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PUBLIC SECTOR INFLUENCES IN THE DEVELOPMENT OF UNDERGROUND ECONOMY AND CORRUPTION IN ROMANIA, IN EU CONTEXT

***Abstract.** This article aims to develop statistical and econometric analysis on several countries in order to capture the main aspects of the underground economy, corruption, quality of public finances, human development index and economic growth, in the context of the European Union.*

Key words: *Underground Economy, Corruption, Public Sector, Economic Growth, Human Development.*

JEL Classification: E62, H11, O10

I. Introduction

The current crisis has revealed serious problems of the European economies. On the background of economic recession has been a sharp decline of public financial resources, which led to a significant increase in consolidated national government budget deficits. High corruption and shadow economy share in GDP are two significant other factors that worsen the economic situation of many European countries. We tried to snap a different correlations and conditionings between these variables. In addition, we analyzed the quality of the public finance indicators and the human development index.

II. Theoretical aspects

a. Underground economy

Tax evasion and the lack of public financial resources are the biggest problems of Romanian economy and EU economies in the context of the actual financial and economic crises. Tax evasion is encountered both in the "surface" economy and, mostly, in the underground economy. The shadow economy has reached specialists' interest since the early '60s, when the phenomenon took a great extent. The underground economy appears in literature under various names: shadow, hidden, disguised, parallel, informal, dual, cash, secondary, illegal, gray, huge

economy or contrary economy, enclosed, dangerous, occult, ghost, invisible and exists, more or less, in all the countries of the world. The definitions of the underground economy, state, mainly, the opposition of the underground economy compared to the dominant approach of production (formal economy), the law or respect for the rules, the concept of underground economy meeting broadly those activities whose existence is not officially known (accounted) and whose incomes are not subject to tax returns (see also Toader Stela [13]).

We will use in this article the definition of underground economy which is utilized by prof. Friedrich Schneider in his research, because we also use his estimation about underground economy. In table 1 we presented the structure of underground economy.

Table 1: Economic Activities of the Underground Economy

Type of Activity	Monetary Transactions		Non Monetary Transactions	
ILLEGAL ACTIVITIES	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling; fraud, human-, drug-, and weapon-trafficking		Barter of drugs, stolen goods, smuggling etc. Produce or growing drugs for own use. Theft for own use.	
	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
LEGAL ACTIVITIES	Unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods	Employee discounts, fringe benefits	Barter of legal services and goods	All do-it-yourself work and neighbor help

Source: Friedrich Schneider [12], p.3

In this approach, underground economy contains typically illegal underground economic activities which fit the characteristics of classical crimes like prostitution, drug dealing, and robbery. The approach also excludes the informal household economy which consists of all household services and production. There is a rich literature about causes of Underground economy, but the most important author is prof. Friedrich Schneider.

Table 2: Main causes of the increase of the Underground Economy

Factors influencing the Underground Economy	Influence on the Underground Economy (in %)	
	(1)	(2)
Increase of the Tax and Social Security Contribution Burdens	35-38	45-42

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Tax Morale	22-25	-
Quality of State Institutions	10-12	12-17
Public Sector Services	5-7	7-9
Transfers	5-7	7-9
Specific Labour Market Regulations	7-9	7-9
Total	84-98	78-96

Source: Friedrich Schnedeir, [12], pg. 13

(1) Average values of 12 studies

(2) Average values of empirical results of 22 studies

Schnedeir took into consideration the following hypotheses:

- a. An increase in direct, indirect taxation and social security contributions increases the Underground economy.
- b. The lower tax morale, the higher the incentives to work in the Underground economy.
- c. The lower the quality of state institutions, the higher the incentives to work in the Underground economy.
- d. The more the country is regulated, the greater the incentives are to work in the Underground economy.
- e. The higher unemployment, the more people engage in Underground economy activities.
- f. The lower GDP per capita in a country, the higher is the incentive to work in the Underground economy.

We also used these hypotheses in our analysis and tried to explain the results accordingly.

b. Corruption

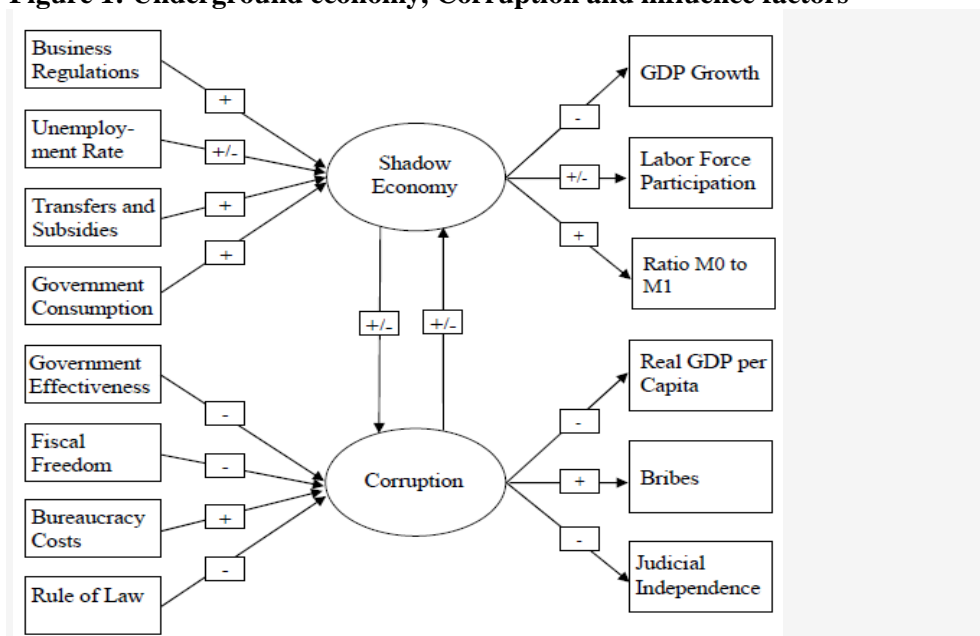
For a long period of time corruption was considered a natural component of a country, but in time, the study of this phenomenon has intensified. More quantitative studies and qualitative researches discuss at length the nature and consequences of corruption. Corruption manifests itself in various fields, various and complex forms and interactions, but dominates the fiscal and budget arena (for more details see Jorge Martinez-Vasquez, Xavier Arze, Jameson Boex, [10]).

Corruption in terms of fiscal and budget policy has three forms:

- a. Corruption in public financial resources (especially tax collection);
- b. Corruption in public expenditures (especially in public investments);
- c. Corruption in quasi-fiscal activities.

Andreas Buehn and Friedrich Schneider [6], have analyzed correlations between corruption and underground economy. On the page 22 they have presented a graph that captures correlations and influence factors of the two phenomena.

Figure 1: Underground economy, Corruption and influence factors



Source: Andreas Buehn, Friedrich Schneider [6]

The conclusion of their study is that a large shadow economy is linked to high levels of corruption. “In countries with large shadow economies, firms and individuals often rely to a large extent on shadow economic activities. In order to avoid detection, taxation, and punishment, they bribe bureaucrats. Moreover, low tax revenues reduce the quality of public services and infrastructure. This in turn reduces the incentives to remain in the official economy. Weaker legal systems and unstable conditions for economic activity increase corruption. Acting like an extra tax corruption drives individuals underground. Thus, the empirical relationship between corruption and the shadow economy confirms the findings of Johnson, Kaufmann, and Shleifer (1997), Johnson, Kaufmann and Zoido-Lobaton (1998b), Hindriks, Muthoo, and Keen (1999), and Friedman et al. (2000).” (see Andreas Buehn, Friedrich Schneider [6], pg. 27-28).

The negative relationship between corruption and taxation is intuitive and apparent, but this negative coefficient of correlation does not necessarily imply a causal relationship between two variables (for example, both high corruption and low tax revenue collection can be caused by common external factors such as the low level of development and high level of poverty). Such examples show that an increase in tax revenue is not registered only by subtracting corruption (see Martinez-Vasquez,

Jorge; Arze, Xavier; Boex, Jameson [10]). The existence of a direct relationship between the size of the underground economy and corruption was established by Schneider [11] in 2007, based on the data from 89th developed and industrialized countries.

Possible explanations regarding the negative relationship between corruption and revenue collection:

- if those who officially collect tax revenues are involved in corrupt practices (either by direct theft from public funds or by allowing taxpayers to not paying taxes in exchange for bribes), then corruption will reduces directly the size of the collected tax revenues;
- the corruption phenomenon may act indirectly to reduce the tax base or the whole economic activity, resulting in the final reduction of public revenues;
- corruption leads to a decrease of GDP or economic growth, thus being reduced the tax base in the whole society (including here the formal economy) (see Brasoveanu, Iulian Viorel; Obreja Brasoveanu, Laura [4]);
- corruption can redirect an important part of the public financial resources to another destinations (these funds are used less effectively in areas which are not a priority and can be removed from their destination);
- corruption increases business and transactional costs;
- corruption leads to a decrease in investments value;
- corruption decreases productivity, as companies compete in terms of bribery and not of quality (companies that succeed in illegal business in the informal sector do not pay taxes for these activities; as a result, companies from the shadow economy have a competitive advantage over the companies in the formal economy, some of them being forced out of the formal economy).

c. Governance indicators

The size of the public sector is a reflection of current and past political choices. Empirical studies support the idea that when the public sector becomes “too big”, there is higher tax burden and inefficiency of the public administration. In this context it is very important to consider the public governance – Kaufmann, Kraay, Mastruzzi, [9], 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).

Another important study shows that corruption and underground economy are substitutes in the sense that the existence of underground economy is associated with smaller levels of graft. It has also been shown that:

(i) the effect of institutional quality on the underground economy is unambiguously negative whereas;

(ii) the effect of institutional quality on the magnitude of corruption is ambiguous and depends on the relative effectiveness of institutional quality. These predictions were tested using data from 18 OECD countries. The empirical estimation confirmed the prediction that institutional quality reduces the underground economy and corruption. The total effect of institutional quality on corruption was estimated to be negative and significant (see Axel Dreher, Christos Kotsogiannis, and Steve McCorrison [8]).

In the next section we test the correlation between the underground economy and the corruption perception index, the fiscal balance, the economic growth, the human development index and the quality of public sector, using a panel data, consisting in EU countries.

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

In this section we test the correlation between underground economy and the relevant determinant factors, corruption perception index, human development index, general government budget balance, public revenues and expenditures, economic growth and governance indicators, in European Union context.

We use the real gross domestic product growth rate, gross domestic product growth per head of population to commensurate the economic growth process.

For the quality of the public sector we use governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption).

The qualitative variables regarding shadow economy, corruption and human quality of life are: the underground_economy as percentage in GDP, the corruption perception index and the human development index.

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The variables and notations are below:

Economic growth variables:

growth = real GDP growth rate;
 gdppc = GDP per head of population;
 loggdppc = log(gdppc)

Budgetary variables:

exp = total expenditure of general government / GDP
 rev = total current revenue of general government / GDP
 balance = balance of general government / GDP

Governance indicators:

govva = governance indicators - Voice and Accountability
 govps = governance indicators - Political Stability
 govge = governance indicators - Government Effectiveness
 govrr = governance indicators - Regulatory Quality
 govrl = governance indicators - Rule of Law
 govcc = governance indicators - Control of Corruption

Underground economy and human development:

underground = underground economy / GDP,
 hdi = human development index.

Data sources are presented in Appendix I.

In the table below we analyzed the descriptive statistics for these variables, in EU 27, in 1996-2009 periods.

Table 3: Descriptive statistics in EU 27

	govcc	govge	govps	govrl	govva	Govrr
Mean	1.11	1.19	0.82	1.13	1.18	1.24
Median	1.04	1.16	0.84	1.12	1.17	1.22
Maximum	2.47	2.24	1.58	1.96	1.83	1.87
Minimum	-0.26	-0.15	-0.18	-0.16	0.34	-0.10
Std, Dev,	0.74	0.58	0.36	0.57	0.32	0.37
Skewness	0.09	-0.25	-0.19	-0.40	-0.39	-0.44
Kurtosis	1.85	2.40	2.60	2.32	2.79	3.16
Jarque-Bera	10.57	4.69	2.42	8.74	5.03	6.23
Probability	0.0051	0.0960	0.30	0.0126	0.0806	0.0443
Sum	208.70	224.70	153.56	213.40	221.80	233.99

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	balance	cpi	exp	gdppc	Growth	hdi	Rev	underground
Sum Sq Dev	102,84	63,45	23,78	60,68	18,88	25,98		
Mean	-2.28	6.43	44.48	21.83	2.43	0.83	41.58	20.74
Median	-2.34	6.50	44.71	20.24	2.95	0.84	40.43	19.80
Maximum	5.18	9.70	58.42	81.21	12.20	0.90	57.16	35.90
Minimum	-15.59	2.80	33.17	2.36	-18.00	0.71	31.33	8.10
Std, Dev,	3.55	1.89	6.15	14.74	4.52	0.04	6.46	7.24
Skewness	-0.57	0.05	-0.15	1.28	-1.24	-0.51	0.52	0.07
Kurtosis	4.01	1.79	2.21	5.72	6.07	2.46	2.49	1.84
Jarque-Bera	18.12	11.47	5.67	109.46	122.31	10.51	10.56	10.76
Probability	0.0001	0.0032	0.0588	0.0000	0.0000	0.0052	0.0051	0.0046
Sum	-428.92	1208.30	8362.63	4103.99	456.40	155.26	7817.02	3899.27
Sum Sq Dev	2361.58	665.87	7066.44	40638.54	3827.60	0.37	7799.02	9810.67

Source: Own calculations

We observed that the public sector has a mean of total current revenue of general government / GDP of 41,58% (with a maximum of 57,16% and a minimum of 31,433%), a mean of total expenditure of general government / GDP of 44,58% (with a maximum of 58,42% and a minimum of 33,17%), resulting a mean for balance of general government / GDP of -2,28% (with a maximum of 5,18% and a minimum of -15,59%), less than the limit imposed by the Pact of Stability and Growth. This is not a good performance, because we are talking about the 1996-2009 period, which was a good period for public finance, excepting the year 2009 which was strongly affected by the current economic and financial crisis.

The minimum values are troubling, but they could be explained by the diversity of fiscal policies among EU Member States. The average values for Romania are closer to minimum compared to the EU average (excluding general government deficit, which is closer of -3%).

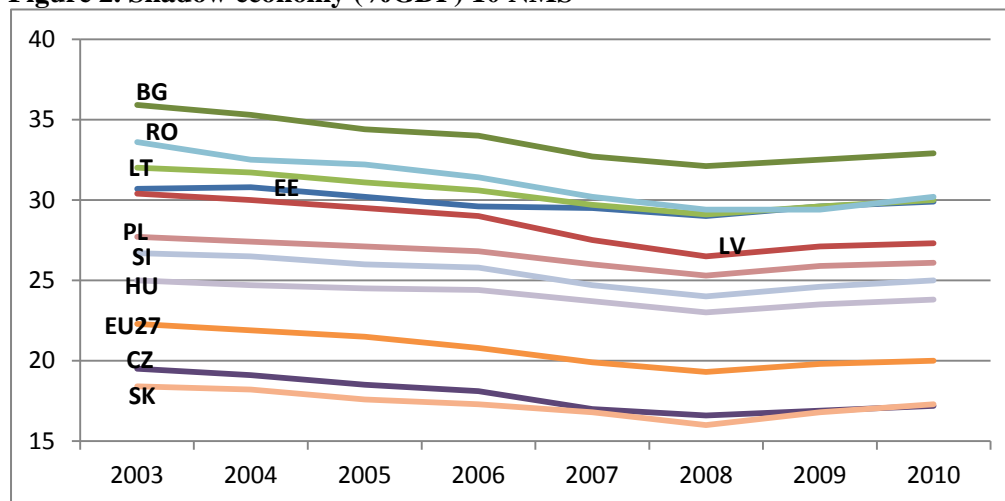
For the quality of the public sector we used governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption), which are normally situated between -2 and +2. We observe that the mean values for EU 27 are situated between 1 and 1,25 (excepting only Political Stability, with 0,82 mean value), which are a satisfactory values.

For the entire period analyzed we have a growth rate of 2.43%, which is a good value for EU. The value for HDI is also high, 0.83, corresponding to a high level of human development.

The underground economy, as a percent of GDP is 20,74% (with a maximum of 35,9% and a minimum of 8,10%), which is a worrying value (we are talking about

more than 1/5 of observed GDP, which is high). The values of this variable for Romania are closer to the maximum, which explains thoroughly the lack of public financial resources in our country.

Figure 2. Shadow economy (%GDP) 10 NMS



Data source: Prof. Friedrich Schneider estimates, (DYMIMIC methodology)

10 NMS are the new member states: Romania, Bulgaria, Lithuania, Estonia, Latvia, Poland, Slovenia, Slovakia, Czech Republic, and Hungary.

A high dimension of the underground economy has as main negative effects the decrease in the growth rate of the formal economy. For Romania, the statistics are alarming with regard to this phenomenon and the negative effects of the increased size of the shadow economy are strongly felt both in GDP and in tax revenue.

Our country has a share of 30.2% of GDP of the underground economy in 2010, only Bulgaria being worst. The average for the EU 27 is 20% of GDP, which leaves our country with more than 10 pp comparing to the average. The difference could lead to obtaining a considerable sum for the national public budget, assuming that the fiscal discipline would increase.

We note a share of the underground economy of less than 15% in the Nordic countries, Austria, Germany, France, Ireland and Great Britain, Luxembourg and the Netherlands. Even if these states were recorded for the low percentage, the difference might be taken into account, considering that the smallest amount of it is still significant, being 8.67% (in Austria).

Romania's underground economy, just like the other countries, declines in the period 2003-2008, but increases in the period 2008-2010. For the whole period Romania occupies the second place, after Bulgaria, from the shadow economy perspective.

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Analyzing the evolution of the underground economy in the period 2003-2010, the comparison between Romania and EU27 average member states, it can be seen a slight reduction in the size of this phenomenon, about 2 percentage points for both our country and for the EU 27 average. The difference between Romania and EU27, however, is relatively constant at around 10 percentage points, which clearly reflects a systemic problem of our economy.

Regarding corruption, measured by CPI (corruption perception index), Romania stands in the first half of the ranking of Transparency International (TI), based on the Corruption Perceptions Index, but the recorded value is far from top 10, being approximately three times lower than the value recorded in Denmark, Finland or New Zealand. Romania, Bulgaria and Greece remain the countries with the highest perceived level of corruption in the European Union (EU). TI Romania expresses its concern about the corruption issue in Romania, due to the existence of corruption scandals linked to the high-level court. Note that the Balkan countries like Romania, Bulgaria and Greece are found on the last positions, while the Nordic countries dominate the hierarchy. Corruption has, undoubtedly, a strong psychological component, a cultural one referring to the local mentalities. If the upper half of the ranking gathers developed countries, we can see that Italy has a higher corruption among them, this fact being generated also by mentalities. Slovakia, as well as Baltic states, like Lithuania and Latvia, are also in the lower half of the range, facing problems with this phenomenon (see also Brasoveanu [2]).

Table 4: Cluster analysis using average values – underground, HDI, growth, CPI – EU27

	Final cluster centers			
	1	2	3	4
underground	9.38	17.30	33.73	25.41
HDI	.85	.80	.73	.82
Growth	3.03	5.08	4.05	2.65
CPI	8.50	4.50	3.90	6.30

Cluster	Distances between Final Cluster Centers			
	1	2	3	4
1		6.284	20.432	15.006
2	6.284		14.171	8.750
3	20.432	14.171		5.542
4	15.006	8.750	5.542	

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Cluster	Cluster Membership			
	1	2	3	4
	AT, FR, IE, LU, NL, UK	BE, CZ, DK, FI, DE, PT, SK, ES, SE	BG, EE, LT, RO	CY, EL, HU, IT, LV, MT, PL, SI

Source: Own calculations

Using cluster analysis for UE27, 2003-2010, for the variables underground, human development index, growth, corruption perception index, we obtain the following cluster:

⇒ cluster 1, with greater value of human development index and corruption perception index, indicating high development and no problem with corruption process, moderate economic growth, and low level of underground economy, characterized by centre values 9,38 for underground, 0,85 for HDI, 3,03% for growth, 8,5 for CPI: AT, FR, IE, LU, NL, UK

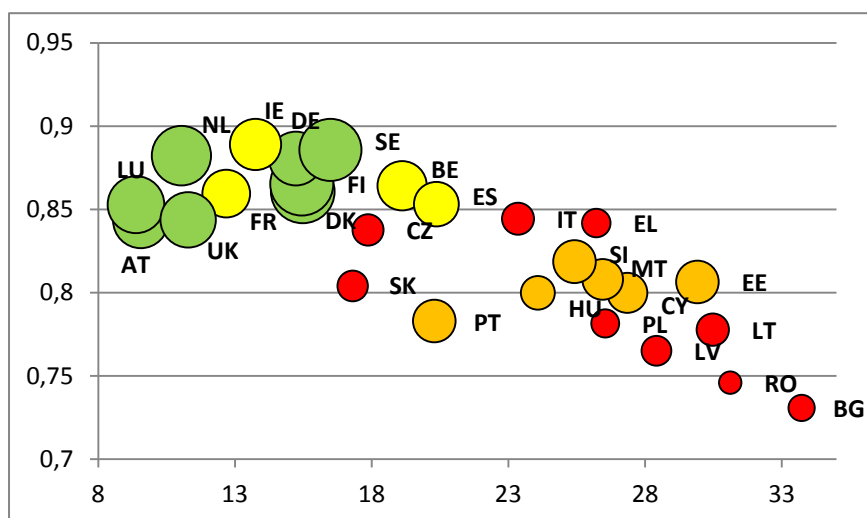
⇒ cluster 2, with small value of human development index and corruption perception index, indicating moderate development and some problems with corruption process, high economic growth, and moderate level of underground economy, characterized by centre values 17,30 for underground, 0,80 for HDI, 5,08% for growth, 4,5 for CPI: BE, CZ, DK, FI, DE, PT, SK, ES, SE

⇒ cluster 3, with the smallest value of human development index and corruption perception index, indicating problems with development and corruption process, moderate economic growth, and high level of underground economy, characterized by centre values 33,73 for underground, 0,73 for HDI, 4,05% for growth, 3,9 for CPI: BG, EE, LT, RO

⇒ cluster 4, with high value of human development index and corruption perception index, indicating little problems with development and corruption process, slow economic growth, and high level of underground economy, characterized by centre values 25,41 for underground, 0,82 for HDI, 2,65% for growth, 6,3 for CPI: CY, EL, HU, IT, LV, MT, PL, SI

Romania is in cluster 3, with Bulgaria, Lithuania and Estonia; this cluster is characterized by the highest proportion in GDP of underground economy, the smallest human development index, the smallest value of corruption perception index (the greatest corruption) and a relatively high economic growth.

Figure 3: Underground economy as %GDP (x axis), human development index (y axis) and corruption perception index (bubble size)



Source: Own calculations

This graph indicates the serious problems that Romania faces with a high level of shadow economy, a low level of human development index and also a low level of corruption perception index.

Table 5. Quartile analysis –panel 1996-2009, UE 27

	percentile	q1	q2	q3	q4
underground	15.225; 20.288 ; 26.538	LU, AT, NL,UK, FR, IE	DE, FI, DK, SE, SK, CZ , BE, PT	ES, IT, HU , SI , EL, MT, PL	CY, LV, EE , LT, RO, BG
HDI	0.8; 0.842; 0.861	BG, RO, LV , LT, PL , PT, HU , CY	SK, EE , MT, SI, CZ , EL	AT, UK, IT, LU, ES, FR, DK	BE, FI, DE, NL, SE, IE
CPI	4.6; 6.3; 8.2	RO, BG, PL , EL, LV, SK	CZ , IT, LT , HU , CY, MT	EE , PT, SI , ES, FR, BE, IE, DE	AT, UK, LU, NL, SE, FI, DK
Balance	-4.329; - 3.089; - 1.844	EL, HU , IE, PT, UK, PL	MT, FR, SK , CZ, RO , IT, LV, LT	SI , CY, AT, ES, DE, BE, NL	BG , LU, EE , SE, DK, FI

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Growth	1.43; 2.08; 3.28	IT, PT, DK, DE, FR, UK, HU	BE, NL, AT, IE, FI, ES, EL	SE, MT, SI , CY, LU, EE , LV	CZ, RO, BG , LT, PL, SK
gdppc	9.138; 19.448; 31.269	BG, RO, LV , LT, PL, HU , SK	EE, CZ , MT, PT, SI , EL, CY	ES, IT, FR, DE, UK, BE, AT	FI, NL, SE, IE, DK, LU
Exp	40.32314; 45.45068; 49.80061	RO, LT, EE , SK, LV, BG	LU, ES, IE, PL , CY, MT, CZ	PT, SI , UK, DE, NL, EL, IT	HU , AT, BE, FI, SE, FR, DK
Rev	37.28403; 40.25795; 44.97689	LT, RO, SK , IE, LV, EE , EL	ES, BG, PL , MT, PT, UK	CZ , LU, CY, HU, SI , DE, IT, NL	BE, AT, FR, FI, SE, DK
Govva	0.992857; 1.164286; 1.425714	RO, BG, LV , LT, SK, PL , EL	CZ , CY, IT, SI, EE, HU	ES, MT, FR, PT, AT, UK, BE, DE	IE, LU, SE, NL, FI, DK
Govps	0.551429; 0.85; 1.08	ES, RO, BG , CY, EL, UK	IT, FR, PL , LV, EE , BE, LT	HU, SK , DE, CZ , PT, NL, SI	DK, AT, IE, SE, MT, LU, FI
Govge	0.792857; 1.118571; 1.678571	RO, BG, PL , IT, LV , EL, LT	SK, HU, CZ , MT, PT, SI , EE	ES, CY, DE, IE, FR, BE, UK	AT, LU, NL, SE, FI, DK
Govrq	0.99714; 1.22143; 1.58286	RO, BG, PL , SI , EL, IT	LV, LT, SK , CZ , PT, MT, HU	FR, ES, CY, BE, EE , DE, AT, SE	FI, IE, UK, NL, LU, DK
Govrl	0.704286; 1.107143; 1.635714	BG, RO , IT, PL, SK, LT	LV , EL, CZ , HU, SI , CY, EE	PT, ES, BE, FR, MT, IE, UK, DE	NL, LU, AT, SE, FI, DK
Govcc	0.402857; 1.041429; 1.782857	RO, BG, LT , LV , IT, PL , EL	CZ, SK, HU , MT, EE, SI	CY, PT, ES, BE, FR, IE, UK, DE	LU, AT, NL, SE, FI, DK

Source: Own calculations

Using quartile analysis for the average values of the used variables, it can be observed that:

- ⇒ Romania is in the upper quartile in the case of underground economy, and the same classification is done for other ex-communist countries LV, EE, LT, BG, but also for CY; this aspect shows the serious problems these countries face with the underground economy;
- ⇒ Romania is in the lower quartile in the case of human development index, the same classification is done for other ex-communist countries BG, LV, LT, PL, HU, but also for PT and CY; this aspect reflects the real problems in level of economic development of Romania. Even if our country has a efficient educational system and good life expectancy, HDI is still low because of the real problems in the level of economic development;
- ⇒ Romania is in the lower quartile in the case of corruption perception index, the same classification is done for other ex-communist countries BG, PL, LV, SK, but also for Greece; this indicates the issues of mentalities and culture of these countries;
- ⇒ Romania is in the second quartile in the case of balance, the same classification is done for other ex-communist countries SK, CZ, LV, LT, but also for MT, FR, IT;
- ⇒ Romania is in the upper quartile in the case of rate of growth, the same classification is done for CZ, BG, LT, PL, SK. It is interesting to notice that in this quartile there are only ex-communist countries, which might sustain the convergence theory regarding catching up process;
- ⇒ Romania is in the lower quartile in the case of gross domestic product per capita, the same classification is done for BG, LV, LT, PL, HU, SK. It is interesting to notice that in this quartile there are only ex-communist countries;
- ⇒ Romania is in the lower quartile in the case of public expenditures, the same classification is done for other ex-communist countries LT, EE, SK, LV, BG. It is interesting to notice that in this quartile there are only ex-communist countries, this aspect indicating the low level of public expenditures which is a consequence of the revenues collection problem;
- ⇒ Romania is in the lower quartile in the case of public revenues, the same classification is done for other ex-communist countries LT, SK, LV, EE, but also for IE and EL;
- ⇒ Romania is in the lower quartile in the case of governance indicators - voice and accountability, with BG, LV, LT, SK, PL and EL;
- ⇒ Romania is in the lower quartile in the case of governance indicators - political stability, with ES, BG, CY, UK and EL;
- ⇒ Romania is in the lower quartile in the case of governance indicators - government effectiveness, with BG, PL, IT, LV, LT and EL;

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- ⇒ Romania is in the lower quartile in the case of governance indicators - regulatory quality, with BG, PL, SI, IT and EL;
- ⇒ Romania is in the lower quartile in the case of governance indicators - rule of law, with BG, IT, PL, SK and LT;
- ⇒ Romania is in the lower quartile in the case of governance indicators - control of corruption, with BG, LT, LV, IT, PL and EL.

The evolution of governance indicators shows that our country has real and serious problems in governance issue. In the same category with our country are included Bulgaria, Lithuania, Poland, Greece, and Italy, which shows that problems in having good governance are related to the general mentality of the people, the cultural component and geographical position.

Table 6: Results of pool regressions – panel 2003-2010 – EU27

dependent variable	independent variables	coefficient	t-statistic	R²
underground	Intercept	38.0482	32.1704	0.7060
	CPI	-1.7836	-7.7879	
	balance	0.3435	4.9986	
	gdppc	-0.2268	-8.0384	
underground	Intercept	38.0705	19.9376	0.6410
	govrl	-4.3512	-2.5088	
	govrq	-5.0548	-2.4637	
	govva	-5.1606	-1.9208	
underground	Intercept	68.8732	8.7183	0.7600
	balance	0.3098	3.7991	
	gdppc	-0.1633	-5.3672	
	govcc	-2.1376	-2.4751	
	govrq	-3.2824	-2.0936	
	hdi	-45.2835	-4.3081	

Source: Own calculations

The regressions' results sustain the following conclusions:

- ⇒ underground economy is negatively influenced by corruption perception index
- ⇒ underground economy is positively influenced by balance
- ⇒ underground economy is negatively determined by economic development, measured by gross domestic product per capita
- ⇒ underground economy is negatively determined by the governance indicators – regulatory quality, voice and accountability, control of corruption

⇒ underground economy is negatively influenced by human development index

IV. Summary and conclusions

In the context of tax evasion and the lack of public financial resources being the biggest problems of Romanian economy and EU economies, there has to be considered the determinant factors for the underground economy.

The regressions' results sustain that the underground economy is negatively influenced by the corruption perception index, the economic development (measured by gross domestic product per capita), the human development index, the governance indicators – regulatory quality, voice and accountability, control of corruption, and it is positively influenced by the public balance.

The qualitative factors, such as corruption, human development index, governance indicators are being really important in explaining the underground economy.

As a consequence, in addition to the efforts to mobilize tax revenues, obtained through the reduction of the underground economy, there has to be considered the improvement of public governance and other qualitative indicators, because these have an important effect on the applied methods' efficiency.

Corruption was not significantly influenced by the public policies, in the context of actual economic and financial crisis. Still, corruption remains an important variable which influences the public sector, public revenues and tax evasion.

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Appendix I

Data sources:

Growth	real GDP growth rate	AMECO
Gdppc	GDP per head of population	AMECO
loggdppc	log(gdppc)	AMECO
Exp	total expenditure of general government / GDP	AMECO
Rev	total current revenue of general government / GDP	AMECO
Balance	the balance of general government / GDP	AMECO
govva	governance indicators - Voice and Accountability	World Bank

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govps	governance indicators - Political Stability	World Bank
govge	governance indicators - Government Effectiveness	World Bank
govrq	governance indicators - Regulatory Quality	World Bank
govrl	governance indicators - Rule of Law	World Bank
govcc	governance indicators - Control of Corruption	World Bank
Cpi	corruption perception index	Transparency International
Hdi	human development index	UNDP
Underground	underground economy / GDP	Friedrich Schneider (DYMIMIC)

Abbreviations:

EU 27 = European Union after 1 January 2007, with 27 Member States

27 EU Member States: AT = Austria, BE = Belgium, BG = Bulgaria, CY = Cyprus, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, EL = Greece, ES = Spain, FI = Finland, FR = France, HU = Hungary, IE = Ireland, IT = Italy, LT = Lithuania, LU = Luxembourg, LV = Latvia, MT = Malta, NL = Netherlands, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia, UK = United Kingdom

NMS: new member states