Issue 5,
October, 2012

Correlation Between Government and Economic Growth - Specific Features for 10 Nms

Author: **Laura Obreja Brașoveanu,** Bucharest University of Economic Studies, Romania, laura_obreja@yahoo.com

The impact of fiscal policy on economic growth is a complex and contradictory topic in finance debates. Government influences real economy through the impact of public revenues and expenditures on the quantity and quality of production factors, labor and capital. High taxation for supporting big public sector can impede growth. On the other hand, some of the public expenditures can stimulate growth. This opposite effects of the public sector's intervention through fiscal policy rise the debate about the performance of public sector in stimulating economic growth. The aim of this paper is to analyze the differences between developed UE countries and former communist EU countries regarding the public sectors and economic growth.

Keyword: *fiscal policy, size of public sector, quality of public sector, economic growth*

JEL Classification: *E62, H11, O10*

Introduction

The economic growth process and its determinant factors represent a topic of interest both for theoretical and empirical research. The interest is primarily justified by the observation of the increasing of living standards in time but also by the existence of major differences in living standards between countries.

The economic growth process can be assimilated to the improvement of the quality of life indicators through a more efficient use of economic resources. Commensuration of the economic growth is achieved through specific indicators related to gross domestic product (GDP), for example by

increasing in GDP per capita or through the growth rate of real GDP.

These determinant factors act through the effects they produce on the quantity and quality of factors of production:

• *factors of production – physical and human capital* - between economic development and production factors's quantity and quality there is a direct, intense and bidirectional relationship.

Both exogenous and endogenous growth theories support the importance of the production factors for stimulating economic growth. Physical capital is the key element in the theoretical and empirical foundation for the differences in living standards in time. Empirical results sustain this correlation – see, for instance, Turner, Tamura and Mulholland (2008); Hall and Jones (1999); Barro (1991)

Gherghina, Ion, Nicolae (2011) studied the influence of human capital on economic growth as the link between the two is obvious: human capital through education contributes to society and the quality of education depends on the level of development.

• *capital market development* - Graff (1999) argues the possibility of four types of causal relationships between financial development and economic growth: (a) financial development, the result of development of financial institutions, and economic growth, the result of real factors, are not directly correlated, (b) economic growth, through the effects of change and development of financial institutions, has effects on the development of the financial sector, (c) financial development leads to economic growth, a phenomenon that is supported by the fact that financial development is a necessary condition for achieving economic growth, by the fact that financial development encourages economic growth, (d) financial development impedes economic growth due to potential adverse effects caused by financial crisis. For empirical test of this correlation see King and Levine (1993); Carlin and Mayer (2003); Garretsen, Lensink and Sterken (2004), Beck, Lundberg and Majnoni (2006), Bose (2005), Claessens, Klingebiel and Schmukler (2006); Obreja Brașoveanu, Dragotă, Cataramă and Semenescu (2008)

• *institutional factors, government policies, macroeconomic and political stability, income distribution* - the importance of institutional factors, government policies adopted, political and macroeconomic stability, income distribution in the economic growth process is given by the role of these factors on the real economy. The direct relationship between these factors and economic growth is given by the effect on private initiative to engage in

productive activities, given by the safety and security of the investment and by the ownership right. There are also empirical tests for this correlation – see, for instance, Helliwell (1992); Minier (1998), Agenor and Montiel (1999); Obreja Braşoveanu (2007); Alesina and Perotti (1997); McDermott and Wescott (1996); Segura-Ubiergo, Simone and Gupta (2006); Roubini and Sachs (1989); Beldacci et al. (2004); Mulas-Granados (2005). Braşoveanu (2011) identified the important aspects of tax evasion in Romania.

These are the main channels throughout the economic growth might be stimulated. Those who act in the sens of generating economic growth are from private but also public sectors. The scope of this article is to analyze the impact of the public sector's size and quality on the economic growth process.

The paper is structured as follows: in section 2 there is a short literature review regarding the impact of the public sector, through expenditures, revenues and governance, on the economic growth; section 3 contains the empirical study – the correlation between public sector and economic growth, by panel regressions, cluster and quantile analysis, and section 4 concludes.

Literature review

In order to determine the important channels through which public revenues and expenditures, may affect economic growth, we consider the production function.

The channels of influencing the economic growth consist of policies that (1) increase capital per labour – public sector might finance the public activities in a way that minimize the possible distortions over the demand or supply of capital and labour - (2) increase the productivity (quality) of capital – public sector might offer social and economic infrastructure that facilitate private sector's activity - and (3) increase the productivity (quality) of labour – public sector might invest in capital and labour only when it complete private sector's activities, situation that is necessary because of the externality or market imperfections.

In order to stimulate the economic growth through fiscal policy, the state has more instruments (for more details, Obreja Braşoveanu (2007)):

(a) financing of direct investments, which the private sector would not provide in adequate quantities;

(b) efficient supply of certain public services which are necessary to ensure the basic conditions for economic activity and long-term investments;

(c) financing of public activities in such a wayu that minimizes the distortions generated in the economy (on the private sector's decisions to spend and invest).

Theoretical background offers arguments for both positive and negative relationship between public expenditures and economic growth. Arguments that sustain a **positive correlation** between public expenditures and economic growth are:

(a) research and development in public sector

Research and developments in public sector may have positive effects through externalities on the private part of economy. Public spending create social infrastructure and other forms of public goods. Public research expenditures may also create technological innovations with broader applicability, enhancing economic growth.

In the less developing countries, public expenditures may help in creating a socioeconomic structure conducive to growth, expenditures for research and development provide technical skills, educational training and create an infrastructure necessary for economic development.

(b) demand

The effect is positive through an expansion of aggregate demand (Keynesian effect), the increased demand leads to an increase of utilization the idle capital, higher employment and profits, therefore higher investment, all of which cause economic growth.

Public expenditure may be considered a tool of fiscal policy and can therefore be increased to stimulate demand or decreased to dampen demand. This impact depends on the multiplier effect, assuming there is not a corresponding increase in taxation to finance the spending and the extent of crowding out caused by the spending.

(c) labour

Public spending may increase the skill set of the used labour force through training and education. It has a growth-stimulating effect if it moves the economy closer to full employment, creates human capital, promotes stability, and provides infrastructure.

It is often argued that expenditure for training in developing countries may contribute to improving the educational level of the labor force and may act as a stabilizing influence in the society.

(d) investment

Capital expenditure can have productive uses: private sector benefits

from the transport networks that are originally constructed for public purposes. Investment in public sector generates positive externalities for the private sector, like public infrastructure development, technology spillovers and human capital formation.

Arguments that sustain a **negative correlation** between public expenditures and economic growth are:

(a) crowding out effect

Public spending can have an adverse effect on economic growth by crowding-out private investment - higher public spending generates a distortion in resource allocation and the diversion of resources from productive activities.

The extent and form of crowding out effects of an increase in public spending will depend on prior utilization and how the increase is financed.

(b) opportunity cost

Trying to explain the negative correlation between public expenditure and growth, economists focus on the opportunity cost of the different categories of expenditures, expenditures hinder economic development by reducing savings and misallocating resources away from more productive use in the public or private sector. In the same context, R&D in the public sector may divert R&D from the private sector where it may receive more practical application.

(c) increased taxation

The government budget constraint requires that an increase in public expenditure might be financed by increased taxes, increased borrowing. The way the increase of public expenditure is financed will have further effects, which feeds back on the economy.

Public expenditure if it is financed by nondistortionary revenues has a positive effect on economic growth; if it is financed by distortionary revenues, it might have a positive or negative effect on economic growth, depending on the level of the public expenditure.

(d) efficiency of resource allocation

Another channel by which public expenditures may affect the economic growth is through their direct impact on the efficiency of resource allocation. Public expenditure is not governed by market processes, so it tends to create distortions in relative prices. Policies implemented to support a public expenditure program might be detrimental to efficient resource allocation and economic growth.

(e) increase the political power of the public sector

In order to be reelected, political parties tend to make time-inconsistent fiscal policy and higher deficits and "bigger" public sector.

In the context of analysing the impact of public expenditures and revenues on economic growth, Barro, Sala-i-Martin (1995) proposed the distinction between:

• distortionary – nondistorsionary fiscal revenues, according to their effects over the decisions of the private agents (distortionary fiscal revenues contain personal income taxes, corporate income taxes, social security contributions, property taxes; nondistortionary fiscal revenues contain value added tax, excise duties). The correlation pattern between the real rate of growth of the GDP and these two categories of income reveals a link of positive causality between the economic growth and non-distortionary taxes and negative between the distortionary taxes. Theory and empirical evidence support the distortional character of some categories of taxes (income, capital and profit taxes) and undistortional character by those taxes and duties that do not generate changes in relative prices (value added tax, customs duties).

• productive and unproductive public expenditures, according to their effects over the productivity of the private agents' actions (productive expenditures contain general public services, defence, public order, national security, education, health, housers, environment , transport and communication; unproductive expenditures contain social assistence, culture, religion, economic activities). The theory of economic growth suggests that changes from productive spending to the unproductive one hinder the economic growth. Public expenditures have an impact on economic growth through its influence on the average level of the quality of the labour and on the productivity of capital employed; the positive effects on economic growth are recorded only if the public sector activities are complementing, not competing, with the private sector activities. Theory and empirical evidence support the stimulation of economic growth through public spending for education, health, research and development, capital expenditures.

The effect on economic growth of budgetary revenues and expenditures might consider the connections between budgetary revenues, budgetary expenses and fiscal deficit: financing the productive spending by non-distortionary income might have a positive impact over the economic growth, while the financing distortionary taxes has ambiguous effects; the unproductive spending financed by distortionary taxes have unclear

effects, while the financing by means of non-distortionary taxes implies no consequence.

The effects of fiscal policies on economic growth depend also on the quality of the public sector. Afonso, Ebert, Schuknecht, Thone (2005) consider that fiscal policy's quality and supporting-growth caracter are given by: providing an institutional environment that stimulates economic growth and sound public finances, limiting commitments to the essential role of providing public goods and services, setting growth promoting incentives for the private sector and using efficiently the public resources, financing public activities by an efficient and stable tax system, supporting macroeconomic stability through stable and sustainable fiscal policies.

The size of the public sector is a reflection of current and past political choices. Empirical studies support the idea that when public sector becomes "too big", the economic growth is negatively affected, and there are also present higher tax burden and inefficiency of the public administration. On the other hand, there are empirical cases of big or small public sectors that achive similar economic growth. In this context it is very important to consider the public governance – Kaufmann, Kraay, Mastruzzi (2004) construct indicators for six aspects of governance: voice and accountability (the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media), political stability and absence of violence (perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism), government effectiveness (the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies), regulatory quality (the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development), rule of law (the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence), control of corruption (the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests).

In this context the direct effects of public revenue and expenditure on economic growth, but also taking into account the indirect effects through

the impact on production factors, on the institutional factors, on government policies, macroeconomic and political stability, on income distribution, the governance factor becomes of a relevant importance.

In the next section we test the correlation between the size and the quality of public sector on economic growth, using a panel data, consisting in EU countries but also separately in former communist EU countries.

Empirical study – testing the correlation between the size and the quality of public sector and economic growth

In this section I test the correlation between the size and the quality of public sector and economic growth in European Union context.

I use the real gross domestic product growth rate, gross domestic product growth per head of population and logarithm of the gross domestic product growth per head of population to comensurate economic growth process.

The variables that I use for the size of the public sector are total public expenditure and total current revenue on gross domestic product.

For the quality of the public sector I use specific categories of public expenditures on gross domestic product (education, health, housing and community amenities, public order and safety, recreation, culture and religion, social protection, general public services, environment protection, economic affairs, defence), productive and nonproductive expenditures (as suggested Barro), governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption) and corruption perception index.

The variables, notations and sources are below:

Variables:

Economic growth variables:

growth = real GDP growth rate (data source: AMECO)
gdppc = GDP per head of population (data source: AMECO)
loggdppc = log(gdppc) (data source: AMECO)

Budgetary variables:

exp = total expenditure – general government / GDP (data source: AMECO)
rev = total current revenue –

general government / GDP (data source: AMECO)
edu = education public expenditures / GDP (data source: AMECO)
health = health public expenditures / GDP (data source: EUROSTAT)
house = housing and community
amenities / GDP (data source: EUROSTAT)
order = public order and safety / GDP (data source: EUROSTAT)
recreation = recreation,
culture and religion / GDP (data source: EUROSTAT)
social = social protection / GDP (data source: EUROSTAT)
services = general public services / GDP (data source: EUROSTAT)
environment = environment protection / GDP (data source: EUROSTAT)
economic = economic affairs / GDP (data source: EUROSTAT)
defence = defence / GDP (data source: EUROSTAT)
expprod = productive expenditures / GDP (data source: EUROSTAT)
expnonprod = nonproductive expenditures
/ GDP (data source: EUROSTAT)

Governance indicators:

govva = governance indicators -
Voice and Accountability (data source: World Bank)
govps = governance indicators - Political Stability (data source: World Bank)
govge = governance indicators -
Government Effectiveness (data source: World Bank)
govrq = governance indicators -
Regulatory Quality (data source: World Bank)
govrl= governance indicators - Rule of Law (data source: World Bank)
govcc = governance indicators -
Control of Corruption (data source: World Bank)
gov = average of the governance indicators (data source: World Bank)
cpi = corruption perception index (data source: Transparency International)

The countries that I use for panel data are

- UE27: AT, BE, BG, CY, CZ, DK, EE, FI, FR, DE, EL, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, RO, SK, SI, ES, SE, UK
- 10 NMS – the former communist UE countries: BG, CZ, EE, HU, LT, LV, PL, RO, SI, SK

I analyze the correlation between public sector and economic growth

using both panel data, because I intend to identify the differences between capitalist economies and former communist countries. The descriptive statistics for the panels I used give some general impression about the differences between developed and emerging countries: average loggdppc is lower in the emerging countries, and so are average public expenditures and revenues; growth has higher average value in emerging countries, this aspect supports the idea of convergence process and caching up theory; public expenditure, both productive and nonproductive, have lower levels in emerging countries, due to the limited public resources; governance indicators, ccorruption perception index put the emerging countries in an inferior possition.

In the next figure there are the average values for the period 1990-2012 for public expenditures (x axis), public revenues (y axis) and economic growth (GDP per capita – bubble'size).

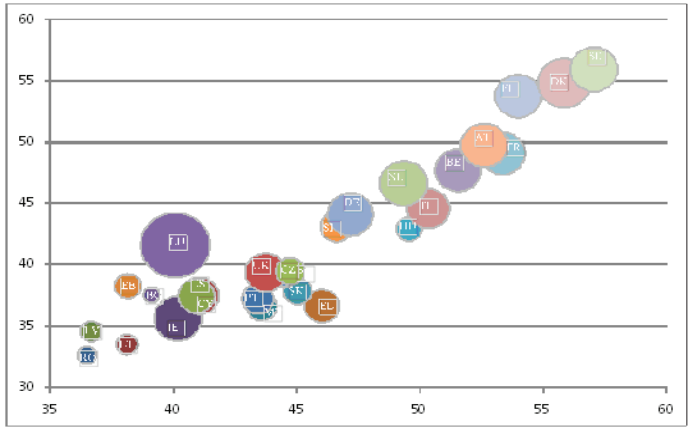

Figure 1: Public expenditure, public revenue and economic growth – average values for 1990-2012 Data sources: EUROSTAT, AMECO

Most of the NMS countries are placed in the left-down corner of the grafic, with the lowest size of the bubble, showing the problems with the economic growth and limited capacity to collect revenues.

In the following table, there are the results of the regressions for economic growth with the most significant independent variables. The dependent variable is the level of economic growth, measured by loggdppc, and the dynamic of economic growth, measured by growth. The independent varibles are public expenditures, governance indicators, corruption perception

index, productive and nonproductive public expenditures, and specific categoriers of public expenditures.

Table 1: Results of pool regressions – panel data

UE 27				10 former communist		
dependent variable	independent variables	coefficient	t-statistic	independent variables	coefficient	t-statistic
Loggdppc	Exp	-0.006883	-2.787695	exp	-0.014318	-2.790158
Growth	Exp	-0.554631	-9.085971	exp	-0.665268	-5.483342
Loggdppc	exp	-0.004452	-1.913657	exp	-0.005047	-1.112871
	gov	0.07293	6.046563	gov	0.215482	4.978259
	cpi	0.062403	4.537838	cpi	0.128053	4.773283
Growth	exp	-0.739823	-11.4359	exp	-1.077376	-8.252643
	gov	-0.771867	-2.301539	gov	0.171127	0.137352
	cpi	-0.535294	-1.399933	cpi	-1.874456	-2.427458
loggdppc	expprod	-0.007749	-1.279523	expprod	-0.009916	-0.756786
	expnonprod	-0.005042	-1.028291	expnonprod	-0.013379	-1.439321
Growth	expprod	-0.05076	-0.348548	expprod	-0.270432	-0.924081
	expnonprod	-1.02458	-8.720984	expnonprod	-1.231245	-5.930784
Loggdppc	govps	-0.136147	-3.300746	govva	-0.363222	-2.655341
	govge	0.114582	3.297026	govge	0.344244	5.704875
	govrq	0.472138	11.45785	govrq	0.671106	7.814439
Growth	govps	7.840068	6.032313	govps	10.26552	4.01542
	govrl	-11.90394	-5.5315	govrl	-21.23729	-5.388441
	govcc	3.628357	2.961931	govcc	7.222656	3.254293
Loggdppc	health	0.051313	5.729457	health	0.073212	4.138073
	recreation	0.190267	5.990864	recreation	0.193948	2.829413
	social	-0.010465	-2.369282	social	-0.017509	-2.096683
	services	-0.043776	-8.398855	services	-0.061931	-5.853262
	environment	0.24317	7.749724	environment	0.363382	5.940449
	economic	-0.028835	-4.78336	economic	-0.035053	-3.070493
	defence	-0.043401	-2.775045			
Growth	health	-1.608375	-5.984839	health	-1.34325	-2.5523
	house	1.75203	2.544099	recreation	-7.278187	-3.793088
	order	2.862238	4.306213	social	-1.907846	-7.99405
	recreation	-2.392691	-2.317408			
	social	-1.29711	-10.11357			

	environment	-3.203522	-3.127444			
	economic	-0.629669	-3.121894			
	defence	1.444285	2.896534			
Loggdppc	health	0.049569	5.264182	govge	0.249059	4.110425
	recreation	0.132437	3.754048	govrq	0.451956	6.038363
	social	-0.009164	-2.018906	edu	-0.064609	-2.233217
	services	-0.031549	-4.866985	health	0.045489	2.721509
	environment	0.209177	6.278727	services	-0.033188	-2.985483
	economic	-0.014273	-2.179745	environment	0.262194	5.870036
	govge	0.066399	2.368871			
	govrq	0.234178	5.947087			
Growth	govrl	-7.384757	-4.858364	govps	4.791767	2.163105
	health	-2.037132	-7.041215	govrl	-15.6316	-5.513523
	house	1.525952	2.148307	health	-1.69251	-3.201055
	order	2.210454	2.951149	social	-2.165902	-9.196355
	social	-1.60396	-11.86612			
	economic	-0.741845	-3.619018			
	defence	1.416271	2.752606			

Data sources: EUROSTAT, AMECO, WB, TI

The regressions' results sustain the following conclusions:

• total expenditure – general government / GDP has a negative impact on economic growth, measured both in real GDP growth rate and log(GDP per head of population); considering the effects of the average of the governance indicators and corruption perception index doesn't change the negative effect of total expenditure – general government / GDP; also the productive and nonproductive expenditure / GDP have negative effects on economic growth. The coefficients demonstrate a stronger impact in the case of former communist countries.

• regarding the effects of the governance indicators – the significant variables for the log(GDP per head of population) are political stability, with negative impact, government effectiveness, regulatory quality, both with positive impact, for UE27 panel data, and voice and accountability, with negative impact, government effectiveness and regulatory quality, both with positive effect, for 10 former communist countries. Regarding the effects of these governance indicators, the significant variables are for the real GDP growth rate are Political Stability, with positive impact, Rule of Law, with

negative effect, and Control of Corruption, with positive impact, for UE27 panel data, and Political Stability, with positive impact, Rule of Law, with negative effect, and Control of Corruption, with positive impact, for 10 former communist countries.

• regarding the composition of the public expenditure, there is evidence of the principle of productive and nonproductive expenditures – the significant variables for the log(GDP per head of population) are, with positive effects, health public expenditures / GDP, recreation, culture and religion / GDP, environment protection / GDP, and , with negative effects, social protection / GDP, general public services / GDP, economic affairs / GDP, for both panels.

• regarding the composition of the public expenditure, there is strange evidence of the principle of productive and nonproductive expenditures – the significant variables for the real GDP growth rate are, with positive effects, housing and community amenities / GDP, public order and safety / GDP, defence / GDP, and, with negative effect, health public expenditures / GDP, recreation, culture and religion / GDP, social protection / GDP, environment protection / GDP, economic affairs / GDP, for EU27, and with negative impact there are health public expenditures / GDP, recreation, culture and religion / GDP, social protection / GDP for the 10 former communist countries panel.

In the next tables there are the results of the cluster analysis.

Table 2: Cluster analysis – panel 1990-2012, UE 27

Clustering – loggdppc, exp, rev	
AT, BE, DK, FI, FR, DE, HU, IT, NL, SE	BG, CY, CZ, EE, EL, IE, LV, LT, LU, MT, PL, PT, RO, SK, SI, ES, UK

Using cluster analysis for UE27, 1990-2012, for variables log(GDP per head of population), total expenditure – general government / GDP, total current revenue – general government / GDP, I obtain the folowing cluster:

• cluster 1, with greater value of economic growth, log(GDP per head of population), and greater size of the public sector, total expenditure – general government / GDP and total current revenue – general government / GDP, caracterized by centre values 1,34 for loggdppc, 52 for expenditures, 49 for revenues: AT, BE, DK, FI, FR, DE, HU(the single former communist country), IT, NL, SE

• cluster 2, with smaller value of economic growth, log(GDP per head

of population), and a little size of the public sector, total expenditure – general government / GDP and total current revenue – general government / GDP, caracterized by centre values 0,93 for loggdppc, 42 for expenditures, 38 for revenues: BG, CY, CZ, EE, EL, IE, LV, LT, LU, MT, PL, PT, RO, SK, SI, ES, UK

Table 3: Cluster analysis – panel data, UE 27

Clustering – govva, govps, govge, govrq, govrl, govcc	
AT, BE, DK, FI, FR, DE, IE, LU, NL, PT, ES, SE, UK	BG, CY, CZ, EE, EL, HU, LV, LT, MT, PL, RO, SK, SI
Clustering – edu, health, house, order, recreation, social, services, environment, govrq, govrl, govcc, PCI	
AT, BE, DE, DK, EL, FI, FR, HU, IT, LU, NL, PL, SE, SI	BG, CY, CZ, EE, ES, IE, LT, LV, MT, PT, RO, SK
Clustering – growth, loggdppc, exp, governance indicators, PCI	
AT, BE, DE, DK, FI, FR, HU, IT, NL, SE	BG, CY, CZ, EE, EL, ES, IE, LT, LU, LV, MT, PL, PT, RO, SI, SK, UK

Using cluster analysis for UE27 for governance indicators, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption, I obtain the folowing cluster:

• cluster 1, with greater value of governance indicators, caracterized by centre values 1,41 for govva, 1,01 for govps, 1,73 for govge, 1,48 for govrq, 1,6 for govrl, 1,79 for govcc: AT, BE, DK, FI, FR, DE, IE, LU, NL, PT, ES, SE, UK, only non-former communist countriest

• cluster 2, with smaller value of governance indicators, caracterized by centre values 0,92 for govva, 0,71 for govps, 0,69 for govge, 0,91 for govrq, 0,69 for govrl, 0,49 for govcc: BG, CY, CZ, EE, EL, HU, IT, LV, LT, MT, PL, RO, SK, SItt

Using cluster analysis for UE27 for the structure of public expenditures, education public expenditures / GDP, health public expenditures / GDP, housing and community amenities / GDP, public order and safety / GDP, recreation, culture and religion / GDP, social protection / GDP, general public services / GDP, environment protection / GDP, economic affairs / GDP, defence / GDP, I obtain the folowing cluster:

• cluster 1, with greater value of edu, health, recreation, social, services, and smaller values for house, order, environment, economic, defence: AT, BE, DK, FI, FR, DE, EL, HU, IT, LU, NL, PL, SI, SE, so Hungary and Slovenia have

the same caracteristics as the developed countriest

• cluster 2, with smaller value of edu, health, recreation, social, services, and greater values for house, order, environment, economic, defence: BG, CY, CZ, EE, IE, LV, LT, MT, PT, RO, SK, ES, UKt

Using cluster analysis for UE27 for governance indicator-control of corruption and corruption perception index, I obtain the folowing cluster:

• cluster 1, with greater value of governance indicator of control of corruption and also great values of corruption perception index, caracterized by centre values 1,79 for govcc and 8,03 for CPI: AT, BE, DK, FI, FR, DE, IE, LU, NL, PT, ES, SE, UKt

• cluster 2, with smaller value of governance indicator of control of corruption and also smaller values of corruption perception index, caracterized by centre values 0,49, for govcc and 4,79 for CPI: BG, CY, CZ, EE, EL, IE, LV, LT, LU, MT, PL, PT, RO, SK, SI, ES, UKt

In the next tables there are the results of the quantile analysis.

Table 4: Quantile analysis – panel 1990-2012, UE 27

	percentile	q1	q2	q3	q4
Loggdppc	0,726717	BG; RO; LT; LV; PL; EE	HU; SK; CZ; MT; SI; PT; EL; CY	ES; IT; UK; FR; IE; BE; FI	DE;NL; AT; SE; DK; LU
	1,160,588				
	140,273				
Exp	4,017,561	RO; LV; LT; EE; BG; LU; IE	CY; ES; PT; MT; UK; PL; CZ	SK; EL; SI; DE; NL; HU; IT	BE; AT; FR; FI; DK; SE
	4,474,137				
	5,034,657				
rev	3,722,748	RO; LT; LV; IE; MT; EL	PT; ES; CY; BG; SK; EE; PL	UK; CZ; LU; HU; SI; DE; IT; NL	BE; FR; AT; FI; DK; SE
	3,936,806				
	4,663,752				

	exp	q1	q2	q3	q4
Loggdppc			>40,17561	>44,74137	
		<40,17561	<44,74137	<50,34657	>50,34657
q1		BG, RO, LT, LV, EE	PL		
	<0,726717				

q2	>0,726717		CZ, MT, PT, CY	HU, SK, SI, EL,	
	<1,160588				
q3	>1,160588	IE	ES, UK,	IT	FR, BE, FI
	<1,40273				
q4	>1,40273	LU		DE, NL,	AT, SE, DK,

Table 5: Quantile analysis – panel 1996-2009, UE 27

Variable	percentile	q1	q2	q3	q4
Growth	1,9 - 2,82 - 4,14	IT, DE, DK, MT, FR, BE	PT, AT, UK, NL, SE, HU, CZ	FI, BG, RO, ES, EL, CY, SI	LU, SK, PL, LT, LV, EE, IE
Gdppc	6,754 - 16,303 - 27,585	BG, RO, LV, LT, PL, SK	EE, HU, CZ, MT, SI, PT, EL	CY, ES, IT, FR, DE, BE, UK, FI	AT, NL, SE, IE, DK, LU
gdppcchange	3,67 - 5,04 - 8,85	DE, AT, SE, FR, BE, DK, FI	NL, IT, UK, PT, MT, CY	ES, LU, SI, EL, IE, HU, PL	CZ, BG, SK, RO, EE, LV, LT
Exp	39,92 - 44,01 - 49,52	IE, RO, EE, LV, LT, BG	LU, ES, CY, UK, SK, PT, MT	CZ, PL, SI, EL, NL, DE, IT	HU, BE, FI, AT, FR, DK, SE
Rev	37,22 - 39,55 - 45,2	RO, LT, IE, LV, MT, EE, SK	CY, ES, EL, PT, BG, PL, CZ	UK, LU, SI, HU, DE, IT, NL	BE, FR, AT, FI, DK, SE
Govva	0,98 - 1,19 - 1,39	RO, BG, LV, SK, LT, CZ, EL, PL	IT, EE, CY, SI, HU	ES, FR, MT, PT, UK, AT, IE, BE	DE, LU, SE, NL, FI, DK
Govps	0,64 - 0,9 - 1,15	ES, RO, BG, CY, EL, UK, PL	LV, FR, IT, EE, LT, SK, HU	CZ, BE, DE, PT, SI, NL	AT, DK, IE, SE, MT, FI, LU
Govge	0,72 - 1,11 - 1,76	RO, BG, LV, PL, LT, IT	SK, EL, CZ, HU, MT, EE, SI	PT, CY, ES, FR, IE, DE, BE	UK, AT, LU, NL, SE, FI, DK
Govrq	0,91 - 1,13 - 1,51	RO, BG, PL, SI, EL, SK	IT, LV, LT, CZ, MT, HU, FR, PT	ES, BE, CY, EE, DE, SE	AT, IE, FI, LU, UK, DK, NL
Govrl	0,63 - 1,16 - 1,65	BG, RO, SK, LV, LT, PL	IT, EL, CZ, EE, HU, CY, SI, PT	ES, BE, MT, FR, IE, DE, UK	NL, LU, SE, AT, DK, FI

Govcc	0,46 - 1,16 - 1,9	RO, BG, LV, LT, SK, PL	CZ, IT, EL, HU, EE, MT, SI	CY, PT, ES, BE, FR, IE, DE, LU, UK	AT, NL, SE, DK, FI
Edu	4,59 - 5,64 - 6,19	EL, RO, SK, BG, DE, ES, CZ	LU, IT, IE, NL, HU, UK, MT	AT, LT, LV, BE, PL, CY	FI, FR, SI, PT, EE, SE, DK
Health	4,5 - 5,7 - 6,58	CY, RO, LV, BG, NL, EE	PL, LT, EL, LU, HU, MT, ES	SK, UK, IT, SI, PT, FI, IE, DE, CZ	SE, BE, DK, FR, AT
house	0,66 - 0,94 - 1,2	BE, LT, EL, FI, EE, DK	SI, BG, IT, LU, AT, PT, DE	SK, UK, ES, HU, NL, SE	CZ, MT, LV, PL, RO, IE, FR, CY
order	1,53 - 1,76 - 2,04	LU, DK, EL, FR, SE, FI, AT	NL, MT, BE, DE, IE, PL	SI, RO, PT, ES, LT, IT, HU	CY, CZ, UK, BG, LV, EE, SK
recreation	0,88 - 1,13 - 1,35	EL, MT, IE, DE, BG, IT, RO	LT, UK, AT, SK, PL, BE, CY	PT, FI, CZ, FR, SE, NL	LV, SI, ES, HU, DK, LU, EE
social	12,38 - 15,9 - 18,1	CY, EE, IE, RO, LT, LV, BG	CZ, ES, SK, PT, MT, UK	HU, EL, LU, SI, PL, NL, BE	IT, AT, FR, DE, FI, SE, DK
services	4,55 - 6,25 - 8,35	EE, IE, LV, LT, LU, CZ, UK	RO, ES, SI, BG, DE, PL	SK, MT, PT, FI, AT, FR, DK	NL, SE, CY, IT, BE, HU, EL
environment	0,52 - 0,68 - 0,85	RO, CY, SE, FI, LV, AT	LT, EL, DK, PL, PT, DE, BE	HU, UK, FR, EE, SI, NL	SK, IT, ES, IE, BG, CZ, LU, MT
economic	4,2 - 4,45 - 5,16	UK, FR, DK, DE, IT, PL	EE, SE, PT, CY, LU, LT, BG	IE, SI, ES, NL, BE, FI	AT, LV, EL, RO, HU, SK, MT, CZ
defence	1,14 - 1,45 - 1,97	LU, IE, MT, AT, DE, ES, LV	BE, HU, PL, IT, SI, PT	EE, LT, CZ, FI, NL, DK, CY	SK, SE, RO, FR, UK, BG, EL
PCI	4,6 - 6,1 - 7,96	RO, BG, LV, SK, PL, EL, CZ	LT, IT, HU, CY, EE, SI	MT, PT, ES, BE, FR, IE, DE, AT	UK, LU, NL, SE, FI, DK

Using quantile analysis for UE27, 1990-2012, log(gdppc) and exp, the correlation between economic growth and the size of public sector is positive – most of the former communist countries are caracterized by “small” public

sectors and less developed economies. The majority of the developed countries have "big" public sectors.

The conclusions of the quantile analysis for UE27 are:

• the former communist countries are in the upper quartile of the real GDP growth rate, which supports the convergence principle.

• the former communist countries are in the bottom quartile of the GDP per head of population.

• most of the former communist countries are in the bottom quartile of the public expenditure – exceptions are CZ, PL, SI, HU.

• most of the former communist countries are in the bottom quartile of the governance indicators – exceptions are CZ, SI in the case of govps, EE in the case of govrq.

• regarding the structure of the public expenditures, there are a lot of differences between the former communist countries – the productive expenditures are high in the case of LT, LV, PL, SI, EE for edu, SK, SI, CZ for health, SK, HU, CZ, LV, PL, RO for house, SI, RO, LT, HU, CZ, BG, LV, EE, SK for order, SK, HU for services, HU, EE, SI, SK, BG, CZ for environment, EE, LT, CZ, SK, RO, BG for defence.

• regarding corruption perception index, all the former communist countries are in the bottom quartiles.

Conclusions

The size of the public sector is a reflection of current and past political choices. There are empirical evidences that support the idea that when public sector becomes "too big", the economic growth is negatively affected, and there are also present higher tax burden and inefficiency of the public administration.

The particularities of the former communist countries consist in inefficient administration of tax and expenditure, volatility of the tax base, the magnitude of fiscal adjustment needed to stabilize macroeconomic environment, required changes in the composition of public expenditure and revenues, weak institutional legacy of budget expenditure management system.

The effects of public sector's size on the economic growth are dependent of the quality of the public sector. In this article I capture the size of the public sector through public expenditures, and the quality of it through governance indicators and the structure of public expenditures.

The empirical results sustain the following conclusions: public expenditure has a negative impact on economic growth; a part of the governance indicators are relevant for economic development; the significant variables for the economic development that have pozitive effects are health public expenditures, recreation, culture and religion, environment protection.

A further reaserch have to be done in order to estimate the changes in public sector's size and quality for ex-communist countries that are also EU members and to evaluate the impact of these changes on economic growth.

Acknowledgment

This work was cofinaced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/89/1.5/S/59184 „Performance and excellence in postdoctoral research in Romanian economic science domain".

References

[1] Agenor, P., Montiel, P. (1999) „Development macroeconomics", Princeton University Press, Princeton, New Jersey.

[2] Alesina, A., Perotti, R. (1997) „Fiscal Adjustments in OECD Countries: Composition and Macroeconomic Effects", IMF Working Paper.

[3] Baldacci, E., B. Clements, S. Gupta, and Q. Cui (2004). "Aid, Social Spending, Human Capital, and Growth in Developing Countries: Implications for Achieving the MDGs". IMF Working Paper WP/04/217. International Monetary Fund, Washington, D.C.

[4] Barro, R. (1991) "Economic Growth in a Cross Section of Countries", The Quarterly Journal of Economics, vol.106, No.2, 407-443.

[5] Barro, R., Sala-i-Martin, X. (1991) „Convergence across States and Regions", Brookings Papers on Economic Activity.

[6] Beck, T., Lundberg, M., Majnoni, G. (2006) "Financial intermediary development and growth volatility: Do intermediaries dampen or magnify shocks?," Journal of International Money and Finance, Elsevier, vol. 25(7), pages 1146-1167, November.

[7] Brașoveanu, I. (2011) "Tax Evasion In Romania – Some Characteristics," Theoretical and Applied Economics, Asociatia Generala a Economistilor din Romania - AGER, vol. 5(5(558)(su), pages 403-409, July.

[8] Câmpeanu, E. (2010) „Importance of fiscal and budgetary policies in the economy", Financial and Monetary Stability in Emerging Countries, 11th International Conference,

Supplement Theoretical and Applied Economics ECTAP.
[9] Carlin,W., Mayer, C. (2003) "Finance, investment, and growth", Journal of Financial Economics 69 (2003) 191–226.
[10] Claessens, S., Klingebiel, D., Schmukler, S. (2006) "Stock Market Development and Internationalization: Do Economic Fundamentals Spur Both Similarly?" Journal of Empirical Finance, 13:3, pp. 316-350, March.
[11] Dragotă, V., Obreja Braşoveanu, L., Semenescu, A. (2008) "Some considerations on the relationship between corruption and economic growth", 4th International Finance Conference, MAR 15-17, 2007, Hammamet, Tunisia. Source: Risk Management and Value: Valuation and Asset Pricing Volume: 3. Pages: 71-95.
[12] Gagliaducci, S., Nannicini, T. (2009), „ Do Better Paid Politicians Perform Better? Disentangling Incentives from Selection", Seminar of Universitat de Barcelona,CEMFI, ESSLE-CEPR.
[13] Garretsen, H., Lensink, R., Sterken, E. (2004) "Growth, financial development, societal norms and legal institutions", Journal of International Financial Markets, Institutions and Money, Elsevier, vol. 14(2), pages 165-183, April.
[14] Gherghina, R., Ion, I., Nicolae, E. (2011) "Theoretical Considerations Regarding The Contributation Of Human Capital To Economic Growth," Theoretical and Applied Economics, Asociatia Generala a Economistilor din Romania - AGER, vol. 5(558), pages 460-465, July.
[15] Graff, M. A.(1999)" Financial Development and Economic Growth - A New Empirical Analysis", Dresden Discussion Paper Series in Economics, No 05/99
[16] Helliwell, J. (1992) "Trade and Technical Progress", NBER Working Papers 4226, National Bureau of Economic Research.
[17] Hibbs, Jr D.A. (1977), "Political Parties and Macroeconomic Policy" American Political Science Review 71 (December): 1467–1487.
[18] Jones, C. (2002) "Why Have Health Expenditures as a Share fo GDP Risen So Much?" NBER Working Papers 9325, National Bureau of Economic Research.
[19] Keynes, JM (1936)"The General Theory of Employment, Interest and Money", Palgrave Macmillan.
[20] King, R., Levine, R. (1993) "Finance and growth : Schumpeter might be right", Quarterly Journal of Economics.
[21] Mc Coy, J.L., Myers, D.J. (2004) „The unraveling of representative democracy in Venezuela", The Johns Hopkins University Press, Baltimore.
[22] McDermott, C., Wescott, R. (1996) „An Empirical Analysis of Fiscal Adjustments", IMF Working Paper, pp. 1-26.
[23] Minier, J. (1998) "Democracy and Growth: Alternative Approaches", Journal of

Economic Growth, 3: 241–266.

[24] Obreja Brașoveanu, L. (2007) "Impactul politicii fiscale asupra creșterii economice", Editura ASE, București.

[25] Mulas-Granadas (2003) "The Trade-Off between Growth & Equality and the Economic Impact of Alternative Fiscal Adjustment Strategies in the EU", European Economy Group Working Papers 20, European Economy Group.

[26] North, D. (1981) "Structure and Change in Economic History". New York: W.W. Norton, 1981.

[27] Obreja Brașoveanu, L. (2010) „The impact of defence expenditure on economic growth", The Romanian Journal of Economic Forecasting (RJEF), Volume 13 Issue 4 /2010.

[28] Obreja Brașoveanu, L., Dragotă, Cataramă, D., Semenescu, A. (2008) "Correlations Between Capital Market Development And Economic Growth: The Case Of Romania", Journal of Applied Quantitative Methods, Vol.3, no.1.

[29] Obreja, L. (2010), „Economic growth – a cost-benefit analysis", Financial and Monetary Stability in Emerging Countries, 11th International Conference, Supplement Theoretical and Applied Economics ECTAP.

[30] Pettersson-Lidbom, P. (2008). „Do Parties Matter for Economic Outcomes? A Regression-Discontinuity Approach", Journal of the European Economic Association, 6 (5), 1037-1056.

[31] Pîrvulescu, C. (2007), "Partide și sisteme de partide", Editura Universității Dimitrie Cantemir, București.

[32] Porte, M (1990) „The Competitive Advantage of Nations", New York Free Press

[33] Rodrik (1997) „Why do More Open Economies Have Bigger Governments?", Journal of Political Economy.

[34] Romer, P. (1986) „Increasing Returns and Long-Run Growth", Journal of Political Economy.

[35] Roubini, N., Sachs, J. (1989) „Government Spending and Budget Deficits in Industrial Countries", Centre for Economic Policy Research.

[36] Schmidt, M. G. (1996)."When Parties Matter: A Review of the Possibilities and Limits of Partisan Influence on Public Policy", European Journal of Political Research, 30, 155-183.

[37] Segura-Ubiergo, A., Simone, A., Gupta, S. (2006) „New Evidence on Fiscal Adjustment and Growth in Transition Economies", IMF working paper 244.

[38] Stoian, A. (2010) „Fiscal vulnerability vs. fiscal sustainability: theoretical background", Financial and Monetary Stability in Emerging Countries, 11th International Conference, Supplement Theoretical and Applied Economics ECTAP.

[39] Turner, Chad; Tamura, Robert; Mulholland, Sean (2008) "How Important are Human Capital, Physical Capital and Total Factor Productivity for Determining State Economic Growth in the United States: 1840 - 2000?", Munich Personal RePEc Archive.