

# Public deficit, public debt, corruption and economic freedom: some empirical evidence from Romania

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*The institutional framework integrates factors that have important effects on fiscal issues, especially, in a transitional economy. This paper uses data for Romania spanning the period 2000-2011 to investigate the relationship between the legal structure, the public deficit and the public debt. The results confirm the importance of the group of institutional variables. The presence of bi-directional causality between the public deficit and all institutional variables is validated. The results are extremely important for regulators and policy makers, since the different sources of inefficiency related to the institutional variables require similarly multi-faceted solutions that take into account local circumstances and cultural contexts.*

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## **I. Introduction**

In the majority of countries that enjoy a democracy in their political organization, the growth rate tends to be higher vis-à-vis those with a lower democratic profile. Regulatory policies have made a significant contribution to economic growth through structural reforms, liberalization of product markets, international market openness, and a less-constricted business environment for innovation and entrepreneurship. Regulatory policy has supported the rule of law through initiatives to simplify the law and improve access to it, as well as improvements to appeal systems and finally, through enhanced transparency. Although, the impact of political and regulatory characteristics on growth has been extensively investigated in the literature (Stiglitz, 1998; Barro, 2000; Ventelou, 2002; Kirkpatrick and Parker, 2004; Laffont, 2005; Aisen and Veiga, 2011), the studies that have attempted to examine the association between such factors and public finance are less (see Section 2 on the literature review). The skeptical attitude of this literature is that the political system, especially in democratic countries, has an incentive to allow for high levels of public debt, even though the body of their voters prefers actually lower levels.

In another relevant strand of the literature, the political environment seems to play a substantial role in a government's decision to default on its public debt. Van Rijckeghem and Weder (2009) investigate any alternative way in which the political environment affects and is affected by those economic factors that determine the safety distance from default. Their results confirm the importance of the political factors in the case of default, regardless of the degree of democracy.

The goal of this empirical paper is to employ a data set for Romania spanning the period 1995-2010 to investigate the relationship between the legal structure, the public deficit and the public debt. The paper is organized as follows. Section II provides a description of the institutional framework in Romania, while Section III gives the

literature review. Section IV comprises the empirical implementation of the study, including a description of the data and the econometric results, while Section V summarizes the results and concludes.

## **II. The institutional framework in Romania**

Romania as one of the former communist countries, it initiated a reforming economic program after 1989 with the objective to turn into a market economy. The economic conditions at the beginning of 1990 were looking extremely gloomy: the country experienced a virtually 7% decrease in GDP, one of the lowest levels across Central and Eastern European countries and in terms of annual per-capita income levels measured in 1989 USD, structural deficiencies such as over-industrialization and an unsuitable structure of its labor force, i.e. about 40% of its labor force was working in the manufacturing sector and virtually 30% in the agricultural sector.

In the literature of Central and Eastern European countries a number of authors [see survey paper by Falcetti *et al.* (2002)] attempted to explain the economic transformation experiences of those countries based on a number of initial condition, on policies or institutions, such as the legal framework associated with economic activity, political and civic freedom, and economic liberalization, while there is a consensus about the fact that certain initial conditions affect the transition path of an economy. However, the importance of those conditions declines over time, while those economic reforms tend to be the most important factor affecting the evolution of such economies (Havrylyshyn and van Rooden, 2003; Falcetti *et al.*, 2002).

Based on the above arguments, we will attempt to highlight the transformations experienced by the Romanian economy, especially over the first years of transition. In particular, Romania started in 1990 to build democratic institutions and to put the economy on track according to market fundamentals. In May 1990 the first democratic Parliament following the communist period was elected and

established the first post-communist Constitution of the country. The enactment of the law for the reorganization of the state-owned enterprises into companies (August 1990) was followed by the law that led to the establishment of the conditions allowing the operation of new companies (November 1990) along with the law for privatization that set the first conditions under which state owned companies were sold to private owners. The country adopted the gradualist approach of privatization, with the primary factor for this choice being the winning of the 1990 and 1992 national elections by the coalition of left parties (Bjornskov and Potrafke, 2011). Additional factors were the initial conditions mentioned above (Estrin *et al.*, 1998) along with the institutional fragility (Dăianu, 2002). As a result, most of the companies remained state-owned, while their economic and financial future was looking gloomy. In the short-run, the number of companies which were running losses was enhancing due to certain documented factors, such as: the diminishing role of the internal market as a consequence of the lower purchasing power of population or the loss of important exporting market (i.e. Russia) as well as a number of managerial reasons. In particular, the majority of managers in the state-owned companies were not preoccupied to improve labor productivity, to discourage specific consumption patterns with respect to raw materials, to encourage investment that allows technology spillover effects from modern equipments and so on. In a situation like this, more and more state-owned companies experienced heavy losses and, according to the law for reorganization of state-owned firms, the government was forced to subsidize these losses, but only within the approved limits of the state budget, which lead to high public deficits and further losses in those firms.

However, the process of privatization most of the times is subject to corruption. Shleifer and Vishny (1993) display that weaknesses within the realm of governments, are highly important determinants for corruption. An alternative strategy of privatization in the 90's was the

so-called “Mass Privatization Program”, a voucher based on mass privatization, which was a process that generated ugly results for firms because of the strong lack of financial capital among the population. In that sense, the privatization process in Romania was undermined by strong corruption patterns, as well as by the lack of financial capital. The high degree of corruption affected all sectors of the society<sup>3</sup>. According to the statistics of Transparency International, Romania has a corruption perception index at 2.6 (in 2002) and at 3.8 (in 2008 and 2009) on a scale of 0 to 10, with 10 being a clean country.

Another problem that generates serious threats for the Romanian economy is the role of the underground economy. According to Buehn and Schneider (2007), there is a bidirectional causal relationship between the shadow economy and corruption, but the causal effect of the shadow economy on corruption is stronger than the effect of corruption on the shadow economy. The shadow economy is about 10% bigger than the average of the European Union countries, indicating that Romania suffers from the presence of weak institutions even after more than 20 years from the country’s transformation to a democratic entity. An important action needed to be undertaken by the government to achieve higher degrees of economic freedom as a prerequisite for a higher efficient resource allocation, is the construction of a more qualitative institutional framework.

Furthermore, the trend of the public debt in Romania comes as a result of the initial conditions (necessary structural reforms and a small but highly productive public sector) as well as a result of the growth patterns of the domestic economy. In nominal terms, the public debt has been increasing over the period 1990-2011, while its structure teaches us that over the period 1990-2005 the country relied more on the external component of its debt figures. In this respect, the external debt of Romania increased after ten years to 33.2% of GDP, while the counterpart of the remaining Central and Eastern European countries

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<sup>3</sup> For the effects of corruption see U-Myint (2000).

registered a modest growth or even decreased (Albu and Pelinescu, 2000). This evolution of the external debt comes as a result of the low levels of development exhibited by the internal capital market (Mosteanu *et al.*, 2011; Oprea *et al.*, 2010), the dysfunctions of the domestic economy, the lack of competition across markets, the distrust in the national currency, the lower costs of financing, the need to obtain foreign currency to finance the balance of payments (Oprea *et al.*, 2010) and, finally, the lack of regulation in state borrowing. The public debt displayed a decreasing trend over the period 2000-2005, but it started again in 2006 to grow up reaching a high sky level in 2007 where turned larger than its external counterpart.

But at the end of 2008, the financial crisis gave rise to fewer than expected revenues. As a result, the government issued a larger volume of treasury bonds to finance the enlarging budget deficit as well as to refinance its public debt. In addition, the country in 2009 signed an agreement with IMF, the World Bank and the EU as a part of a bailout loan from the IMF to finance its budget deficit and the repayment of its public debt. Nevertheless, the public deficit grew up to 9% of GDP in 2009, generating further needs for financing. As long as the economy moved deeper into the crisis, the government undertook important austerity measures to maintain a stability status quo in the economy: increases in the VAT tax rate from 19% to 24%, 25% wage cuts in the public sector and a huge blocking in the hiring by public entities. Even then, however, the deficit remained higher than 3% of GDP and the need to further financing grew larger.

### III. Literature review

In the case of the Central and Eastern European countries, the economic results are diversified. De Melo *et al.* (2001) and Falcetti *et al.* (2006) attempt to explain such mixed results based on the country's initial conditions, policies and/or institutions, i.e. the legal framework for economic activity, the extent of political and civic freedom and

economic deregulation. Although there has been a general consensus about the role of initial conditions for such results, the importance of them tends to decline over time, while certain economic reforms, such as economic deregulation, seem to be an important factor for the future path of the economy (De Melo *et al.*, 2001; Havrylyshyn and van Rooden, 2003).

Barro (1979) argues that the public budget should be balanced over the business cycle, while tax rates should be maintained relatively constant over time to minimize distortions, in a sense that revenues decrease or public spending increases over a recessionary economic period, generating public deficits, which, in turn, are expected to be eliminated once the economy gets into the growth path again. Roubini and Sachs (1989) also argue that political fragmentation is a potential cause of the presence of persistent deficits, because of the veto power over changes in the status quo of the small coalition partners, while Tabellini and Alesina (1990) argue that the accumulation of debt comes as a result of a strategic use of the public deficit in an attempt to reduce future government expenses. Within this strand of the literature, Perotti and Kontopoulos (2002) estimate the impact of political factors, such as fragmentation, on public expenditures and tax revenues, arguing, however, that the effect on deficit might be ambiguous

Another strand of the literature presents research works suggesting that a number of redistributive policies are responsible for the presence of persistent public deficits and public debts. In particular, Cukierman and Meltzer (1989) argue that in the society there are bequest-constrained individuals who favor decreases in taxation without affecting public expenses, thus, the higher these individuals' share is in the society the more governments are inclined to run public deficits.

Certain idiosyncratic characteristics of the society, can affect public deficits and public debts as well, such as, corruption and economic



freedom. Corruption has been the first phenomenon studied in correlation with issues in public finance. Sanyal *et al.* (2000) consider a corrupt tax administration where the scenario of a rise in tax rates displays the inefficiency of this type of fiscal policy to generate higher revenues for the government, since higher tax rates signal an increased likelihood of extensive negotiated bribes. Barreto and Alm (2003) find that corruption generates a different tax structure: countries suffering from corruption rely more on indirect than on direct (income) taxes, while Cerqueti and Coppier (2011) find that the 'shame effect', i.e. the likelihood of an entrepreneur being detected and reported in a corrupted transaction, is highly important for the relationship between the growth rate of tax revenues and the tax rate itself, since the growth rate tends to be more sensitive to variations of the tax rate in an honest rather than in a corrupt country.

Gupta *et al.* (2001), using cross-section and panel regression techniques for 120 countries over the period 1985-1998, find that corruption is associated with higher military spending as a share of both GDP and total government spending. In a recent paper, Hessami (2010) finds, in a two-stage rent-seeking model with endogenous rent-setting for 26 OECD countries over the period 1996-2008, that higher corruption is associated with a higher share of spending on health and on environmental protection, but with a lower share for spending on social protection, recreation, culture and religion. Finally, Grechyna (2012), for a panel of OECD countries, finds that higher levels of public corruption are a significant determinant of public debt.

In terms of the impact of economic freedom on public deficits, the literature is less abundant. Changes in the degrees of economic freedom and corruption impact the situation of public finance in the 10 new European Union (EU) members (Hanousek and Kocenda, 2011). Their results show that there is not a uniform for all countries pattern. An improvement in the degree of economic freedom is associated with increases in public deficits in the cases of: Czech



Republic, Estonia, Latvia and Malta, and with deficit declines in the cases of Poland and Cyprus. Improvements in the degree of economic freedom tend to decline public deficits in the cases of: Hungary, Slovakia and Cyprus, while neither country registers an increase in its public debt. In the case of lower levels of corruption, public deficits display a declining trend in the cases of: Hungary, Poland, Slovakia, Slovenia and Cyprus, and an ascending trend for the case of Lithuania. The authors recommend that for the majority of new member countries, improvements in their economic freedom performance and decreases in the levels of corruption could lead to positive effects in their fiscal position.

#### **IV. Empirical analysis and results**

##### ***Data***

Quarterly data on unemployment percentage (UN), public deficit as a percentage of GDP (DEF), public debt as a percentage of GDP (DEBT), the public debt service cost (SDEBT), measured as the difference between the nominal interest rate and inflation multiplied by debt in the previous period, the long-term nominal interest rate, measured as the yield on 10-year government bonds, consumer prices, measured as the CPI index, and two indexes capturing institutional characteristics of the Romanian economy, as economic freedom (FR) and the extent of corruption (COR). Higher values of the two institutional variables indicate higher freedom and less corruption. All economic data were obtained from the IFS database spanning the period 1995-2010. All institutional data, but corruption, were obtained from the 'Free the World.com' database, while the corruption index variable was obtained from Transparency International. The institutional variables were available on an annual basis and, therefore, they were converted into quarterly through interpolation. Finally, all data were seasonally adjusted.

##### ***Integration analysis***

We test for unit root non-stationarity by using the tests proposed by Dickey and Fuller (1981). In particular, the analysis is based on the augmented Dickey-Fuller unit root tests, the results of which are presented in Table 1. Using a 5 per cent significance level, those data clearly accept the hypothesis of a unit root for both series in levels. When first differences were used, unit root non-stationarity was rejected both cases. However, the power of the statistical unit root test is of critical importance. Therefore, two modified Dickey-Fuller tests with good power are also applied. They are the DF-WS test, proposed by Park and Fuller (1995), which makes use of the WSLS estimator, which is more efficient than the OLS estimator in estimating autoregressive parameters and the DF-GLS test, proposed by Elliott *et al.* (1996), which analyzes the sequence of Neyman-Pearson tests of the null hypothesis of the presence of a unit root. The results are also reported in Table 1. They indicate that all the variables are integrated of order one.

Table 1.

## Unit root tests

ADF Tests				
Variable (X)	Levels		First differences	
	<u>Without trend</u>	<u>With trend</u>	<u>Without trend</u>	<u>With trend</u>
SDEBT	-0.54(3)	-1.12(3)	-4.02(2)*	-4.39(2)*
DEF	-1.63(4)	-1.75(3)	-4.87(2)*	-5.24(2)*
DEBT	-1.52(3)	-1.68(3)	-4.94(1)*	-5.36(1)*
UN	-1.29(4)	-1.72(3)	-5.49(2)*	-5.93(2)*
FR	-0.50(3)	-0.85(2)	-7.59(1)*	-7.94(1)*
COR	-1.43(3)	-1.58(3)	-4.91(1)*	-5.17(2)*
DF-WS Test				
	Levels (trend)		First differences-trend	
SDEBT	-1.28(3)		-5.19(1)*	
DEF	-1.18(3)		-4.91(1)*	
DEBT	-1.22(3)		-5.18(1)*	
UN	-1.47(3)		-5.26(2)*	
FR	-1.14(4)		-4.74(2)*	
COR	-1.28(3)		-4.64(1)*	
DF-GLS				
	Levels		First differences	
SDEBT	-1.32(3)		-5.37(2)*	
DEF	-1.20(2)		-5.13(1)*	
DEBT	-1.31(3)		-5.37(1)*	
UN	-1.19(3)		-4.74(2)*	
FR	-1.48(3)		-4.62(1)*	
COR	-1.33(3)		-4.83(1)*	

Numbers in square brackets denote the optimal number of lags used in the augmentation of the test regression and were obtained through the Akaike criterion

\* indicates that the unit root null hypothesis is rejected at the 5 per cent level.

### Modeling a process for public deficit

Johansen and Juselius (1990) cointegration tests are performed. They reveal evidence in favor of cointegration among the deficit variable and the explanatory variables. The cointegration results are reported in Table 2. Both the eigenvalue test statistic and the trace test statistic indicate that there is a single long-run relationship among the variables under study.

**Table 2.**  
**Cointegration tests (DEF as the dependent variable)**

Lags=3					
r	n-r	ml	95 per cent	Tr	95 per cent
r=0	r=1	175.3266	156.0000	96.3719	51.2700
r<=1	r=2	121.3632	124.2400	42.3546	45.2800
r<=2	r=3	90.6631	94.1500	31.9954	39.3700
r<=3	r=4	62.9053	68.5200	29.0643	33.4600
r<=4	r=5	42.4883	47.2100	23.7731	27.0700
r<=5	r=6	23.2360	29.6800	17.9864	20.9700
r<=6	r=7	12.8032	15.4100	12.5087	14.0700
r<=7	r=8	2.8733	3.7600	2.8733	3.7600

*r is the number of cointegrating vectors, n-r is the number of common trends, ml = maximum eigenvalue statistic, Tr = Trace statistic. The number of lags was determined through Likelihood Ratio tests.*

Normalizing the cointegration vector on the deficit to GDP variable, we obtain the following estimates:

$$\text{DEF}_t = 0.559\text{UN}_t + 0.672\text{SDEBT}_t - 0.131\text{FR}_t - 0.458\text{COR}_t$$

(4.67)\*      (7.36)\*      (-4.87)\*      (-4.84)\*

$$R_{\text{bar-squared}} = 0.55 \quad \text{LM} = 1.31[0.38] \quad \text{RESET} = 1.22[0.43]$$

Numbers in parentheses denote t-statistics, while an asterisk denotes significance at the 1% statistical level. LM and RESET are tests for serial correlation and model functional misspecification, respectively, while figures in brackets denote p-values. The coefficients are

correctly signed and statistically significant. The results with respect to the two alternative institutional variables display that a one unit improvement in freedom and corruption lead to lower levels of deficit by 0.131 and 0.458 units, respectively. As expected, higher unemployment leads economic authorities to run higher deficits, while higher levels of the debt service cost also lead to higher public deficits.

### **Causality effects**

Finally, to examine causal relationships among the variables under study, a vector autoregressive model (VAR) is estimated and the causality tests are obtained. Table 3 reports the results of the short-run and long-run causality tests. With respect to the equation of deficit as a percentage of GDP, both institutional variables, i.e. economic freedom and corruption, have a negative and statistically significant impact on the public deficit measure. Moreover, there exists bivariate causality between the public deficit measure and economic freedom, the extent of regulation and corruption, while between the public deficit and the legal structure the causality runs only from the legal structure to the public deficit. Finally, the error correction terms are statistically significant at the 5 percent level in the equations under study.

**Table 3.**

**Causality tests (equations: DEF, FR, COR)**

Dependent Variable	Sources of Causation (Independent Variables)					
L-R	S-R					
	$\Delta$ DEF	$\Delta$ SDEBT	$\Delta$ UN	$\Delta$ FR	$\Delta$ COR	ECT
$\Delta$ DEF	----	51.4(0.21) [0.00]	22.1(0.07) [0.01]	57.9(-0.4) [0.00]	43.6(-0.1) [0.00]	-0.124 [0.00]
$\Delta$ FR	61.5(-0.04) [0.00]	0.52(0.13) [0.80]	0.02(0.01) [0.84]	-----	33.6(0.13) [0.00]	-0.15 [0.00]
$\Delta$ COR	45.1(-0.25) [0.00]	71.1(0.16) [0.00]	23.7(0.26) [0.00]	44.1(0.14) [0.00]	----	-0.125 [0.00]

*S-R=short-run, L-R=long-run. Partial F-statistics reported with respect to short-run changes in the independent variables. The sum of the lagged coefficients for the respective short-run changes is denoted in parentheses. ECT represents the coefficient of the error correction term. Probability values are in brackets and reported underneath the corresponding partial F-statistic and sum of the lagged coefficients, respectively.*

## V. Conclusions

This paper provided evidence in favor of a relationship between fiscal measures, such as the fiscal deficit and the public debt (both measured as percentages of GDP) and a group of institutional variables, such as the legal structure, economic freedom, the extent of regulation in economic activities and the size of corruption in Romania. The results confirm the importance of the above group of institutional variables. The interpretation of these results is a matter of debate, because the institutional variables may be taken either at face value or as an indicator of investors' risk perceptions. In particular, they could be interpreted either as a sign of the importance of institutional quality, or

as confirmation that countries with poor credit ratings, which are most exposed to the whims of international investors, exhibit cycles in spending associated with feast and famine in international capital flows. Causality estimations revealed the presence of bi-directional causality between both the public deficit and the public debt and all institutional variables, except in the case of the legal structure in which causality runs only from the legal structure to the public deficit (debt). The results are extremely important for regulators and policy makers. In particular, the different sources of inefficiency related to the institutional variables described above will require similarly multi-faceted solutions that will take into account local circumstances and cultural contexts. An increasing recognition that the roots of institutional inefficiencies extend far beyond weaknesses in the capacity of government also requires us to look at anti-corruption efforts beyond public administration and public finance management. The mandate instead should be broadened to target structural relationships, including the internal organization of the political system, the relationship between the state and firms, and the relationship between the state and civil society. Potential and drastic measures could be the higher level of the accountability of political leaders, stronger institutional restraints, such as some degree of separation of powers and establishment of crosscutting oversight responsibilities among state institutions, encouraging stronger civil society participation, a clearer perception about the role of the media, and encouraging higher levels of competition in the private sector. Future research efforts could proceed in certain directions. For instance, a future empirical effort on a panel basis, i.e. with more countries characterized as a paradise of corruption, could give a better perspective on the results that incorporate (panel) cointegration and (panel) error correction.



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