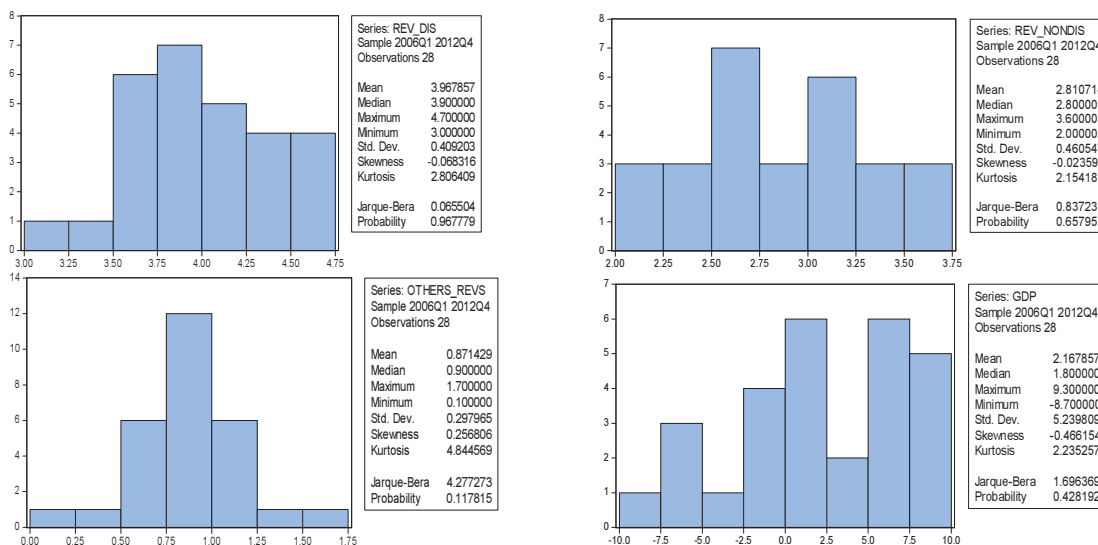
Table number 3. Correlation matrix of the variables analyzed for the period 2006-2013

	GDP	REV_DIS	REV_NONDIS	OTHER_REV
GDP	1.000000	0.103833	0.141962	-0.337466
REV_DIS	0.103833	1.000000	0.318305	0.080280
REV_NONDIS	0.141962	0.318305	1.000000	0.199338
OTHER_REV	-0.337466	0.080280	0.199338	1.000000

Source: own processing using Eviews

Analyzing the data in the table above, it appears that between distortionary and non-distortionary revenues and growth there is a positive causal link, while the link between other income and economic growth is negative (table number 3).

The following are statistical descriptions of the four variables considered in the econometric model (graph number 3).

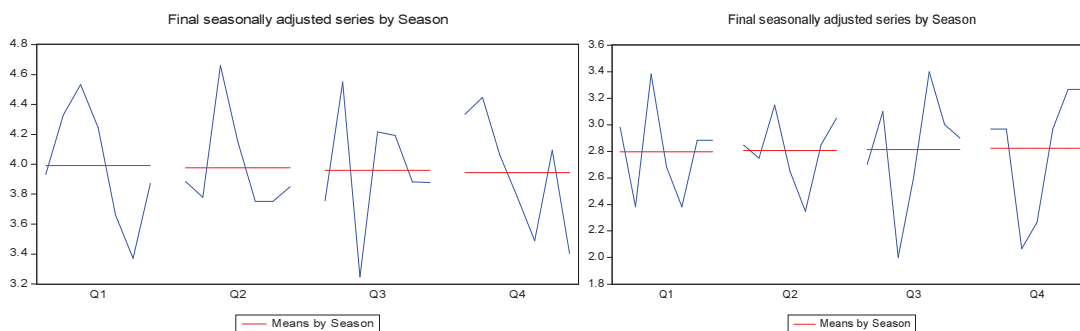


Graph number 3. Histogram and descriptive statistics of variables

Source: own processing using Eviews

As it can be seen from the graph number 3, none of these 4 variables has a normal distribution. Distortionary income, non-distortionary income and GDP growth rate have a platykurtic distribution as Kurtosis is less than 3. Other income category has a leptokurtic distribution, having a height greater than a normal distribution.

In order to estimate an econometric model valid it is necessary that the data series show no seasonality. Seasonality will be analyzed using graphs of Eviews. Of the four sets of data, distortionary and non-distortionary revenues are affected by seasonality. To remove seasonality, we applied function Tramo / Seats from Eviews program. The following are the graphs for the two income categories seasonally adjusted (graph number 4).



Graph number 4. Distortionary and non-distortionary revenues series seasonally adjusted

Source: own processing using Eviews

Using the new data, seasonally adjusted, we estimate the econometric model to determine the influence of three types of public revenues on growth. The results are presented in table below.

Table number 3. Regression results of economic growth based on distortionary, non-distortionary and other revenues

Independent variable	Real GDP growth rate	Prob.
Free period (c)	-3,8887	0,7431
Coefficient of SA distortionary tax % GDP	1,08505	0,0339
Coefficient of SA non-distortionary taxes % GDP	2,8113	0,0297
Coefficient of other income % GDP	-6,1062	0,1763
R ²	0,6617	
Number of observations	32	

Source: own processing using Eviews

From this analysis it can be seen that the overall relevance of the model is quite high, $R^2 = 0.6617$, which explains that 68% the fluctuation of GDP annual growth rate (table number 3).

4. Conclusions

From these 3 categories of revenue, just distortionary and non-distortionary revenues have a significant impact, the probability for these two variables are below the threshold of significance of 5%. As specified in the economic literature, the category of other revenues includes income that have no significant impact on economic growth. Therefore, our econometric model reinforces this assertion, the probability of this variable is 17.63%, well above the 5% significance, so these revenues are not considered during the model.

Distortionary revenues for Romania did not have the expected effect on economic growth. A 1% increase in the share of these revenues in the gross domestic product will determinate an increase by approximately 1.08% of annual real GDP growth rate. This affirmation contradicts specialized literature, that distortionary revenues influence in a negative way economic growth.

This time, non distortionary income confirms economic theory and have a positive impact on economic growth. Thus, a 1% increase of these revenues in GDP share will cause a decrease of approximately 2.51% annual real GDP growth rate.

This model is valid only if are fulfilled the conditions of the assumptions of normality of errors, homoskedasticity hypothesis and autocorrelation of errors hypothesis. The first assumption applied is the assumption of normality of errors and involves using Jarque-Bera test. The probability associated with the test of relevance is more than 5%, so the null hypothesis is accepted, so the errors are normally distributed.

The second hypothesis, homoskedasticity assumption has an important one. The probability associated with the White test is greater than 5%, threshold of relevance. The null hypothesis can not be rejected, there is heteroskedasticity. Last test applied is Breusch-Godfrey in order to test the hypothesis of autocorrelation of errors. The null hypothesis of non-existence of autocorrelation is accepted, as probability associated to the test is higher than threshold of relevance. Finally, the model is valid, both revenues categories, respectively, distortionary and non-distortionary having a significant positive influence on economic growth.

5. References

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