Efficiency of Public Expenditure: Review and Preliminary Results for Romania

Simona-Gabriela MASCA

Lecturer PhD, Department of Finance, Faculty of Economics and Business Administration,
Babes-Bolyai University, Cluj-Napoca, Romania
Email: simona.masca@econ.ubbcluj.ro

Abstract: *The issue of public spending efficiency is a current one in the majority of countries, especially for those confronting large negative effects derived from recent crisis. In Romania, some arrangements were recorded lately in order to reduce costs in government sectors. Thus, we evaluated the performance and efficiency level in Romanian public sector, both in aggregate and disaggregated terms. Our analysis is based on a methodology recently developed in the area. The results on composites indicators allow to place Romania above average in terms of public sector efficiency, but in a very heterogeneous situation in structure: total public spending is highly efficient in generate economic performance, while it is highly inefficient in insuring stability in the same period 2001-2012. Our findings are useful for government to set intervention priorities in order to improve efficiency in the most inefficient sectors. One special case is that of social public expenditures, whose impact on income distribution has weakened lately requiring the reorganization of the social public spending system.*

1. Introduction and a short semantic debate

Both in the private and public sector, we are lately witnessing an entire process of rethinking and reshaping the concept of efficiency, based on new rules. The current context of the global economy challenges governments who are facing budget pressures and excessive debts to find solutions to achieve public policy objectives by employing a limited amount as possible of resources. This requires efficient activity in the public sector on individual components. The logic of this approach is in line with what the literature recognizes as a convex relationship between public expenditure and benefits in terms of social welfare: with increasing public expenditure social welfare increases to a point beyond which the benefits tend to decrease when additional public expenditure incurs. The efficiency of the public sector is damaged in the second half of the curve, imposing the limitation of state intervention. Theory postulates and the empirical results confirm the higher efficiency in the public sector of a less interventionist state than in a strongly interventionist one.

Overall efficiency of the public sector in a country does not provide sufficient information, thus being necessary to evaluate it by components of public intervention. A good

indicator of aggregate efficiency may be the result of an extremely heterogeneous situation regarding efficiency on different sectors. Acknowledging the most inefficient sectors of public intervention enables governments to set intervention priorities to improve overall efficiency.

This study does not aim to compare the efficiency of the Romanian public system with the efficiency of other public systems, as most studies do, but to compare the efficiency of various public sectors in Romania. For the assessment to be realistic, the efficiency of the components of the public sector in Romania is assessed by reference to relevant averages in the economy. Such an approach enables the development of a coherent strategy to prioritize interventions to improve performance in the most inefficient sectors.

Literature commonly uses the term "efficiency" when comparing public expenditure employed to achieve public interest objectives to the results obtained in relation to these objectives (the outcome). If this is the term preferred by many authors, there are others who prefer the term "impact".

Ecalle (2005) strictly separates the notions of efficiency / effectiveness in the following manner: one can talk about *effectiveness* when referring to public policy, while managing a public body can be characterized by *efficiency*. A body managing public funds is *efficient* if it has the ability to maximize the ratio of products / results (in terms of quantity and quality) and costs incurred.

It is not sufficient for public bodies to reach efficiency, but it is a prerequisite for both public policy and public expenditure employed to become effective. *Effectiveness* is judged by the socio-economic benefit brought by public expenditure. It is calculated as the difference between the added benefit for the community based on the public expenditure and the cost of compulsory levies necessary to fund that expenditure. If the socio-economic benefit is positive, then the expenditure is justified. Gains in terms of utility, in other words collective surplus, are not always easy to measure - Ecalle (2005) exemplifies through the social utility of the education system which goes as far as shaping the personality of the students in the spirit of their role as citizens in society, something that is highly difficult - if not impossible - to be measured.

For this reason, those concerned with effectiveness in public administration, considers Ecalle (2005), examine the contribution of public goods to reach the macro-economic objectives defined by the political power (such as reducing unemployment, environmental protection, etc.). And the term used in this context is "*impact*", which compares the final results (impact) to the cost of that activity or product provided. Most often, however, major objectives are explained by many factors, not just related to the public funds incurred. In this context it is difficult to measure the effectiveness of public expenditure.

In the last decade, measuring the efficiency of the public sector has become a topic of increasing interest, outlining a widely accepted idea according to which assessing efficiency must be based not necessarily on inputs (mobilized resources), but rather on the services provided and further, on the resulting effects related to overall development objectives. In fact, Tanzi (1974) shows for the first time the difference between costs incurred and benefits obtained hitherto considered identical. But the first initiative to measure public expenditure in relation to the benefits it brings dates no further than 1997 and it belongs to Tanzi and Schuknecht (1997). More recently, there have been concerns to distinguish between the

immediate benefits achieved (outputs) and further results (qualitative rather than quantitative) subordinated to the objectives of general interest.

Whether it is "efficiency", "effectiveness" or "impact", all of them measure the adequacy of the volume of public expenditure to financially support an objective of general interest. What makes the difference is how their outcomes are valued as compared to these objectives and at what level (particular or general, aggregated or disaggregated) is the situation evaluated.

The analysis of public sector efficiency originates and is inspired by efficiency studies focused mostly on other entities such as companies, banking institutions and universities (Afonso 2013).

The paper is structured as follows: Section 2 provides the investigation framework of the theme, explaining common methodologies and results obtained by other authors; Section 3 shows our personal contribution to the topic of performance and efficiency of the public sector in Romania; and Section 4 presents the conclusions and some policy implications.

2. Appropriate measures and results on efficiency – a literature overview
2.1. Measures and methodologies

Measuring public sector efficiency is not an easy endeavor, a major challenge being to identify the "effort-effect" pairs, that is connecting specific categories of public expenditure to macroeconomic indicators relevant to the results produced by that expenditure, and at the same time easy to commensurate.

In this area, widely known are the contributions of Afonso et al. (2005, 2008, 2010, and 2013) who draw up composite indicators for assessing performance and efficiency in the public sector, both encompassing in their structure only those results which had impact (outcome). These indicators are the starting point or reference for other studies in the field. Performance takes into account the results of the public sector, while efficiency balances results against resources employed. The results are basically socio-economic variables that can be observed.

Performance in the public sector is considered as a sum of performances on various sectors of government intervention. Performance indicators in the public sector are divided into two categories: indicators of opportunity (reflecting the influence of fiscal policies on individual opportunities - the state is the promoter of equal opportunities in the market) and traditional indicators (related to the functions of Musgrave).

If the first category of indicators derived from the role of the state as public administrator and provider of public services, those in the second category refer to the role of the state in the allocation of resources, distribution of income and economic stability.

The opportunity indicator evaluates the results in several sectors, such as administration, education, health, public infrastructure. In the administration sector fight against corruption, bureaucracy, quality of justice and underground economy are considered. The education system is assessed both quantitatively (by the number of enrollments in education) and qualitatively (by educational performance). Health is assessed by life expectancy and infant mortality. Finally, the quality of public transport and communication are important in valuing public infrastructure.

The indicator of Musgrave's functions (stabilization, allocation, redistribution) consider GDP growth variation and inflation rate (stability), unemployment rate, per capita income and GDP growth rate (economic performance), distribution of income in society as measured by the GINI coefficient (redistribution).

The composite indicator of public sector performance sums up the indicators mentioned above, granting them equal weights. In comparative studies, Afonso et al. (2005) recommends normalization of values, setting the average to 1 and interpreting public sector performance in each country as compared to the average. Afonso et al. (2013) has a similar approach in his latest study: he selects a number of seven representative indicators for output in the public sector (three related to traditional state functions and four referring to key sectors of state intervention) and for some of these indicators he assesses specific sub-indicators. Sub-indicators are normalized as compared to their average, and then are averaged to obtain the value of each individual performance indicator. Public sector performance is the average of these indicators, which - if over-unit - is interpreted as "good". A simple average is usually calculated by granting equal weights to performance indicators. The results do not change significantly when distinguishing the importance and the weight given to different indicators (Afonso et al. 2005). Given that the collected data to draw up performance indicators are not all as truthful, some of them being the result of analyses based on questionnaires, the authors (Afonso et al. 2013) take into account the possibility to differentiate the importance attached to these indicators, approach which however does not significantly change the result.

Efficiency in public expenditure is assessed by comparing performance on public expenditure sectors committed to funding these sectors. Public expenditure expressed as a share of GDP reflects the opportunity costs required to obtain performance in the public sector.

The easiest way of expressing public sector efficiency is shown as below:

$$Efficiency = \frac{Performance}{Public\ expenditure}$$

For example, the distribution of income in society is conditioned by transfers representing social payments from the state budget, quality of infrastructure depends on public investment and the completion of a course of education is influenced by public investment in education. Public consumption is the necessary input for the administrative function of the state, and expenditure as a whole determines economic stability and economic efficiency.

In comparing the composite indicators of efficiency in a sample of countries, and as a first step, Afonso et al. (2005) suggests the normalization of public expenditure among countries, taking the average value of 1 for each category of public expenditure. Similarly, public sector performance is compared to the average. Finally, public sector efficiency is determined as sum of different sectors efficiency that, at their turn, results from the ratio between performance and the costs incurred.

However, some clarifications are necessary. Not always it is possible to establish a connection between a certain category of public expenditure and a certain performance. Most of the time, performance indicators are under the influence of many factors, some of them unrelated to public expenditure. For example, public funds allocated to health determine performance in these sectors without them being the only factors. The indicator of life

expectancy is influenced by public investment in health, but also by other factors such as climate and people`s lifestyle. Quality of infrastructure, in turn, is determined not only by public funding, but also by some specific geographical conditions. Income distribution is also conditioned by the degree of progressivity of the tax system.

Secondly, the authors underline, one must take into consideration the fact that the effect occurs after a certain period of time, after public investment, public transfers, etc. occur. For example, it is accepted that public investment in education achieved over a decade will influence the situation of completion of studies only at the end of the next decade.

Efficiency of public expenditure in the social sectors is assessed particularly in relation to their effect of reducing income inequality and poverty rate (Afonso et al. 2008). The most inefficient countries are those that could have achieved better results in reducing income inequality with the money allocated to social protection, or those countries that could have achieved the same results with less public expenditure. The same public expenditure on social protection is connected to long-term unemployment rate, life expectancy or dropout rate for the same purpose of assessing the efficiency of public expenditure (Coelli et al. 2008).

Common methodologies in the literature investigating the issue of efficiency in the public sector start by drawing up the composite indicators and then going deeper by using more advanced techniques based on the Free Disposal Hull (FDH), Data Envelopment Analysis (DEA) and two-step DEA / Tobit analysis. The latter use the concept of efficiency frontier, whose shape they calculate and estimate. This frontier refers to the maximum output that can be achieved at a given level of inputs. In a non-parametric approach (the most common), the efficiency frontier provides a benchmark against which the performance of different public systems can be assessed. If the composite performance of the public sector in a country has a value lower than the one set by the efficiency frontier, than that specific public sector is characterized by inefficiency (for a detailed presentation of the methodology see Afonso et al. 2010).

In fact, the DEA methodology developed many years ago by Farrell (1957) has been quite recently applied in the public sector using two approaches: (i) input approach based on the determination of the minimum amount of input needed to produce the same values of output, and (ii) output approach based on searching for the maximum output that can be achieved by mobilizing a certain volume of input. One can make judgments on the efficiency of the public sector by considering the ratio between the actual input and output values and the optimal values (maximum or minimum) that determine the efficiency frontier (Afonso et al. 2013).

DEA and FDH methodologies, widely accepted in the literature for efficiency assessment, present a number of drawbacks, which is why Afonso et al. (2013) recommends the parallel use of composite indices. In addition to that, Afonso et al. (2010) found minor differences between the results of different methods for efficiency assessment.

Latest studies show that the efficiency of public expenditure is under the influence of many factors and not just the volume of resources employed. In order to separate the influence of these "other" factors, the authors (Afonso et al. 2010) use the Tobit analysis that allows the correction of the results concerning public sector efficiency determined solely on inputs. These other factors, called non-discretionary, exogenous inputs or environmental factors may or may not have economic origins, but are decisive in explaining the heterogeneity of different

countries in terms of performance and efficiency in the public sector. For example, it is the case of the population`s education level: the higher the level, the more it generates a careful monitoring of politicians and bureaucrats and penalizing inefficiency in their work. In addition, proper training of workers in the public administration allows increased productivity and efficiency in the public sector. Physical capital stock in a country also conditions the efficient production of public goods. Protection of property rights hinder the extraction of resources from the private sector to finance the public sector, which legitimize and increase state performance in managing the public system.

Therefore, the basic methodology approved in this segment of the literature consists in drawing-up and interpretation of composite indicators provided that they identify the most relevant sub-indicators in their structure.

2.2. Results of the studies

Unfortunately, at public management level, the analyses of efficiency in public expenditure are relatively few. And until recently, they have not been a constant concern in the scientific publications. Only in the last decade, the number of studies on the effect of public expenditure concerning stabilization, allocation and distribution increased mostly because of the contributions of Afonso et al. (2005, 2008, 2010, 2013), Sanchez and Bermejo (2007), Mandl et al. (2008) who conclude that public expenditure is excessive and partially inefficient; and that the increase of efficiency in the public sector should be subject to increased performance in public institutions.

The authors are concerned either with the overall public system or specific sectors of public intervention, both in Africa and in Europe, OECD countries, emerging countries, Latin America. However there are few studies focused on the efficiency of the public sector in Europe, much less in the case of Romania.

Among the most important actors in the global economy, the U.S. and Japan get superior performance results to those registered in the EU in the field of public expenditure (Afonso et al. 2005). And inside the EU, Sweden, Hungary, Ireland, Luxembourg, Austria, Denmark are the most efficient in the allocation of public funds for social protection, while countries like Greece, Spain, Portugal, Italy and Belgium are the most inefficient (Coelli et al. 2008).

Of the public sector domains, for which studies of efficiency have been initiated, we mention: public order and national security, the judiciary and most notably education and health. Studies are concerned with both levels of the budget system, investigating the efficiency of public resource management through central and local budgets (Afonso et al. 2013).

In terms of performance, the results of the study by Afonso et al. (2005) show that states with low budgets have the best results overall, especially in the sectors of administration, and on the allocation and stabilization functions of Musgrave. Conversely, states with larger budgets have better performance in reducing income inequality.

In terms of efficiency, as well as performance, the results are the best in countries where the size of the budget is low (on all three functions of Musgrave and especially administration). Where the budget is of average size, education records greater efficiency and states with large budgets are more efficient in the field of infrastructure (Afonso et al. 2005, 2010).

Inverse correlation between performance/efficiency of the public sector and government size is a result also confirmed by other studies, on other samples of countries, the same as in Afonso et al. (2013). In addition, the authors conclude that this inverse relation persists over time and that large countries found no significant improvements in terms of performance of the public sector.

An important contribution belongs to Afonso et al. (2010) who, by his two-step analysis, shows that along resources mobilized and employed through state budget, other factors, non-fiscal ones, determine the efficiency of the public sector. Among non-discretionary factors, the competence of civil servants, the population`s education level, and notably granting property rights and GDP / capita significantly and positively influence the efficiency of public expenditure. Romania is among the countries where these factors have reduced the public sector efficiency score; if Romania scores in input-induced efficiency, which is not among the lowest, the non-discretionary factors merely exacerbate inefficiency. Ever more recent studies (Afonso et al. 2013) find other non-discretionary factors with significant impact on the efficiency of the public sector: transparency, regulation quality, corruption control, important in the Latin American countries.

This result has important implications in terms of economic policy by showing that a simple decrease in public expenditure does not ensure increased efficiency; therefore additional non-fiscal measures are needed.

An extremely delicate aspect is the efficiency with which public money is spent for social protection. It is very delicate because the studies do not always support, with their results, the socially oriented policies that still fail to prove their efficiency. Afonso et al. (2008) made an extremely important finding: fiscal efforts to reduce inequality of income tend to concentrate lately in the sphere of public expenditure more than on the taxes which have partially lost their ability to impact on income distribution. Moreover, transfers of resources to the needy have been replaced by health and education programs whose beneficiaries are all citizens, not just the poor. On the other hand, the assessments regarding the impact of such policies should also take into account former policies with the same objective as the effects are felt with some delay after their implementation.

Among public policies regarding expenditure, with possible impact on income inequality, are mentioned: transfers of income or purchasing power (in the form of grants to pay utilities, for example) and also public funding in education or health. Investing public money in education can improve the relative endowment - in terms of human capital - of the neediest. Free access to health facilities can improve the health of all citizens and especially that of the poor who have no access to private services, in a way that they will be also present on the labor market and thus they will increase their relative income.

In Romania, there are very few studies oriented towards analyzing performance and efficiency in the public sector and sometimes they are subject to criticism in terms of methodology and results obtained. For most of the time, in efficiency studies, Romania is included in the sample of EU countries or the countries that joined the EU in recent years. Few are the studies that focus exclusively on the efficiency of the public sector in Romania.

In terms of performance and efficiency in the public sector, study results of Afonso et al. (2010) place Romania on a not too favorable position in the group of considered countries (new EU countries and emerging countries). At the beginning of the XXI century, the composite

indicator of performance is 22% below average. The results by components of public intervention in Romania are similar to those in other new EU countries, recording scores above average in education (quality criteria) and income distribution, and below average scores for stability, economic performance and administration. In terms of aggregate efficiency and by the obtained score, the authors placed Romania close to the average among the new EU member countries, but below the average for the entire sample. On sub-components, Romania is ranked first on efficiency in public education, on medium level regarding efficiency of income distribution but it occupies one of the last positions on stability. The DEA analysis conducted by the authors leads to the result according to which Romania mobilizes in the public sector almost two times more resources than the most efficient country in the sample, and all just to obtain the same level of performance. On the other hand, on inputs employed, Romania only gets 62% of the output that could be obtained if the public sector would be more efficient.

Aristovnik (2011) shows in his study that there is a wide variety in terms of efficiency in education and health in the new EU member states and that overall efficiency level is low in these countries; performance in different domains is achieved by employing too many resources. As regards Romania, the author finds opposite results by applying two different methodologies to assess efficiency in the health sector, which makes the result interpretable. In contrast, in funding education with public money, Romania is among the most efficient countries among the new EU member states, being on the average of the EU15. Regarding the entire sample, the author concludes by stating that inefficiency in the health sector is more likely due to the excess of resources employed and less to the quality of the results. The source of inefficiency in the education sector is generally found in the impossibility to use the obtained results to achieve the major goals of the society.

Mihaiu et al. (2010) is another study which is concerned with Romania's performance in the public sector, comparing it with that of the EU countries; by applying a methodology for calculating the composite indicator of performance in the public sector, based on the allocation of different weights to indicators representing outputs / effects, the authors placed Romania in the category of low performance countries.

Enache (2012) identifies a negative impact of the recent years' crisis on the redistributive effects of social protection expenditure in the EU. In addition, among the relevant factors in explaining social protection expenditure efficiency to reduce income inequality, the author finds two more important ones: employment rate (positive influence) and dependency rate of the population – in the case of children and the elderly (negative influence).

Radu (2012) argues that in order to achieve significant redistribution between individuals it is not essential that the transfer of resources be targeted excessively to the underprivileged. The more social benefits are oriented towards the poor, the less poverty and inequality will be reduced.

Therefore, the situation of public sector efficiency in Romania is still insufficiently explored in studies. Perhaps more important than to compare Romania`s performance to that of other states is to identify and subsequently to develop those specific outputs and outcome which are subordinated to the policies for economic growth and social welfare and that are in connection with public funding.

3. Case of Romania

In this study, which is an exploratory one, we propose a preliminary analysis on the efficiency of public expenditure in Romania. Unlike other studies conducting comparative analyzes between performance and efficiency of the public sector in many countries by comparing them to a benchmark, the focus of this study is exclusively on Romania, highlighting the differences in terms of efficiency on different components of the public sector. By this approach we try to explain the results of studies which show that countries may not qualify as efficient or inefficient because on certain sectors they perform better than the benchmark while on others are below average. In term of public policy, our approach would allow the prioritization of efficiency increase on the less efficient segments in a context in which urgent action must be taken to streamline the public sector.

In this time of post-crisis, comparative analyses in relation to other countries are not the most conclusive, the situation being different from country to country. The analyses performed so far, connecting inputs (resources employed) to outputs (results on sectors measured by specific indicators), are not considering (1) the fact that those outputs are determined by a combination of factors and not just the public expenditure, and (2) the fact that sometimes the considered output is not necessarily an outcome, i.e. a factor that directly serves economic growth and social welfare. Along with traditional factors, growth, in its turn, is also conditioned by the quality of institutions and government performance. Furthermore, most of the studies on the efficiency of the public sector are comparative studies; comparing expenditure incurred in various countries is based on the assumption that production costs of public goods are proportional to GDP / capita.

3.1. Public policy performance

In this stage, using the methodology based on composite indicators, we proceed to analyze the performance and efficiency of the public sector in Romania. However, beforehand, we perform a descriptive analysis of performance trends associated with public funding.

In reference to the administrative component, Romania has recorded progress primarily in terms of corruption control; perception of how public authority succeeds to remove private influences and undeserved private earnings from state action improved by 23% during 1998-2012 (source: processed World Bank data - Worldwide Governance Indicators). Other sources even indicate an improvement in corruption control by 50% (Corruption Perceptions Index, Transparency International). Less significant progress concerns confidence in the judiciary, namely protection of property rights, activity of the police and the courts (only 5% in 14 years). Also, the government's ability to formulate and implement coherent policies to promote private sector development has improved only slightly over 10% during 1998-2012. As for the bureaucratic component, the time required to start a business in Romania decreased from 29 days in 2004 to 13.5 days in 2012 while resolving a situation of insolvency takes about 3.3 years today as compared to 4.6 years in 2004 (source: World Bank, Doing Business). Thanks to government efforts, underground economy in Romania also experienced a downward trend in the period 1999-2012, from 34.3% of GDP to 29.1% of GDP, (Schneider, 2010 and the European Commission). Overall, the indicator of government efficiency, as published by the World Bank

334

(Worldwide Governance Indicators), improved from 1998 to 2012 from (-0.6) to (-0.3) on a scale of (-2.5) to (+2.5); this indicator captures the perception of the quality of public services, the degree of independence from political pressures, the quality of policies promoted and their implementation and the credibility of members in the government.

Performance of public education can be measured by several indicators, among which the most relevant are the number of enrollments in public secondary schools, which in Romania has been down 20% in the last decade, and the number of university graduates which has increased almost 5 times in the last decade (source: World Bank, Education Statistics). Regarding the health system, World Bank data show an increase in life expectancy from 69 years in 1998 to 74 in 2011 and a decrease in infant mortality from 25 to 11 children per 1.000 live births (Health, Nutrition and Population Statistics).

Infrastructure increased in performance or, in other cases, stayed the same or even declined. The largest increases concern the communication component: for example, the number of Internet users increased from 2 to 50 per 100 people in the period 1998-2012. The kilometers of railway increased by 20%, the share of total paved roads did not significantly increase and the number of researchers involved in research and development decreased by 25% (source: World Bank, World Development Indicators).

From the beginning of the transition, social revenues per capita grew in real terms of 65%, reaching more than 11.000 USD. Income distribution has evolved as follows: overall, over the period 1998-2011, we have seen a slight decrease in the inequality of income, the Romanian society being closer to the status of perfect equality more than that of perfect inequality (the GINI coefficient ranges from 27 to 32 on a scale of 0 to 100). The share of social income by the poorest one-fifth of the population slightly increased from 8.7% to 8.8%, while the share held by the richest one-fifth of the population fell from 38% to 36% (source : World Bank, World Development Indicators).

Those listed above are socio-economic indicators on which the government has a significant - but not exclusive - influence and which reflect the results and performance of public policy.

Inspired by studies by Afonso, who has developed his own methodology for calculating composite indicators and who also applied it on several samples of countries, we proceed in a similar analysis by focusing on the case of Romania (year 2012) and comparing its performances to the average values of reference. Performance indicators relevant to the public sector in Romania, also present in Afonso`s studies, refer to the traditional functions of the state, those of allocation, redistribution and stabilization, and, in addition to those, the administrative functions and those which support key sectors (education, health and infrastructure). The results are found in Table 1 and explanations of the source and the calculation method of the indicators can be found in the table in the Annex.

Table 1: Public sector performance indicators in Romania, as compared to the average values of reference, 2012

Indicator	Romania	Average	Ro – normalized values
1. Redistribution	30,6	33,2	0,96
2. Stability	11,10	2,53	0,22
3. Economic performance			
- GDP (growth)	3,77	1,41	2,67
- GDP/capita	10251,75	27860	0,36
- unemployment rate	7,11	8,79	1,23
4. Administration			
- corruption	4,4	6,348	0,69
- protection of property rights	3,9	4,3	0,90
- independence of the judiciary	3,1	3,9	0,79
- bureaucracy	2,8	3,3	0,84
- legal framework efficiency	2,8	3,8	0,73
- transparency of government policies	2,9	4,3	0,67
- underground economy	29,1	18,9	0,64
5. Education			
- enrollments in secondary education	95,01	104,25	0,91
- quality of the education system	3,3	3,8	0,86
- quality of education in mathematics and sciences	4,5	3,9	1,15
6. Health			

- life expectancy	74,56	80,54	0,92
- infant mortality	10,7	4,02	0,99
7. Infrastructure	2,3	4,3	0,53

Notes: 1/ The average value is the one calculated at EU level (case of coefficient of redistribution, inflation, GDP growth, GDP / capita, unemployment, corruption perception index, underground economy, enrollments in secondary education, life expectancy, infant mortality/survival) and at the level of 142 countries covered by the Global Competitiveness Report (case of property rights, independence of the judiciary, bureaucracy, efficiency of the legal framework, policy transparency, quality of the education system, quality of education in mathematics and science, infrastructure)

2/ In case of specific indicators (GINI coefficient, inflation, unemployment, underground economy, infant mortality), we used the inverse values (1 / x or (100 - x) for the GINI coefficient or (1000-x) for the infant mortality rate) in order to equalize the impact of the indicators on public sector performance (increased indicator value leading to increased performance)

3/ In case of economic variables, we used the average of the last 12 years to capture the structural changes instead of the yearly fluctuations

4/ normalized values are determined by comparing Romania`s performance to the average values

What distinguishes our approach from Afonso`s is that we compared Romania`s performance to already calculated - and thus published - averages values. We also considered additional indicators when calculating the administrative component. These indicators that we added are the ones that Afonso names non-discretionary, and whose effect is isolated in studies by using the Tobit method. By including an important part of the non-discretionary variables in the preliminary analysis we simplified subsequent steps. Thus, there was no further need to apply the Tobit analysis.

Aggregate and disaggregate performance of the public sector in Romania is presented as in Table 2.

Table 2. Performance (aggregated and disaggregated) of the public sector in Romania

	Romania
	Romania
1. Redistribution	0,96
2. Stability	0,22
3. Economic performance	1,42
Total traditional functions	0,86
4. Administration	0,75

5. Education	0,97
6. Health	0,95
7. Infrastructure	0,53
Total other functions	0,8
Aggregate performance (relative)	0,82

Source: own calculations

Each of the seven indicators resulted from the average of sub-indicators (where the case). Aggregated performance, taken separately on traditional functions and other functions, or taken together, resulted from the average of the indicators` values. We assigned the same weight (importance) to each indicator in the structure of the public sector performance index, and then distinct weights like higher weights for indicators associated to traditional functions (following the method of Afonso et al. 2013); results do not differ significantly.

Neither considered as a whole, nor on the two function categories of the state, the result shows that Romania is not among the countries with an overall competitive public system. Aggregate performance is subunit, below average, located around 0.8 (average value is 1). However, significant differences are observed in distinct sectors of state intervention. Public system in Romania is competitive in relation to the impact it has on the economy, namely on economic growth and employment. Nevertheless, it is underperforming in other sectors such as price stability and infrastructure. Sectors with relatively good results are redistribution, education and health, while public administration still has significant shortcomings in terms of performance.

3.2. Public expenditure efficiency

Assessing the efficiency of public sector performance requires connecting performances to the costs represented by public expenditure. This approach starts from the assumption that performance and outcome are the exclusive result of public expenditure policies, which in reality is not quite so; performance sectors such as education, health, etc. are also influenced by other factors external to the public sector and connected to the decision-making of private agents.

With these clarifications in mind, we try to identify a connection between public funding and performance in priority sectors of the society, and thus determine the efficiency of the public sector in Romania. Given that the effect of public funding is felt with a delay of several years, we consider the public expenditure average of the decade 2001-2010, likely to influence performance at the beginning of the last decade (2011/2012) (see Table 3).

338

Table 3. Public sector efficiency in Romania, 2012

Public expenditure	Expenditure – normalized values	Performances	Performances – normalized values	Efficiency of public expenditure
Subsidies and transfers	0,8	Redistribution	0,96	1,2
Total public expenditure	0,77	Stability	0,22	0,28
Total public expenditure	0,77	Economic performance	1,42	1,84
Government consumption	0,77	Administration	0,75	0,97
Expenditure in education	0,73	Education	0,97	1,32
Expenditure in the health sector	0,48	Health	0,95	1,97
Gross capital formation	1,81	Infrastructure	0,53	0,29

Source: own calculations; normalized public expenditure results are based on Eurostat data that we processed.

Public sector performance on every sector is connected to those categories of public expenditure that are used to achieve such performance. Public expenditure (% of GDP) is normalized as compared to the EU average. And efficiency on every sector is determined by making a ratio between the performance of every sector (determined above, also normalized as compared to average) and the corresponding, normalized public expenditure.

Normalized public expenditure indicates the following results: public investments (gross capital formation) in Romania are well above average while the health sector benefits from half the average public funding granted by EU countries. The other categories of public expenditure (government consumption, education, subsidies and transfers, including total public expenditure) are on average 70-80% of the corresponding average expenditure in the EU. In terms of efficiency on sectors, the results show efficiency above average in four of the seven sectors: health, economic performance, education and redistribution. In the administration sector, efficiency is close to the average. But stability and infrastructure are two sectors where the state has proved inefficient.

Due to a relatively low volume of public expenditure, we notice an improvement in the efficiency results considered in its structure, as compared to performance results. This finding confirms what Afonso et al. (2013) had obtained in their studies: small budget countries are

more efficient. So if we found good performance in connection solely to the economic sector, due to the relatively low costs incurred, many other sectors prove to be efficient (the health sector is most relevant in this respect). In these cases, performance is obtained at low cost. Among the sectors characterized by inefficiency, infrastructure seems to be the most problematic, public investment being almost double the EU average, whilst performance is half of that obtained in the EU. In this particular case, performance is obtained with huge costs.

Figure 1. Framing the sectors of public intervention in relation to their performance and efficiency, 2012
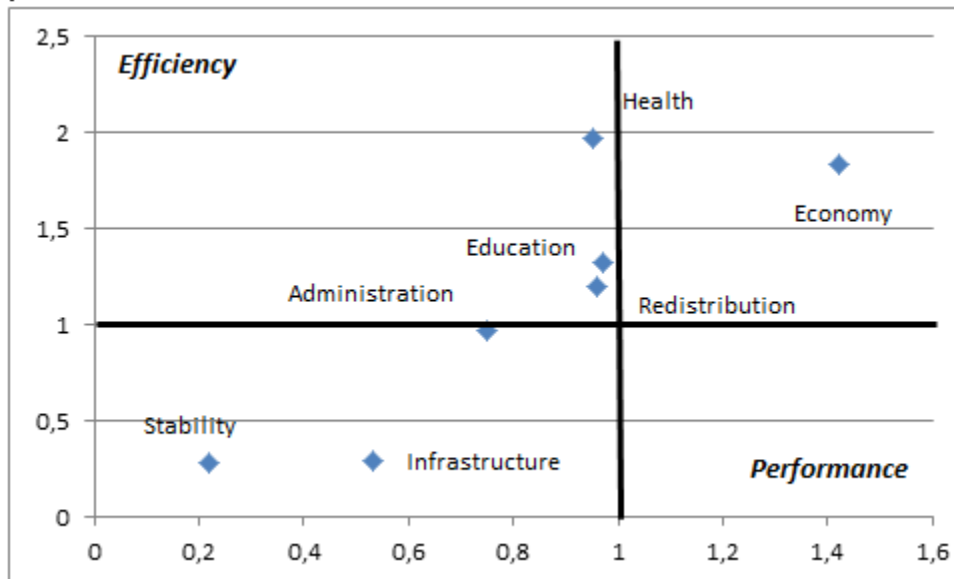
Source: own projection based on results obtained

As shown in Figure 1 in Romania, the only sector of public intervention which is simultaneously performant and efficient is the economy. Education, health and redistribution are efficient, but on the limit of performance. Although recording relatively low performance, administration can be considered on the limit of efficiency. However, infrastructure and stability are the least performant and efficient public intervention sectors in Romania.

In aggregate terms, the efficiency of the public sector in Romania has a score of 1.12, slightly above average. On the other hand, Romania's budget is a relatively small one, which mobilizes between 30 and 40% of GDP. This association between a weakly interventionist state and an above average efficiency allows Romania`s inclusion in the pattern found by most of the studies: the more state intervention, the less efficiency in the public sector. However, as we have seen, the situation in the structure is extremely diverse.

As shown in other studies, the issue of efficiency of public social protection measures is a delicate one that we intend to investigate more closely as follows.

In Romania, if we consider the trend of public investment in social protection, compared to the evolution of the situation concerning income inequality since 2000, it will leads us to say, at a first glance, that social measures have not fully proven their efficiency in reducing income inequality (see Figure 2).

Figure 2: Evolution of public expenditure on social protection and income inequality, Romania, 2000-2012
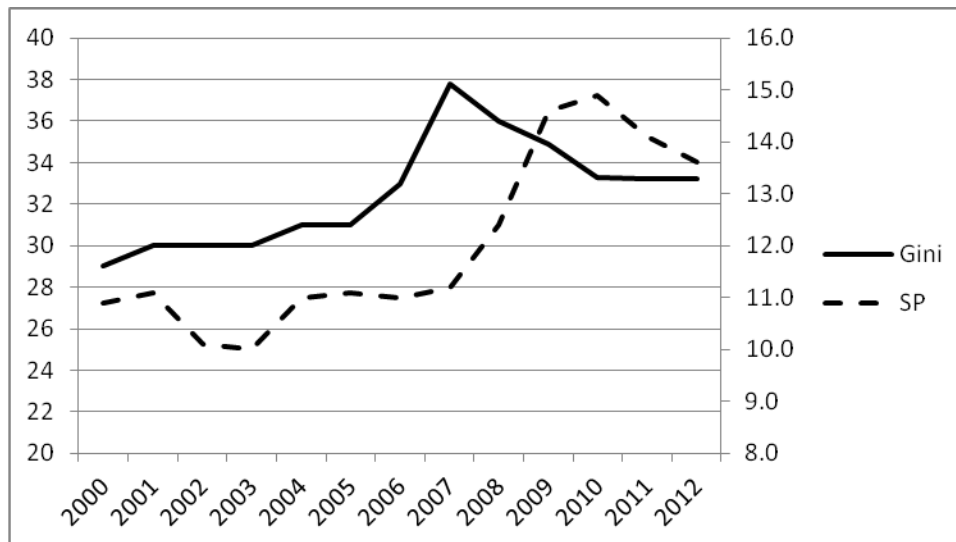
Source: processed Eurostat data

Note: 1. The GINI coefficient is shown on the left axis while public expenditure on social protection (expressed as % GDP) is represented on the right axis.

The 2007-2010 sub-period is the only efficient one characterized by the reaction of income inequality reduction to increased social protection expenditure. In other sub-periods (2001-2003 or 2010-2012), the decrease of investments in social protection seem not to affect in any way the situation of income distribution in the society; this can be explained by the policies of the previous period characterized by increases on the social protection component, effects which are felt and manifested later by keeping the same income distribution. Finally, sub-periods such as 2000-2001, 2004-2005, 2006-2007 have as common characteristic the evolution in the same direction of the two indicators, a situation which if viewed independently of prior periods and thus may be characterized by inefficiency.

If we extend the period of analysis, from the beginning of the transition period to the current one, we find a stronger, reverse connection between the two indicators: as social protection expenditure increases, the GINI index lowers, which means a reduction in income inequality. The correlation between the two variables is presented in the figure below (Figure 3).

341

Figure 3: The connection between social expenditure and the GINI coefficient, Romania, 1995-2011
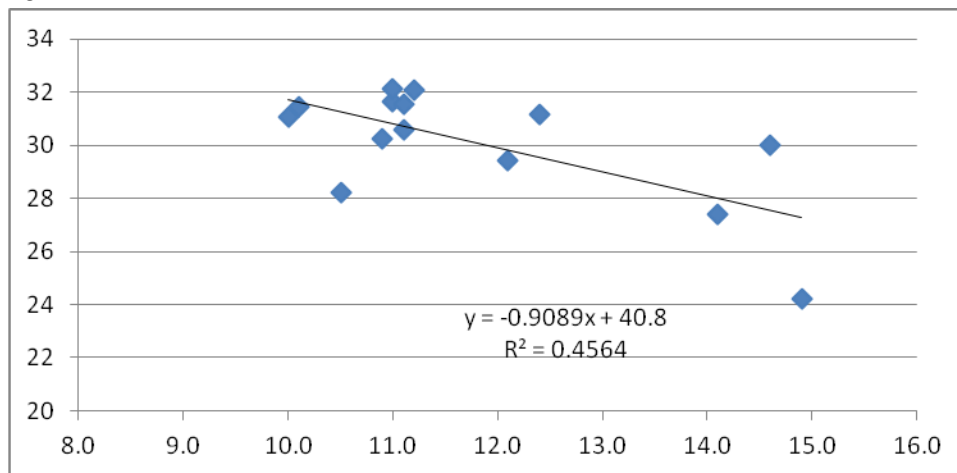

Source: own calculations based on World Bank and Eurostat data
Note: on the horizontal axis we represented social protection expenditure (% of GDP), and on the vertical axis the GINI index

This result shows that an increase in social protection expenditure by 1% of GDP reduces the GINI index by 0.9 on a scale of 0-100.

We reach a similar result if we consider another indicator of income distribution in society, i.e. income owned by the poorest one-fifth of the population (data provided by the World Bank). The relationship between this indicator and social protection expenditure in Romania is presented as in the Figure 4.

Figure 4: The connection between social protection expenditure and revenues of the poorest one-fifth of the population, Romania, 1995-2011
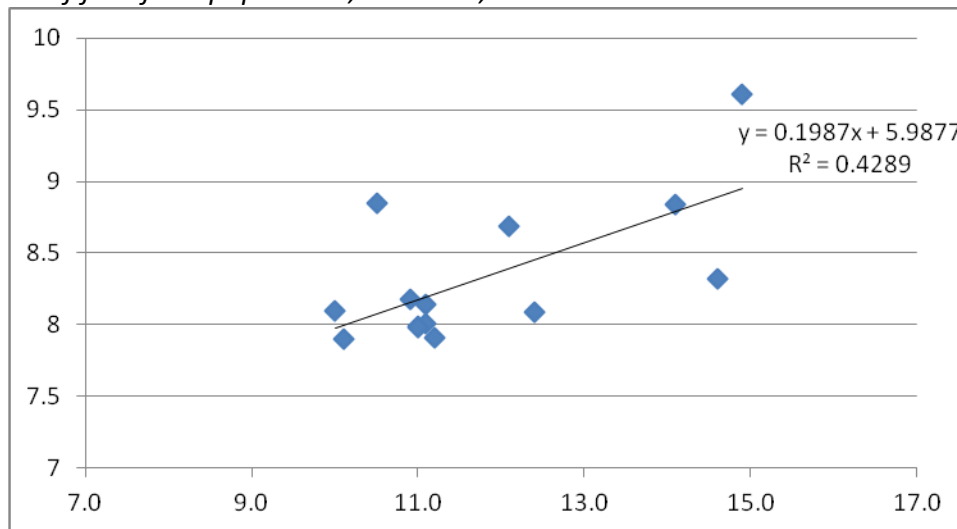
Source: processed World Bank and Eurostat data

In Romania, a 1% increase in social protection expenditure determines an increase of nearly 0.2% of the share of the poorest class of society income.

With these findings, that a relationship between social protection expenditure and income distribution in society is stronger if analyzed on a longer time horizon and weaker if analyzed only more recently, we join the results of Afonso et al. (2008) and Enache (2012). Therefore, social protection expenditure seems to lose recently from its efficiency and impact on regulating income distribution. This happens because the public measures of social orientation are not the only determinant of income distribution; distribution of income in society also depends on tangible goods and financial legacy, legacies in terms of human capital (attitude towards learning, work, risk-taking), social arrangements (marriages with partners having similar social status), individual talent, intelligence level, even luck and also on how former social policies have spread their effects (Afonso et al. 2008). Not incidentally, the authors find and support a social protection policy based of other terms, such as well-defined and less targeted programs to specific categories of beneficiaries.

4. Conclusions

This study is a preliminary investigation on public sector efficiency in Romania. Briefly, it allows identifying the most efficient and inefficient public sectors in Romania. Total public spending support efficiently the economic performance, but it impacts in a highly inefficient manner the stability issues. Public spending in sectors as education and redistribution are placed on the frontier of efficiency and performance. Health is an efficient public sector, but not very performant. Infrastructure and administration are low performing public areas; though, public administration is on the frontier of efficiency.

These findings have a set of policy implications. There are useful for government to set intervention priorities in order to improve overall efficiency in the public sector. Results on performance together with those on efficiency should be taken into account. Most likely, an area which is efficient but not performant owe its efficiency on low costs, and thus efficiency is not well grounded. This is the case of public health and administration sector in Romania; improving performance in these areas, without increasing excessively the costs, should be taken into account by the government. A more independent judiciary, a more efficient legal framework, more transparency in public policies and a better protection of property rights would improve significantly the performance at administration level. Public health has improved its performance over the last decade at low costs, but more efforts are needed especially on reducing infant mortality.

Education public sector is a heterogeneous one, since fields like mathematics or sciences are highly performant while other fields are well below average. Homogenizing the education sector in its structure, in performance and efficiency terms, would increase the overall quality of education system in Romania. A special attention should be paid on enrollments in secondary education which is below average and also decreasing.

As our results reveals, the redistributive effects of social public policies should be reevaluated, and perhaps a less targeted programs should be implemented, in line with other authors' recommendations.

Stability and infrastructure are the less performant and less efficient public areas. In the infrastructure field, the well below average performance is obtained mobilizing above average public investments, and this is the most problematic issue in Romanian public system at this time. Equally questionable is the inefficiency of total public spending in insuring price stability. Annual growth rate of consumer prices highly exceeded the EU average, being situated around 15-35% at the beginning of the analyzed period and decreasing lately, but still remaining at high levels. Multiplying government efforts in these respects is a top priority.

The results of this study regarding public sector efficiency in Romania in 2012 allow compliance with the pattern outlined in previous studies, that of a state with a relatively low state intervention, which is characterized by above-average efficiency. What is atypical is the mediocre efficiency in Romania`s public administration. Atypical is also the difficulty with which the state performs its stabilization function. Highly efficient in the education sector, Romania is approaching the pattern of a country with average intervention. Infrastructure is still a deficient sector in Romania, but this is specific to a state with a relatively low budget. Efficiency in the health sector, well above average, is due primarily to a relatively low volume of resources employed. This is a result that supports the theory of Aristovnik (2011).

Overall, compared to the situation at the beginning of the XXI century, in 2012, Romania has improved its position regarding public sector efficiency, in aggregate terms exceeding the average, and on sub-components recording improvements on the allocation function.

We are well aware of our analysis limitations. To begin with, to measure public efficiency is complicated due to difficulties in measuring costs and benefits and putting them in connection. Another difficult aspect is the allocation of fixed costs for a specific function. Sometimes, the choice of indicators underlying the composite indicator is based on subjective factors and data availability.

Making the difference between efficiency and effectiveness in the public sector and quantifying them is a real challenge. Even if more difficult to assess, more than public expenditure efficiency, most important is perhaps its effectiveness. Effectiveness is a deeper concept than efficiency as it assesses even the ability of resources committed to serve the final goals pertaining to population welfare and economic growth. On the other hand, the latter is under the influence of several factors, including outputs, and not only them. In order to make a public sector efficiency assessment as fair as possible, in explaining outcome, it is essential to separate the effect of factors other than public resources employed and to link the adjusted outcome (induced by public expenditure) to the resources employed. Our futures analysis on Romanian public spending efficiency will be based on these aspects.

Annex

Indicator	Source	Explanations
1.Redistribution coefficient	European Commission, Eurostat	GINI coefficient: 0 (perfect equality) - 100 (perfect inequality), 2012
2. Stability – Inflation	World Bank, World Development Indicators	The average of the period 2001-2012, the annual growth rate of consumer price index
3. Economic performance		
- GDP (growth)	International Monetary Fund, World Economic Outlook Database, April 2014	The average of the period 2001-2012, annual increase in GDP at constant prices
- GDP/capita	International Monetary Fund, World Economic Outlook Database, April 2014	The average of the period 2001-2012, GDP per capita
- unemployment rate	International Monetary Fund, World Economic Outlook Database, April 2014	The average of the period 2001-2012, % total workforce
4. Administration		
- corruption	Transparency International - Corruption Perceptions Index	The index ranges on a scale from 10 (no corruption) to 0 (high corruption), 2012
- protection of property rights	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (very poor) to 7 (very strong), the average of the period 2010-2011
- independence of the judiciary	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (strongly affected) to 7 (completely independent), the average of the period 2010-2011
- bureaucracy	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (very heavy) to 7 (not heavy), the average of the period 2010-2011

- legal framework efficiency	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (extremely inefficient) to 7 (very efficient), the average of the period 2010-2011
- transparency of government policies	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (totally lacking transparency) to 7 (very transparent), the average of the period 2010-2011
- underground economy	Schneider, 2013	% GDP, 2012
5. Education		
- enrollments in secondary education	World Bank, World Development Indicators	Share in total enrollments, 2012
- quality of the education system	World Economic Forum Global Competitiveness Report 2011 - 2012	The education system meets the needs of a competitive economy: 1 (not at all) - 7 (completely), the average of the period 2010-2011
- quality of education in mathematics and sciences	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (poor) - 7 (excellent quality), the average of the period 2010-2011
6. Health		
- life expectancy	World Bank, World Development Indicators	Life expectancy at birth, expressed in years, 2012
- infant mortality	World Bank, World Development Indicators	Infant mortality rate per 1000 live births over one year, 2012
7. Infrastructure	World Economic Forum Global Competitiveness Report 2011 – 2012	The index ranges on a scale from 1 (undeveloped) - 7 (extensive and efficient, on international standards), average 2010-2011

Bibliography

Afonso, A., Romero, A., Monsalve, E. (2013). Public Sector Efficiency: Evidence for Latin America. *Inter-American Development Bank, Fiscal and Municipal Management Division, Discussion Paper*, no IDB-DP-279, march 2013.

Afonso, A., Schuknecht, L., Tanzi, V. (2005). Public sector efficiency: An international comparison. *Public Choice*, 123 (3), 321-347.

Afonso, A., Schuknecht, L., Tanzi, V. (2008). Income Distribution Determinants and Public Spending Efficiency. *ECB Working Paper series* no 861/January 2008.

Afonso, A., Schuknecht, L., Tanzi, V. (2010). Public Sector Efficiency: Evidence for New EU Member States and Emerging Markets. *Applied Economics*, 42 (17), 2147-2164.

Aristovnik, A. (2011). An Analysis of the Efficiency of Education spending in Central and Eastern Europe. *Knowledge as Business Opportunity: Proceedings of the Management, Knowledge and Learning International Conference 2011*, 277-286.

Coelli, T., Lefebvre, M., Pestieau, P. (2008). Social protection performance in the European Union: comparison and convergence. *CORE Discussion Paper* 2008/12.

Ecalle, F. (2005). *Maitriser les finances publiques! Pourquoi, comment?.* Economica. Paris.

Enache, C. (2012). The Efficiency of Expenditure-Related Redistributive Policies in the European Countries. *Timisoara Journal of Economics*, 5 (18), 380-394.

Farrell, M. (1957). The Measurement of Productive Efficiency. *Journal of the Royal Statistical Society*, Series A, 120, Part 3, 253-290.

Mandl, U., Dierx, A., Ilzkovitz, F. (2008). The effectiveness and efficiency of public spending. *European Comission, Economic Papers*, 31/2008.

Mihaiu, D., Opreana, A., Cristescu, M. (2010). Efficiency, Effectiveness and Performance of the Public Sector. *Journal for Economic Forecasting*, Institute for Economic Forecasting, 4, 132-147.

Radu, C. F. (2012). Ways of income redistribution in the society. *The Scientific Journal of Humanistic Studies,* 4 (6), 228-233

Sanchez, A.M., Bermejo, L.R., (2007). Public Sector Performance and Efficiency in Europe: the Role of Public R&D. *Institute of Social and Economic Analysis: Madrid*, Working Papers 01/2007.

Schneider, F., (2013). The Shadow Economy in Europe,2013. *Johannes Kelper University of Linz, Austria.*

Schneider, F., Buehn, A., Montenegro, C. E. (2010). Shadow Economies All Over the World: New Estimate for 162 Countries from 1999 to 2007. *World Bank Policy Research Working Paper*, No 5356.

Tanzi, V. (1974). Redistributing Income through the Budget in Latin America, *Banca Nazionale del Lavoro, Quarterly Review.*

Tanzi, V., Schuknecht, L. (1997). Reconsidering the Fiscal Role of Government: The International Perspective. *American Economic Review*, 1997 (87), 164-168.

*** World Bank data - Worldwide Governance Indicators, Doing Business, Education Statistics, Health, Nutrition and Population Statistics, World Development Indicators

*** International Monetary Fund, World Economic Outlook Database, April 2014

*** World Economic Forum, Global Competitiveness Report 2011 - 2012

*** Transparency International, Corruption Perceptions Index

*** European Commission, Eurostat database