

PUBLIC DEBT CRISIS AND THE "BLACK HOLES" FROM THE NATIONAL BUDGET OF ROMANIA - A LINEAR ANALYSIS

Trandafir Adina

*Department of Management Financial Accounting,
Spiru Haret University, Constanta, Romania*

Email trandafir.adina@yahoo.co.uk

Abstract

On the background of the global financial downturn the problem of public debt has accentuated in many states, the worst situation at EU level being recorded in Greece. The situation in Greece seriously affects all EU states, especially those in the euro area. Given these issues and the measures imposed by the international forums and the European ones, Romania must adopt measures to limit public spending those considered true "black holes" that drain public money. This article analyzes, using a linear regression model, which of the categories of public spending leads to deepening public debt of Romania. The cost of external borrowing is too high, therefore should allocate more money to sectors that increase investment and to economic recovery of our country. Unfortunately, this phenomenon, found in the literature and as the competition between states through public expenditure has direct repercussions in the social area (reducing public sector wages, is just one example of anti-social measures adopted by the authorities of our country). It is therefore necessary to determine which black holes Romanian budget system to limit the growth of borrowing and boost the national economy.

Keywords: *public debt, sovereign debt, public spending, the global financial crisis.*

1. Introduction

Debt crisis is raging in the European Union, and especially in the euro zone. Some specialists consider that this crisis is totally wrong understood. Guilty, they believe, is the private banking sector, wasteful, which put pressure on public finances (De Grauwe, Paul, 2010). Increased debt has reached crisis point in the EU, because the euro zone is a monetary union without a political union.

EU rules require states to maintain in the euro area (somewhat) a healthy fiscal position, but states decide what rules and how they should be implemented. There is no centralized third-part to implement these rules, rather than sovereign states. It is one of the main causes leading to the collapse of the Union: national sovereignty in tax policy. This shows that public options are very powerful forces in European parliamentary systems, because the tendency to spend now and pay later is amplified in social democracies. It is fair to say that EU fiscal rules are just a show that nobody takes him seriously. If EU officials wanted indeed to impose fiscal discipline, fiscal rules should be adopted to limit the true behavior of governments, such as tax and expenditure limits as in Colorado's Taxpayers Bill of Rights. The Old-Time Fiscal Religion is long gone in Europe. The major problem of the EU, is that consciousness tax consequences and bad government policies can not be avoided, and Greece is the first country to bear the consequences.

Romania, as EU member state and on the background of global financial crisis and bad government policies, it was forced to take measures to limit public spending in order not to end up with Greece. These measures had strong repercussions in the social field. This article is structured in three parts, aims to analyze, using a simple linear regression, which are really spending would be limited to avoid deepening debt crisis in Romania.

The first part, entitled, "Causes of sovereign debt crisis in the EU", contains a brief overview of the debt situation in Member States, and an overview of government debt crisis in the whole Union.

The second section, "Debt crisis in Romania and" black holes " from the national budget", presents the study mentioned above, the study which aims to show that unnecessary for measures with repercussions on budgetary discipline and social order to avoid a catastrophic situation in Romania in terms of public debt.

And the third part presents the conclusions of the entire article and of the study described above.

2. Causes of sovereign debt crisis in the EU

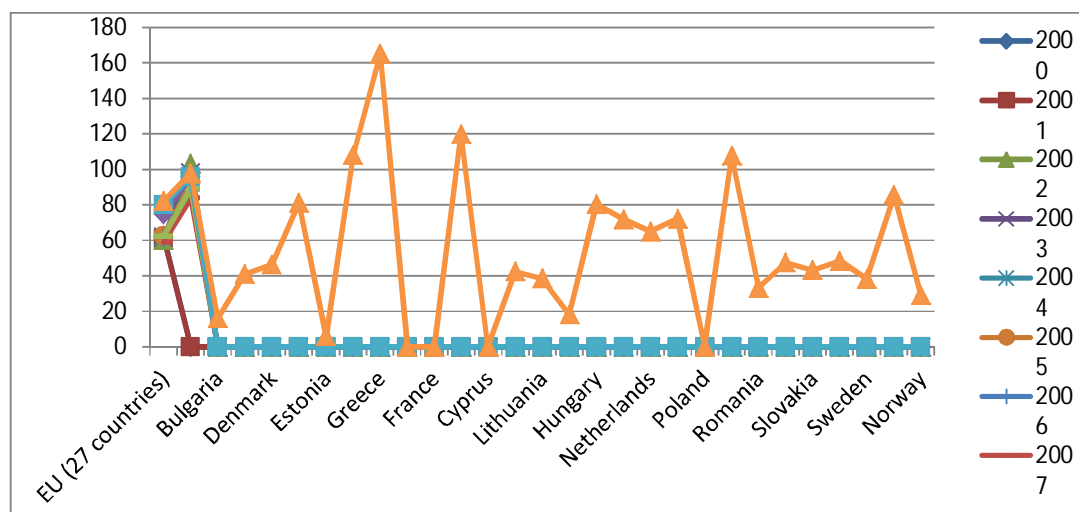
Debt crisis is raging in the euro area. However, when comparing the evolution of public debt in the euro area with the United States (U.S.) reveals something striking developments in the euro area sovereign debt are worse compared with the U.S..

Before the financial crisis started in 2007, both rates have converged debt, namely in the euro area public debt ratio tends to fall while U.S. government debt ratio tended to increase. Since the beginning of the financial crisis has been a significant increase in public debt faster in U.S. than in the euro area. In 2010, U.S. public debt ratio was 10 percentage points higher than in the euro area.

Considering these aspects could certainly conclude that if a country is likely to be hit by a sovereign debt crisis, this should be the United States, not the euro area. However, the euro area is hit by the crisis. Why?

The answer comes from the fact that the debt to GDP in the euro area average hides large differences between countries and the euro area has no mechanism to address these differences. In the following I will present, first, the size of these differences.

Fig.1. Evolution of government debt in the Member States and the EU 2000-2011



Source: European Commission, EUROSTAT

The differences are very large, as can be seen from the chart above. Some countries, like Greece, Portugal and Italy have very high levels of debt, others, such as Ireland and the UK public debt levels, which are growing rapidly. All these countries share register of government debt exceeding the value of 100%. This situation has raised concerns about its capacity to cope with debt in an environment of low economic growth.

Given the overall strength of public finances in the euro area would have been possible for Greece to face the problem of over-indebtedness, which represents only 2% of euro area GDP. However, this is not possible. The reason is that there is no mechanism to "internalize" the problem. Therefore, Greek sovereign debt crisis triggered a chain reaction of contagious other countries.

The contrast with the United States is strong. Deficit and surplus regions are, also in the U.S.. These differences are, but considerably mitigated by the fact that centralized federal budget surpluses automatically redistributed to poor regions, without anyone being affected (Sachs & Sala-i-Martin, 1989; Von Hagen, 1991; Asdrubali et al., 1996).

The heart of this problem is that the euro is a monetary union without political union. In a centralized political union is a budget that provides a mechanism for automatically solidarity in times of crisis. This is absent in the euro area (Asdrubali et al., 1996; Mélitz & Zumer, 1999; De Grauwe, 2009).

Transfers automatic adjustment does not help Member States, but they reduce the need for state deficit or the need for countries to borrow on capital markets. Thus, the existence of a centralized budget system automatically creates solidarity (insurance), mechanism for countries to rely on resources from other countries when faced with a negative shock. Many economists have pointed out before, that such an insurance mechanism is essential for smooth functioning of monetary union (to ensure the optimality of a monetary union). This mechanism seems to be fully justified today.

An explicit fiscal union is the only way to create a mechanism to ensure a monetary union. It can also be organized with the aid of a monetary fund that obtain resources from its members or redistribute their funds in times of crisis (and a sufficient compliance). Such a proposal was recently made by Gros and Mayer (2010).

The design of the euro area, completely eliminating any form of auto insurance mechanism. The main reason was that, like any insurance mechanism, exist the risk of moral hazard. This is the risk that governments will exploit it, in case of an insurance mechanism, create excessive debts and deficits. The need to avoid moral hazard was the main reason for the euro area was created without any assurance mechanism.

Although it is understandable that some Member States were not willing to automatically transfer resources to deficit countries, but is less understandable that so many have lived with the illusion that monetary union could function smoothly under these conditions . The current crisis shows that even if there countries aimed at providing support for others, events can force them to do so. Similarly, governments are not obliged to save the banks, but when the banking crisis broke out, were forced to do. Also, at some point a monetary union can require Member States to show solidarity, even if they like it or not. The problem with the euro area is that when events require countries to be united, there is no mechanism to do so without problems.

3. Debt crisis in Romania and " black holes " from the national budget

3.1. Methodology

In the following I will present the impact of various categories of expenditure from the national budget of Romania, structured according to functional classification, on the government debt in the period 2000-2011.

The impact of national budget spending on government debt can be analyzed using multiple linear correlation between macroeconomic variables above. Using regression techniques and Granger causality in the following is presented impacts previously mentioned, using the software package Eviews and variables:

Expenditure with general public services (denoted GSP), defense , order and national security expenditure (marked Aosn), Education spending (denoted Education), health expenditure (denoted Health), culture expenditure (denoted Culture); social security and welfare expenditure (denoted Assoc), public development spending (denoted SDP) and economic actions expenditure (marked AE), all shares representing the percent in GDP in the period under review, as independent variables;

Government public debt (denoted Dat_guv), representing its share in GDP as the dependent variable;

In this analysis, the independent variables are the different categories of public expenditure, classified according to functional criteria in the consolidated national budget and government debt is the dependent variable in the analyzed period. As seen from the correlation matrix (Table no. 3) between certain variables taken into account, is a fairly strong positive relationship, between other variables have a weaker relationship, although positive (such as the relationship between government debt and service and public development expenditure).

To estimate the correlation between government debt and other indicators mentioned above, will use the regression technique, using the method of least squares to determine the parameters of

regression equations for individual variables:

$$Y = \alpha + \beta X_1 + \varepsilon X_2$$

Where,

Y - is the dependent variable

X1, X2 - are independent variables

α , β , ε - are the parameters of the equation.

3.2. The Analysis Results

The table below illustrates the descriptive statistics of variables used in the analysis:

Table 1 Descriptive statistics of variables

Sample: 2000 2011									
	SDP	AOSN	EDUCATION	HEALTH	CULTURE	ASSOC	GSP	AE	DAT_GUV
Mean	0.435	3.07	1.127	0.463	0.338	2.674	2.58	3.38	21.26
Median	0.423	3.205	0.904	0.474	0.348	2.826	1.39	3.388	22
Maximum	0.785	3.886	2.799	0.514	0.47	4.275	7.27	4.459	33.3
Minimum	0.202	1.899	0.499	0.342	0.18	1.194	0.558	1.653	12.4
Std. Dev.	0.143	0.578	0.634	0.051	0.084	1.116	2.343	0.825	6.86
Skewness	0.952	-0.571	1.567	-0.993	-0.467	0.025	1.04	-0.867	0.211
Kurtosis	4.3	2.615	5.023	3.376	2.445	1.547	2.64	3.062	2.005
Jarque-Bera	2.66	0.726	6.959	2.04	0.591	1.056	2.229	1.506	0.584
Probability	0.264	0.695	0.03	0.359	0.744	0.589	0.327	0.47	0.746
Sum	5.226	36.845	13.529	5.56	4.065	32.097	30.97	40.567	255.1
Sum Sq. Dev.	0.227	3.675	4.424	0.029	0.079	13.705	60.396	7.495	518.6
Observations	12	12	12	12	12	12	12	12	12

Source: Own calculations performed using EViews program of information taken from the site of the Romanian National Institute of Statistics (www.insse.ro).

To highlight the association of variables used in econometric calculation, I calculated the covariance matrix and the correlations between variables.

Table No. 2 Covariance matrix of the variables

	DAT_GUV	GSP	AOSN	EDUCATION	HEALTH	ASSOC	SDP	AE
DAT_GUV	43.21576	7.946	-2.07	-1.196	-0.1	-0.624	-0	0.167
GSP	7.945879	5.033	0.005	-0.07	-0	1.7839	0.16	1.183
AOSN	2.072014	0.005	0.306	0.2589	0.02	0.2486	0.03	0.272
EDUCATION	1.196376	-0.07	0.259	0.3687	0.01	0.0913	0.02	0.13
HEALTH	0.072919	0.012	0.016	0.0107	0	0.0049	0	0.019
ASSOC	0.623705	1.784	0.249	0.0913	0	1.1421	0.1	0.655
SDP	0.035521	0.163	0.033	0.0175	0	0.1017	0.02	0.082
AE	0.166509	1.183	0.272	0.1304	0.02	0.6547	0.08	0.625

Source: Own calculations performed using EViews program.

Table 3 Correlation matrix of variables

	SDP	AOSN	EDUCATION	HEALTH	CULTURE	ASSOC	GSP	AE	DAT_GUV
SDP	1	0.439	0.209	0.2509	0.721	0.69171	0.53	0.7541	-0.04
AOSN	0.439	1	0.77	0.57449	0.804	0.42041	0	0.622	-0.57
EDUCATION	0.209	0.77	1	0.35433	0.684	0.14066	-0.05	0.2718	-0.3
HEALTH	0.251	0.5745	0.354	1	0.513	0.09179	-0.11	0.4831	-0.22
CULTURE	0.722	0.8048	0.684	0.51374	1	0.71414	0.43	0.8282	-0.22
ASSOC	0.692	0.4204	0.14	0.09179	0.714	1	0.74	0.7751	-0.09
GSP	0.529	0.0041	-0.051	-0.111	0.43	0.74403	1	0.667	0.539
AE	0.754	0.622	0.271	0.48312	0.828	0.7751	0.66	1	0.032
DAT_GUV	0.039	0.5695	-0.299	-0.2234	-0.21	-0.0888	0.53	0.032	1

Source: Own calculations performed using EViews program.

The correlation between government debt and various categories of public expenditure structured by functional criterion from the general government budget of Romania

Using the method of least squares regression technique and multiple, regression equation between the variables for the period 2000-2011 is:

Table no. 4 The correlation between government debt and various categories of public expenditure

Dependent Variable: DAT_GUV				
Method: Least Squares				
Sample: 2000 2011				
Included observations: 12				
DAT_GUV=C(1)+C(2)*GSP+C(3)*AOSN+C(4)*EDUCATION+C(5) *HEALTH+C(6)*ASSOC+C(7)*SDP+C(8)*AE				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	40.69233	15.77583	2.579409	0.0614
C(2)	1.858309	1.779563	1.044250	0.3553
C(3)	-12.94053	8.570170	-1.509950	0.2056
C(4)	5.132374	4.456476	1.151666	0.3136
C(5)	4.423141	35.56149	0.124380	0.9070
C(6)	-4.202925	2.329251	-1.804411	0.1455
C(7)	-4.185062	12.95662	-0.323006	0.7629
C(8)	6.132558	6.450149	0.950762	0.3956
R-squared	0.900302	Mean dependent var		21.25833
Adjusted R-squared	0.725831	S.D. dependent var		6.866183

S.E. of regression	3.595213	Akaike	5.63180
		info	5
		criterion	
Sum squared resid	51.70224	Schwarz	5.95507
		criterion	6
Log likelihood	-	Durbin-	2.08265
	25.79083	Watson	0
		stat	

Source: Own calculations performed using EViews program.

Based on the previous table, the regression equation between the variables analyzed is:

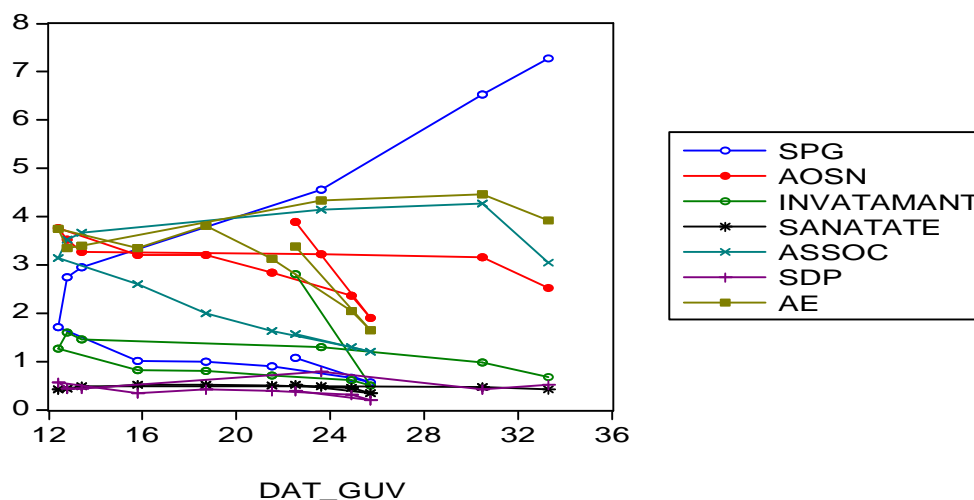
$$\text{DAT_GUV} = 40.69 + 1.86 \cdot \text{GSP} - 12.94 \cdot \text{AOSN} + 5.13 \cdot \text{EDUCATION} + 4.42 \cdot \text{HEALTH} - 4.20 \cdot \text{ASSOC} - 4.19 \cdot \text{SDP} + 6.13 \cdot \text{AE}$$

According to the econometric relationships, correlations between government debt and the independent variables are as follows:

- A direct correlation with expenditure on general public services, meaning that an increase of 1% of their share in GDP will lead to a change in the same direction by 1.86% of government debt to GDP;
- An indirect correlation with expenditures on defense, order and national security, meaning that an increase of 1% of their share in GDP will lead to a change in the opposite of 12.94% of government debt to GDP;
- A direct correlation with spending on education, meaning that an increase of 1% of their share in GDP will lead to a change in the same direction by 5.13% of government debt to GDP;
- A direct correlation with spending on health, meaning that an increase of 1% of their share in GDP will lead to a change in the same direction by 4.42% of government debt to GDP;
- An indirect correlation with spending on health and social protection, meaning that an increase of 1% of their share in GDP will lead to a change in the opposite direction of 4.20% of government debt to GDP;
- An indirect correlation with spending on public services and development, meaning that an increase of 1% of their share in GDP will lead to a change in the opposite direction of 4.19% of government debt to GDP;
- A direct correlation with the cost of economic actions, meaning that an increase of 1% of their share in GDP will lead to a change in the same direction by 6.13% of government debt in GDP.

Graphic, regression equation can be represented as follows:

Figure no. 1. Regression equation between the variables



Source: Own calculations performed using EViews program.

Further I will analyze Granger causality for each pair of these five variables. Granger causality tests (CG) indicates which variables are useful for forecasting other variables. More precisely, we say that X causes Y-Granger if a forecast of Y made on a range of information including history of X is better than a forecast that ignores the history of X. The regression equation given above, is can check that X (independent variable, namely, different categories of expenditure from the national budget), Granger causes Y (dependent variable represented by government debt) by testing whether the parameters are significantly different from zero. It should be emphasized that despite the name, CG can not be interpreted as causality itself (structural), as demonstrated by Cooley and LeRoy (1985). CG is only consistent with (not to be neither necessary nor sufficient for) true causality, that effect must succeed in the long case. More important is that CG is extremely useful in answering questions like: "What variables may signal in advance an increase in variable X?".

Table no. 5. Testing Granger causality between the variables

Pairwise Granger Causality Tests			
Sample: 2000 2011			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
AOSN does not Granger Cause SDP	10	0.42568	0.67497
SDP does not Granger Cause AOSN		3.20908	0.12689

EDUCATION does not Granger Cause SDP	10	1.05004	0.41617
SDP does not Granger Cause EDUCATION		1.06931	0.41057
HEALTH does not Granger Cause SDP	10	0.50944	0.62898
SDP does not Granger Cause HEALTH		0.96785	0.44126
CULTURE does not Granger Cause SDP	10	2.24605	0.20138
SDP does not Granger Cause CULTURE		1.84655	0.25089
ASSOC does not Granger Cause SDP	10	6.90238	0.03645
SDP does not Granger Cause ASSOC		2.58531	0.16946
SPG does not Granger Cause SDP	10	1.30504	0.34991
SDP does not Granger Cause SPG		10.4611	0.01634
AE does not Granger Cause SDP	10	0.14334	0.86990
SDP does not Granger Cause AE		0.10515	0.90213
DAT_GUV does not Granger Cause SDP	10	0.75316	0.51771
SDP does not Granger Cause DAT_GUV		5.6E-05	0.99994
EDUCATION does not Granger Cause AOSN	10	0.98350	0.43633
AOSN does not Granger Cause EDUCATION		1.21900	0.37050
HEALTH does not Granger Cause AOSN	10	0.19579	0.82820
AOSN does not Granger Cause HEALTH		0.26591	0.77670
CULTURE does not Granger Cause AOSN	10	1.57782	0.29429
AOSN does not Granger Cause CULTURE		0.80173	0.49888
ASSOC does not Granger Cause AOSN	10	7.47896	0.03141
AOSN does not Granger Cause ASSOC		0.60189	0.58316
SPG does not Granger Cause AOSN	10	3.91685	0.09474
AOSN does not Granger Cause SPG		0.42498	0.67537
AE does not Granger Cause AOSN	10	1.07213	0.40976
AOSN does not Granger Cause AE		0.07532	0.92848
DAT_GUV does not Granger Cause AOSN	10	3.23038	0.12572

AOSN does not Granger Cause DAT_GUV		0.04949	0.95217
HEALTH does not Granger Cause EDUCATION	10	1.55958	0.29761
EDUCATION does not Granger Cause HEALTH		0.17517	0.84425
CULTURE does not Granger Cause EDUCATION	10	0.75713	0.51613
EDUCATION does not Granger Cause CULTURE		2.02001	0.22751
ASSOC does not Granger Cause EDUCATION	10	2.58905	0.16914
EDUCATION does not Granger Cause ASSOC		3.96849	0.09286
SPG does not Granger Cause EDUCATION	10	2.38139	0.18771
EDUCATION does not Granger Cause SPG		0.71253	0.53424
AE does not Granger Cause EDUCATION	10	1.69250	0.27458
EDUCATION does not Granger Cause AE		0.49205	0.63816
DAT_GUV does not Granger Cause EDUCATION	10	6.66303	0.03888
EDUCATION does not Granger Cause DAT_GUV		0.51461	0.62628

Source: Own calculations performed using EViews program.

P-value test under the null hypothesis that X does not Granger cause Y is rejected for values less than 0.05 of the associated probability. Thus, the null hypothesis is rejected alleged default, so the increased expenditure on public services and development Granger cause expenditure on general public services and expenditure on social security and welfare to Granger cause public expenditure on services and development.

Using regression techniques and Granger causality in analyzing the impact of various categories of general government expenditure on public debt of Romania, during 2000-2011, were found the following: direct correlation between government debt and expenditure on general public services, education, health and economic actions, and between government debt and expenditure on defense, order and national security, those on culture and development services and the public, an indirect correlation. Changing the dependent variable analyzed is explained in 90% of the independent variables change. This result indicates a direct relationship between the variables considered strong enough.

4. Conclusions

The fundamental mistake of euro zone doctrine was that not considered necessary to create a mechanism to ensure a proper functioning of the euro area. Stability and Growth Pact provides the only mechanism for compliance member countries of rules imposed by it. If this happens, i.e. if their states have to comply, the EU considered that there is no need for an automatic mechanism of assurance provided by a centralized budget, or a European Monetary Fund. Thus, one can say that the euro had an elaborate set of rules to prevent crisis situations and decided that, therefore, not need another insurance mechanism. Also, another fundamental mistake in managing sovereign debt crisis in the euro area refers to the fact that when settled, finally, a Disciplinary Board, it was first concerned to punish the guilty, before taking measures to ensure. In this case, no wonder the crisis spread to other countries.

The recent proposals developed by the European Commission, under pressure from the German government, continues to follow the logic of building standards of conduct and ignore the need to act to end the debt crisis in the euro area before applying sanctions. It is clear that this approach is not feasible, in a crisis of sovereign debt.

Structural problem of the euro area is the absence of a sufficiently strong political union in which monetary union should be integrated. Such a political union should ensure that budgetary and economic policies are coordinated to prevent large differences in economic and fiscal results, which appeared in the euro area. It also implies that an automatic mechanism for financial transfers can help solve the financial crisis. Mutual solidarity can not be avoided in a monetary union, even if it involves solidarity with those who make mistakes.

Amid these problems caused by the sovereign debt in the euro area, Romania, as a member state had to adopt certain measures to limit public spending on social impact. The analysis carried out in part three of article, I used a multiple linear analysis in an attempt to show what types of expenses are the real "black hole" through which drain public money. According to econometric analysis conclusions are:

1. Expenses and general public services, education, health, economic actions lead to increased government debt, the econometric results showing a direct correlation between these variables.
2. The highest value was recorded for spending on economic actions, meaning that a one percentage point of growth in GDP leads to an increase of about 6% of government debt in GDP.
3. Also, if spending on education and econometric results indicate a high enough value. A one percent increase in their share in GDP leads to an increase of about 5% of government debt in GDP.
4. Expenses such as defense, public order and national security, those of culture and the development of public services and not directly influence the public debt of Romania in the period analyzed.

Changing the dependent variable analyzed is explained in 90% of the independent variables change. This result indicates a direct relationship between the variables considered strong enough.

References

Asdrubali, P, Sorensen, B., & Yosha O. (1996), “Channels of Interstate Risk-sharing: US 1963 – 1990”, *Quarterly Journal of Economics*, Volume 111, No.4, 1081-1110, URL: <http://links.org/sici?sici=0033-5533%28199611%29111%3A4%3C1081%3ACOIRSU%3E2.0.CO%3B2-I>.

De Grauwe, P (2009), “The Economics of Monetary Union”, 8th Edition, Oxford University Press.

De Grauwe, Paul (2010), “Fighting the wrong enemy”, Vox Column, URL: <http://www.voxeu.org/index.php?q=node/5062>

Gros, D. & Mayer, T., (2010), “[Financial Stability beyond Greece: On the need for a European Financial Stability Fund](#)”, Economic Policy, CEPS, URL: <http://www.ceps.eu/book/financial-stability-beyond-greece-need-european-financial-stability-fund>.

Méltiz, J. & Zumer F., (1999), “[Interregional and International Risk Sharing and Lessons for EMU](#)”, *Carnegie-Rochester Conference Series on Public Policy* Journal, 149-188, URL: <http://www.sciencedirect.com/science/article/B6V8D-493GBVD-9/2/e45671be574e4418eac88a6a9867fdcc>.

Sachs, J & Sala-i-Martin, X. (1989), “[Federal Fiscal Policy and Optimum Currency Areas](#)”, CEPR Discussion Paper 632.

Von Hagen, J (1991), “Fiscal Arrangements in a Monetary Union. Evidence from the US”, Working Paper, Indiana University.

<http://epp.eurostat.ec.europa.eu>

www.insse.ro