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CORRELATION BETWEEN CORRUPTION AND TAX REVENUES IN EU 27

Abstract. The aim of this paper is to analyse the evolutions and the correlation between corruption and overall tax burden. This analysis is realized for UE 27 members, for the period 1995-2008. Corruption is measured by corruption perception index (CPI) and the overall tax burden is measured by fiscal revenues over the gross domestic product.
Key words: corruption, corruption perception index, overall tax burden, correlation coefficient

JEL Classification: H2, H3

1. Corruption: theoretical aspects

For many years, corruption was considered a cultural and a political issue, and measuring corruption was perceived as nearly impossible. Thus, elimination of corruption was not usually an economic objective of development reforms. Instead, corruption it was taken as part of the nature of a country, as exogenous perhaps as its geography (Martinez-Vasquez, Arze, Boex, 2004).

But, the attention acorded to corruption increased recently. The qualitative studies analyse the nature and the consequences of corrpution, and the quantitative studies focus on comparative aproaches between world countries.

Corruption manifests itself in innumerable areas, in various and complex forms and interactions. Corruption has dominated in the fiscal arena (as number of cases, or as dimension, at high level of public administration).

Although often unintentionally, fiscal policies sometimes facilitate corruption in the private and public sectors, as a result of the ways that governments collect and spend resources. The relationships between corruption and fiscal policy can be simple and direct but also subtle and complex.

Numerous definitions for the term "corruption" have been proposed and cited in policy-relevant literature on corruption. The Oxford English Dictionary, for example, defines corruption as "the perversion or destruction of integrity or fidelity in the discharge of public duties by bribery or favor".

The Roumanian Explanatory Dictionary defines corruption as „deviation from morality, honesty and duty".

Perhaps the most widely cited definition of corruption in the public sector denotes corruption as: ***"The abuse of public office for private gain"*** (Martinez-Vasquez, Arze, Boex, 2004).

Public office is abused for private gain when an official accepts, solicits, or exhorts a bribe. It is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit. Public office can also be abused for personal benefit even if no bribery occurs, through patronage and nepotism, the theft of state assets, or the diversion of state revenues (Martinez-Vasquez, Arze, Boex, 2004). Alternative definitions of corruption include "the degree misuse of public power for private benefit", and "the likeliness to demand illegal payments in high and low levels of government".

It is relevant to establish the relationship between tax evasion and corruption. While taxes may be evaded unilaterally by a tax payer, it is likely that in many instances tax evasion is related to some form of corruption. Thus, most factors that have an impact on tax evasion (such as high levels of taxation) have also at least an indirect effect on corruption.

When corruption is considered in the context of fiscal policy and fiscal administration, corruption can take three different forms:
- first, corruption can take place on the revenue side of the budget as public resources are collected.
- second, corruption can occur on the expenditure side of the budget as these resources are spent in the delivery of services and the building of infrastructure.
- third, corruption can occur outside the budget in quasi-fiscal transactions, such as the imposition of economic regulations or the financial operations of para-statal enterprises (Martinez-Vasquez, Arze, Boex, 2004).

However, we know that not only the level of corruption varies across countries, but also the types of corruption activities vary from country to country. Even the potential of corruption is different in the world countries, fiscal and budgetary corruption are influenced by the structure of fiscal system and the fiscal management. If the fiscal system is complex, with large variations of tax rates, the tax payers are incite to bribe the fiscal colectors. If the fiscal management is lax, the corruption is stimulated.

2. Corruption: evolutions and considerations for corruption around the word in 2008, on the basis of Transparency Information Report

CPI is dimensionated by Transparency International (TI). Using CPI, TI realizes a clasification of world countries and makes a characterisation of corruption. *The CPI is more important than ranking. The comparative aproaches have to be realized* using this indicator.

Table 1: CPI in 2008, selective data

Rk	Stat	CPI	Nomber of sources	Standard Deviation	CPI Interval min / max	Confidential Interval
1	**Denmark**	**9,30**	6	0,20	8.9-9.6	9.1-9.4
	Sweden	**9,30**	6	0,10	9.1-9.4	9.2-9.4
	New Zeeland	**9,30**	6	0,20	8.9-9.6	9.2-9.5
4	Singapore	9,20	9	0,30	8.4-9.6	9.0-9.3
5	Finland	9,00	6	0,80	7.5-9.4	9.1-9.4
	Suisse	9,00	6	0,40	8.5-9.4	8.3-9.6
7	Netherlands	9,00	6	0,30	8.7-9.5	8.8-9.2
	Island	9,00	6	0,30	8.5-9.5	8.8-9.2
9	Canada	8,70	6	0,70	7.6-9.5	8.3-9.1
	Australia	8,70	6	0,90	7.1-9.5	8.0-9.2
70	**Romania**	**3,80**	8	0,80	2.7-4.9	3.4-4.2
	Columbia	**3,80**	7	1,00	2.7-5.2	3.3-4.5
176	Afganistan	1,50	4	0,30	1.0-1.8	1.1-1.6
177	Haiti	1,40	4	0,40	1.0-2.0	1.1-1.7
178	Irak	1,30	4	0,30	1.0-1.8	1.1-1.6
179	Myanmar	1,30	4	0,40	1.0-1.8	1.0-1.5
180	**Somalia**	**1,00**	4	0,60	0.3-1.8	0.5-1.4

Data source: Transparency International, 2008.

*Denmark, New Zeeland and Sweden have the highest CPI (9.3), and Somalia (*with CPI=1.0), *Irak (*with CPI=1.3), *Haiti (*with CPI=1.4) have the lowest performances, so the highest level of perception of corruption.

Romania is situated in the first half oh hierarchy, but the value of CPI is very low comparative with the first performance (aproximatively 1/3 from CPI of Denmark).

We also remarked high density of this hierachy between CPI 1 and CPI 3.8: in these intervalthere are 110 countries from 180 countries analysed.

Using a comparative aproaches between CPI in 2008 versus CPI in 2007 we observed:
- decrease of CPI (Bulgaria, Burundi, Maldive Islands, Norway, United Kingdom);
- increase of CPI for Albanya, Cyprus, Georgie, Mauritius, Nigeria, Oman, Turkey, Qatar, Sud Koreea, Romania. The improvement of CPI for the Est European Countries indicates the benefic influences exercitated by European integration on macroeconomic evolutions and the reduction of corruption in these countries.

The correlation between corruption and poverty is obvious: 50% from countries with CPI lower than 3 (level for which corruption is considered endemic phenomenon) are classified by World Bank as poor countries, with very small revenues. The small CPI is equivalent with a corrupt system, where public institutions are compromised. If citizens can not use the justice and other public institutions in their fight against corruption, the economic development is compromised.

In the poor countries, the level of corruption represents the difference between life and death, when we are talking about the public health or potable

water. The result of a high and persistent level of corruption is a humanytarian disaster, which can be no longer tolerated.

3. Evolution of corruption in UE 27, 1995-2008

The evolution of CPI in Romania folowed the evolution of average CPI in UE 27 and in 12 NMS (new member states of EU, starting at 2004), with the exception of 2000-2002 period, when CPI in Romania was low and the average for UE 27 and for 12 NMS was greater.
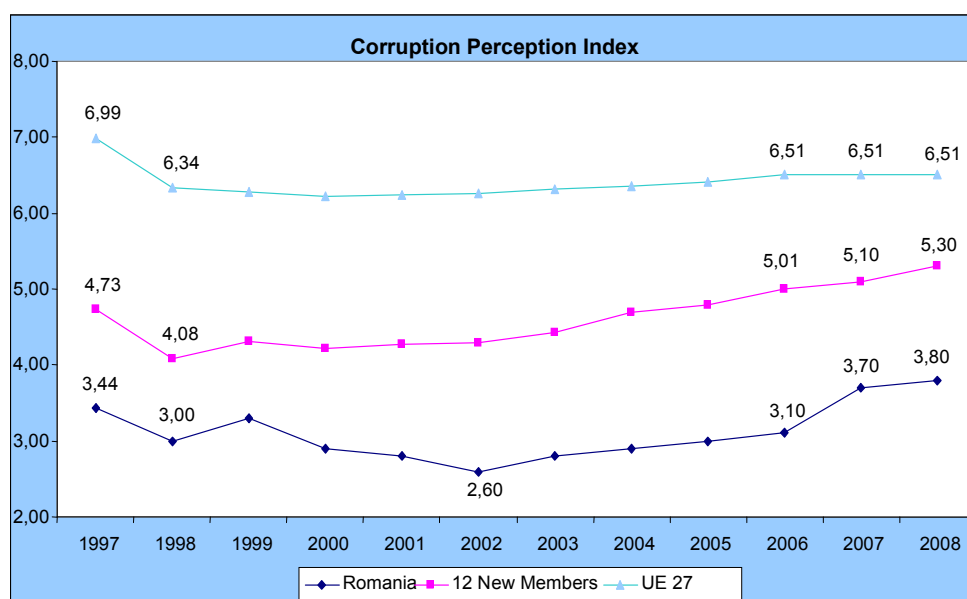

Corruption Perception Index

Figure 1: CPI in Romania, UE 27 and 12 New Member States

Our country had been constantly characterized by small CPI or, in other words, a high level of corruption. The evolution of CPI for Romania is favorable since 2002. The value of CPI in 2008 is higher then in 1997, so that corruption had decreased in Romania for 1997-2008 periods. The values of CPI in these periods are between 2.6 and 3.8, so that corruption perception index is far from the maximum value, 10, associated to an unexistent corruption.

The turning point in the corrption's evolution was in 2002 – till then the CPI is rising; the most consistent increase of CPI was in 2007, the growh was 0.6 points from the previous year.

The state of UE member country implies strong restrictions; 2008 is the first year in which Romania swiches places with Bulgaria, from the last position, after a CPI's increase of 0.1 points from the previous year. Transparency International expresses the worries concerning the sustainability of this index for the next period, because of the scandals generated by the corruption at the political and justice high level. Transparency International is concerned about the defective measures taken by Romania for EU adhering, the corruption commitments were

only formal made. The latest internal evolution makes us to wonder about the credibility of the anticorruption measures.

In this hierarchy we observe the maximum changes: CPI for United Kingdom declines by -0.7, and CPI for Cyprus increases by 1.1. Bacanic countries, like Romania, Bulgaria and Greece are on the final positions, while Nordic countries are on the first positions. Undoubtedly, corruption has strong psychological and cultural components, local mentality being very important. In the first part of the hierarchy are situated developed countries, but Italy is characterized by greater corruption, the explanation is correlated with the mentality.

Comparing to Bulgaria, Romania has greater values of corruption, starting from 1999. Bulgaria's CPI is greater then Romania's CPI by more then 1 point.

Table 2. CPI in 2007 and 2008 in member states UE 27

Rank	Country	CPI 2007	Rank	State	CPI 2008
1	**Denmark**	**9.4**	**1**	**Denmark**	**9.3**
	Finland	**9.4**		Sweden	**9.3**
3	Sweden	9.3	3	Finlanda	9
4	Netherlands	9	4	Netherlands	8.9
5	United Kingdom	8.4	5	Luxembourg	8.3
	Luxembourg	8.4	6	Austria	8.1
7	Austria	8.1	7	Germany	7.9
8	Germany	7.8	8	United Kingdom	7.7
9	Ireland	7.5		Ireland	7.7
10	France	7.3	10	Belgium	7.3
11	Belgium	7.1	11	France	6.9
12	Spain	6.7	12	Slovenia	6.7
13	Slovenia	6.6	13	Estonia	6.6
-----	**UE 27**	**6.51**		UE 27	6.51
14	Estonia	6.5	14	Spain	6.5
	Portugal	6.5	15	Cyprus	6.4
16	Malta	5.8	16	Portugal	6.1
17	Hungary	5.3	17	Slovakia	5.9
	Cipru	5.3	18	Malta	5.8
19	Czech Republic	5.2	19	Czech Republic	5.2
	Italy	5.2	20	Hungary	5.1
21	Slovakia	4.9	21	Latvia	5
22	Lithuania	4.8	22	Italy	4.8
	Latvia	4.8	23	Greece	4.7
24	Greece	4.6	24	Lithuania	4.6
25	Poland	4.2		Poland	4.6
26	Bulgaria	4.1	**26**	**Romania**	**3.8**
27	**Romania**	**3.7**	27	Bulgaria	3.6

Data source: Transparency International 2007 and 2008.

4. Correlation between corruption and overall tax burden

In order to determine the correlation between corruption and overall tax burden, we consider two variables:

- corruption, measured by COR = 10 – CPI, which is positive correlated with the perception of corruption (for high value of COR, corruption is high);
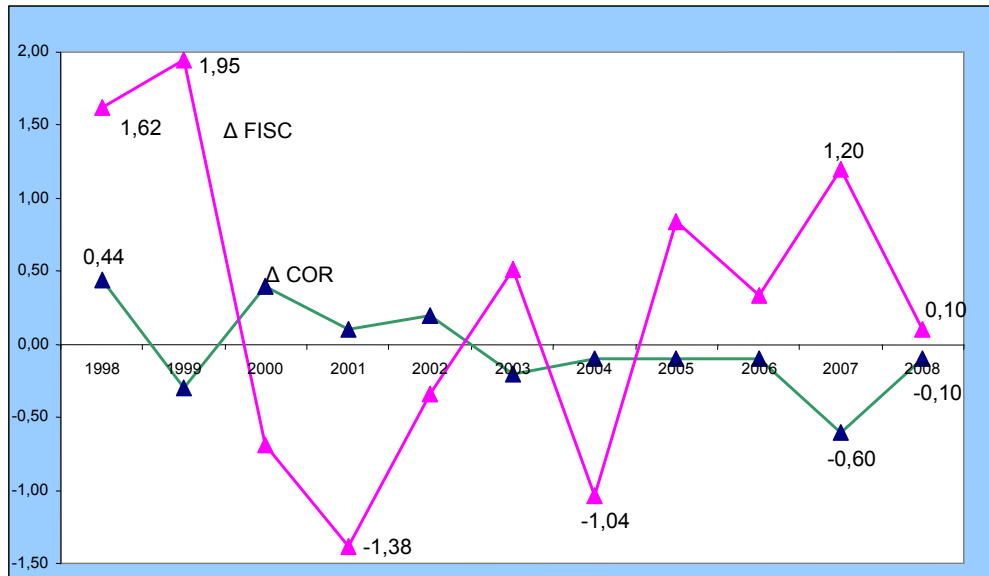- overall tax burden FISC, fiscal revenues over GDP.

Figure 2: The annual absolute change for COR and FISC in Romania

The evolution of these two variables is in the opposite direction for most of the cases. Exceptions are in years 1998, when both variables were positive, and 2004, when both variables were negative (for more details, see Braşoveanu, Obreja Braşoveanu, Păun 2008 (b)).
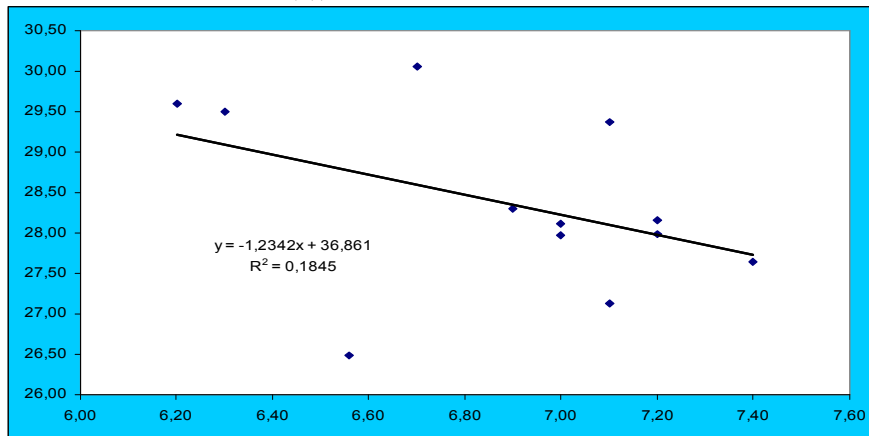

Figure 3: Regresion equation between FISC and COR in Romania, 1997-2008

Coefficient of determination, R^2, is low (0.18) and this situation could have the following explanations:
- data base is too short;
- reducing the fiscal revenues does not necessary imply that corruption will be lower in the same year, because it might be a lag between these changes;
- not all of the fiscal revenues are affected by corruption; the analysis might be extended by individually considering the categories of fiscal revenues, in order to determine which of them is strongly correlated with corruption;
- fiscality is represented by fiscal revenues over GDP, so it is also affected by economic growth; the analysis might be expanded, by considering the real fiscal revenues;
- corruption's effects on fiscal revenues are reduced; it is possible that other factors have a greater influence on fiscal revenues, so that the causality relationship between corruption and fiscality is distorted.

Coefficient of correlation between these two variables is negative, -0.43.

We extended this analysis for all UE 27 member states, for 1995-2008; (for comparative analysis in EU, see Braşoveanu, Obreja Braşoveanu, Păun 2008 (a)).

The results are: 12 strong negative corellation (Irlanda, Espagna, Italie, Portugal, Denmark, Sweden, Finland, Netherlands, Luxembourg, Romania, Poland and Malta), 3 null corelation, statistic irelevant (Germany, Greece and Cyprus), but also 12 positive corelation.

Table 3: The corellations between corruption perception index and overall tax burden, in UE 27 states, 1995-2008

State	Regresion equation	R^2	Coefficient of Corellation	Corellation type
Ireland	y = -2.0502x + 35.994	0.56	- 0.75	Negative
Spain	y = -0.8194x + 37.571	0.46	- 0.677	Negative
Italy	y = -0.4077x + 43.897	0.08	- 0.283	Negative
Portugal	y = -0.7899x + 37.143	0.04	- 0.2	Negative
Denmark	y = -1.5801x + 49.631	0.22	- 0.473	Negative
Sweden	y = -3.9759x + 53.725	0.13	- 0.371	Negative
Finland	y = -1.2982x + 45.231	0.05	- 0.231	Negative
Netherlands	y = -0.8959x + 40.05	0.02	- 0.134	Negative
Luxembourg	y = -1.0547x + 39.512	0.13	- 0.358	Negative
Germany	y = 0.2696x + 39.406	0.007	+ 0.08	Null
Greece	y = -0.4112x + 37.372	0.009	- 0.09	Null
Belgium	y = 0.3832x + 43.388	0.14	+ 0.375	Positive
UK	y = 1.0751x + 34.974	0.10	+ 0.314	Positive
France	y = 0.4451x + 42.503	0.06	+ 0.243	Positive
Austria	y = 0.822x + 41.026	0.09	+ 0.303	Positive
Romania	y = -1.2342x + 36.861	0.18	- 0.43	Negative
Poland	y = -1.5324x + 43.397	0.46	- 0.70	Negative
Malta	y = -0.2028x + 35.275	0.04	- 0.21	Negative
Cyprus	y = -0.0391x + 35.75	0.01	-0.01	Null
Latvia	y = 1.3142x + 21.689	0.28	+ 0.53	Positive

Hungary	y = 2.5855x + 25.901	0.50	+ 0.71	Positive
Czech R.	y = 0.4561x + 32.295	0.07	+ 0.26	Positive
Slovakia	y = 2.6619x + 16.304	0.49	+ 0.7	Positive
Estonia	y = 1.1251x + 27.168	0.10	+ 0.314	Positive
Lithuania	y = 2.7318x + 14.774	0.57	+ 0.752	Positive
Slovenia	y = 0.2647x + 38.162	0.03	+ 0.171	Positive
Bulgaria	y = 0.9413x + 27.921	0.08	+ 0.271	Positive

At UE 27 level the regresion equation is FISC = - 0.219 COR + 37.986

The coeficient of determination R^2 is 0.03 and the corelation coeficient is negative – 0.15.

Even if the negative correlation between corruption and tax revenues is intuitive, the negative coefficient of correlation does not necessary imply that it exists a causal relationship of those two variables. For examples, it might be the case that a high level of corruption and a low level of tax collection rate are caused by some common external factors, such as low level of economic development and high level of poverty; in this case, the reduction of corruption does not imply an increase of fiscal revenues.

For explaining the negative relationship between corruption and fiscal revenues, we take into consideration the following:

1) if the persons which are official in charge with the fiscal revenues collection are corrupt (by direct stealing from public funds – in this case the impact is 100% - or by generating the possibility for taxpayers to evade in exchange of bribery – in this case the impact is less than 100%), the corruption level has a direct impact on the low level of fiscal revenue collection.

2) corruption might cause the reduction of the tax base or of the level of the economic activity, the final result being reduction of the budgetary revenues.

a) corruption reduces the tax base by reducing the formal sector – this is often the case of transition and developing economies (Johnson, 1999; Giles, Caragata , 1999; Friedman, 2000; Schneider, 2003). The greater the underground economy is, the smaller the tax base (formal sector) is, and so is the level of tax revenues collection;

b) corruption leads to decrease of GDP or of economic growth, so the entire tax base is decreasing; (for a Romanian analysis, see Obreja Braşoveanu, Braşoveanu, 2008; Dragotă, Obreja Braşoveanu, Semenescu, 2008)

c) corruption might generate that an important part of public financial resources goes into extrabudgetary sector. These funds are less efficient used, in non prioritary domains.

d) other mechanism: corruption might lead to a higher cost of transactions, a lower investment rate, a lower productivity, because firms compete through bribery instead of quality.

Companies that are succesfull in illegal business, in unformal sector, do not pay taxes, so that firms that activate in underground economy have a competitive advantage comparing with firms that activate in the formal economy, some of them being forced to leave the formal economy.

5. CONCLUSIONS

There has been done a great progress in corruption monitoring and reducing. Corruption is no longer considered as an exogenous factor in an economy, it is a controlled and minimized phenomenon by the democratic institution and civil society.

Statistical analysis showed a high level of corruption in underdeveloped countries, but also an alarmed tendency of rising the corruption in developed countries. As Huguette Labelle, the president of Transparency International, said, the high and persistent level of corruption and poverty are no longer admitable. Corruption might be analysed in more details and eliminated as soon as possible.

We also emphasized the social-cultural component of corruption, the Latine, Balcanik, and Baltic countries are perceived being the most corrupt, not only from UE, but olso from a mondial classification (which contains 180 countries for 2007, 2008). These aspects show the dangerous dimensions of corruption.

Econometric results for 27 member states EU, for period 1995-2008, reflect, in general, a negative correlation between corruption and fiscal revenues over GDP, that does not necessary imply a causal relationship between these two variables. This might be the explanation for the positive correlation for 12 UE countries.

In the case of Romania, we consider that the high level of corruption has degraded society from the moral point of view, and it is abnormal that those who break the rules to have success and those who are correct to pay for the tax dodgers. The greatest effect on moral values in Romanian society is generated from unpenalized corruption.

Even if Romania's CPI in 2008 shows a reduction in the level of corruption, Romania occupies the last but one position in the classification, far from the average and more far from the developed countries. European Commision did not activate the safeguarding clause for corruption, but the scandal from the big corruption events shakes the judicial system in our country.

Corruption and tax evasion remain main problems in our country. These negative phenomena might be seriously treated, and administrative and legislative reforms have to be continued in order to diminish corruption.

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