

Cross-Regional Comparison of Corruption

VERONIKA LINHARTOVA, MARTINA PULTAROVA

Institute of Economic Sciences
University of Pardubice
Studentska 84, 532 10 Pardubice
CZECH REPUBLIC
Veronika.Linhartova@upce.cz

Abstract: - Regarding the fact that bribery and other forms of corruption are illegal in most countries, the participants of such practices strive thoroughly to hide them and uncovering corruption is often almost impossible. Even so, a large number of specific procedures exist nowadays. These procedures attempt to quantify corruption rates in each country. A common feature of these methods is however that they focus on corruption rates at the country level, but socio-economic development is not homogeneous from country to country. It can be assumed that corruption levels also differ in individual regions within the country. Sub-national areas which are more corrupt lower the rating of the corruption level in the entire country. Sub-national resolution in terms of corruption rates could bring a whole new dimension to the theory of cause and effect in the question of regional disparities. The main objective of this paper has been formulated in this context. A newly created index was used to verify corruption variability within the NUTS II regions in European countries. The high level of variability in corruption was confirmed between regions, particularly in Italy, but also in other countries. Because of this variability, it is in many cases very misleading to evaluate the country as a whole from the viewpoint of the impact of corruption.

Key-Words: - corruption, regions, regional disparities, European Commission, regional policy, economic performance.

1 Introduction

Corruption and its potential reduction is a constant topic not only of economic or socio-scientific research, but it is also a problem which intensively troubles governments of individual countries as well as citizens. The definition of the concept itself is still not explicit and various authors define corruption with minor distinctions. [6, 18]

Neither the question of whether nor that of how corruption can influence the economic level of a country is answered by the literature without controversies. One may read the opinion that corruption is “sand in wheels” of economics and complicates economic transactions because it reduces the security of property rights and contributes to inefficient allocation of sources. [13, 14, 16, 17, 19] On the other hand, there are authors who state that corruption is something that “greases the wheels” of economics because it enables individuals to avoid administrative delays and bureaucratic blocks. [7, 9, 10, 11]

All the studies mentioned above are similar in that they explore the issue of corruption at the national level. The regional view of the consequences of corruption, especially in economic

terms, is still quite an unexplored territory worldwide. Only a few studies have been written focused on quantifying the extent of corruption and its impact on the regional level abroad. [2, 5] These studies depict the level of corruption in a variety of sub-national divisions as being very diverse and its analysis can help explain differences in the economic performance of the different regions.

Considering that bribery and other methods of corruption are illegal in most countries, participants of such practices strive thoroughly to hide them and uncovering corruption is often almost impossible. Even so, a large number of specific procedures exist nowadays. These procedures attempt to quantify corruption rates in each country. A common feature of these methods is however that they focus on corruption rates at the country level. Quantification of corruption rates in smaller regional areas is still considerably unexplored. Sub-national resolution in terms of corruption rates could bring a whole new dimension to the theory of cause and effect in looking at regional disparities. There are several reasons for focusing on this issue. Perhaps the strongest reason is that if corruption is one of the variables that have an effect of reducing economic performance, the elimination of corruption in certain

regions may be the key to eliminating regional economic disparities and thus increase the economic performance of the country. An analysis of regional corruption may also lead to the creation of regional anti-corruption precautions that can bring a reduction in the corruption rate at the national level. The main objective of this paper is formulated in this connection.

In this paper, the hypothesis of whether or not the level of corruption in NUTS II regions is heterogeneous will be verified. Verification of this hypothesis consists of a proposal of a methodology for quantifying the regional corruption rates, comparing the individual regions and at the same time defining the rate of deviation of a region from the “surface” corruption rate in a country. The definition of these regional disparities in corruption will be a benefit mainly for anti-corruption policies of a country.

2 Quantifying Corruption

As mentioned above, no unified definition of corruption concept exists today either at the theoretical or practical-application level. But all existing approaches agree that corruption represents unfair practices with the goal of gaining a certain artificial advantage at the expense of others. Authors of this report build on the traditional definition according to Nye who describes corruption as “*behaviour that deviates from the formal duties of a public role (elective or appointive) because of private regarding wealth or status gains.*” [15]

The European Commission carries out regular evaluations to determine how the individual Member States make use of EU funds. According to the latest report of the European Commission, when drawing from EU funds in the period of 2007 – 2013, the worst offender in the entire EU was the Czech Republic. One key problem at present in drawing on European funds is corruption. According to the European Commission, the bureaucratic burden particularly, and related fraudulent methods, of obtaining grants in the Czech Republic represent an obstacle in drawing resources from European funds. These resources therefore paradoxically often do not help remove the undesirable regional disparities, but the distribution of these resources demonstrably increases the opportunities for corruption. This in turn brings to the region additional negative economic consequences, which may cause an increase in the disparities within the country as a whole. [3] Cases of corruption dealing with the disbursement of funds

are not exceptional even in other countries. Even so, due consideration is not given to corruption at the sub-national level.

In Italy, some studies were conducted on corruption in the various Italian regions. Del Monte and Papagni [2] Fiorno, Galli and Petrarca [5] agree in their studies in that the variability in the level of corruption in the Italian regions is very high, and in this country there are regions with very high levels of corruption, but also regions with very low levels of corruption. The regions with higher levels of corruption were identified as regions in the south of the country. In contrast, the regions in the north of the country were ranked as those with much lower levels of corruption.

2.1 Indicators of Corruption Measurement

The indicators of corruption measurement which are currently used are to a larger extent based on so-called “soft data”. These various approaches can be divided into the four following basic groups according to the method of data collection and evaluation [18]:

1. Group 1, including *public opinion researches*, is represented mainly by studies which focus on wider problems regarding the possibility of the long-term economic growth of a country and a complex quality classification of the corporate environment. This group of indices include e.g., *the Growth Competitiveness Index, Global Corruption Barometer, Bribe Payers Index*, etc.
2. Group 2, studies and analyses based on *combined indices* – consists of a combination of several already existing corruption indicators. This group of indices includes e.g., *the Corruption Perception Index (CPI)*.
3. Group 3, studies and analyses based on *objective data* – is represented by such indices as *Neumann’s index* which is based on results of interviews with exporters.
4. Group 4, representing studies and analyses based on *specialists’ evaluations*.

The methodologies of all the approaches mentioned above focus on assessing corruption at the country level and it is necessary to remark that an extensive professional as well as non-professional polemic exists regarding the rate of their predicative ability. In the following text we will further work with the most known index from

the index group based on specialists' evaluations (Group 4). It regards the general index **Worldwide Governance Indicators (WGI)** which is edited annually by the World Bank. Specialists in the World Bank classify this data into six groups and then compile six aggregated key indicators of government quality using statistical methods: *Voice and Accountability*, *Political Stability*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law* and *Control of Corruption*.

These six indicators range in value in the interval $\langle -2.5 ; 2.5 \rangle$. The higher the value of the indicator is, the better we perceive government quality in a given sphere. [8]

3 Cross-Regional Comparison of the Level of Corruption

Due to the absence of any method for determining corruption in a more or less affected sub-national region, the next section will present a method for quantifying corruption at a sub-national level. The design of this method is based on the construction of the European Quality of Government Index developed by the European Commission together with The Quality of Government Institute.

3.1 The European Quality of Government Index

The European Quality of Government Index (EQI) was created to quantify the quality of public administration at a regional level. This index has so far been worked out twice; in 2010 and 2013. 27 EU Member States were included in the EQI in 2010. In 2013, 28 EU Member States were included as well as the Candidate States, Turkey and Serbia; 30 countries in total. In 2013, the European Commission recalculated the RIC 2010 also for countries which had been newly included in the RIC 2013. The European Commission plans to construct an EQI regularly every three years. The next EQI calculation will be published in 2016.

In addition to the national evaluation of the quality of governance, the resulting EQI also takes note of the evaluation of regional administration using regional data which the European Commission has drawn up for the purpose of constructing the EQI. The EQI is a combined index and consists of two major parts

The first part of the EQI takes into account the national government level, which is represented by the Worldwide Governance Indicators (WGI) of the World Bank (see chapter

2.1). Of the six pillars of the quality of governance, the European Commission chose four for the construction of the EQI: Voice and Accountability (GM1), Government Effectiveness (GM3), Rule of Law (GM5) Control of Corruption (GM6). [4, 8]

The second part of the EQI, which takes into account the regional level of governance, was compiled by the European Commission on the basis of a unique regional survey, conducted for the sole purpose of creating a Regional indicator of government quality, which would take into account regional aspects in the final construction of the EQI.

This unique research registered in the first construction of the EQI was executed in 172 NUTS II regions in 18 countries of the European Union in 2010 (from the remaining 9 countries of the European Union only data at the national level was included). The research includes altogether 181 regional units. Data was obtained by means of surveying more than 33 000 inhabitants. The all-European regional research was conducted from 15th December 2009 to 1st February 2010 by means of telephone interviews with respondents older than 18 years and in the local language.

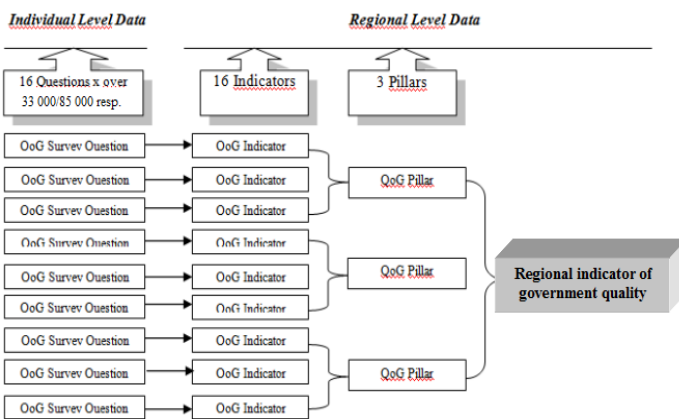
In the second construction of EQI, it was executed in 206 NUTS regions in 24 countries of the European Union in 2013 (from the remaining 7 countries of the European Union only data at the national level was included). The research includes altogether 213 regional units. Data was obtained by means of research of more than 85 000 inhabitants.

A list of survey questions is contained in the European Commission's document *Measuring Quality of Government and Sub-National Variation*. [4]

The resulting regional quality of administration indicator reflects the actual experience of respondents with the use of individual public services, thus the quality of governance in the region is evaluated as it is perceived by its inhabitants; i.e., the recipients of public administration. The Regional indicator of government quality is composed of 16 separate indicators relating to the quality of administration in a particular region. These 16 indicators were developed based on 16 questions developed in accordance with the pillars arising from the methodology of the WGI: Voice and Accountability, Government Effectiveness, Rule of Law and Control of Corruption. In order to capture the most important sub-national differences, questions were focused on three public services that are often funded or administered at sub-national levels. Each of the four pillars mentioned thus involves issues relating to education, health care and

law enforcement in the region. With a focus on these three services, respondents were asked to assess these public services with regard to the three fundamental concepts of quality administration - quality, impartiality and corruption. These three concepts are the pillars of the resulting regional indicator of quality government. Data is aggregated three times using a simple average. First is the creation of the average values of responses to the questions. This will create 16 indicators for each region. Then these 16 values are aggregated into three defined pillars - quality, impartiality and corruption. Finally, these three pillars are aggregated into a single numerical Regional quality of administration indicator. A simple diagram of the formation of the Regional indicator of government quality is shown in Figure 1.

Figure 1: Approach to creating a Regional Indicator of Government Quality



Source: own processing according to [4]

The final index of government quality EQI upgrades in this way national evaluation of government quality created by the World Bank by regional extent.

For the purpose of findings to what extent e.g. demographic changes will display in the final value of “Regional indicator of government quality” was made a sensitivity test. It resulted from 62 executed simulations that though some investigated topics could be dependent on demographic conditions of a region; a change of these conditions would not expressively influence the final score of Regional indicator of government quality.

The final form of the index construction is as follows:

$$EQI_{regionXincountryY} = WGI_{countryY} + (R_{qogregionXincountryY} - CR_{qogcountryY}), \quad (1)$$

where $EQI_{regionXincountryY}$ is the final European Quality of Government Index in the region of a given country,

$WGI_{countryY}$ is the national average of the above four *Worldwide Governance Indicators* for each country,

$R_{qogregionXincountryY}$ is the score from a regional survey; thus the *Regional indicator of government quality*,

$CR_{qogcountryY}$ is the regional survey of all regions in the country weighted by the proportion of the population of each region to the national population of the country.

3.2 Regional Corruption Measurement

The above mentioned methodology of calculating the EQI construction is today a unique approach which enables a view not only of a national but also a regional level when assessing government quality. We can assume that today it is an original approach which could be used not only for the purposes of evaluating the government quality in the future. In the context of the subject of our interest, the fact that the EQI represents the approach which allows the consideration of regional corruption is determinative in this way. Therefore from our point of view, it is possible to apply the modified form of the EQI only for the purpose of quantifying a regional rate of corruption based on the above mentioned methodology of composition of the EQI.

The resulting Regional Index of Corruption (RIC) is then calculated based on the formula: [12]

$$RIC_{regionXincountryY} = CC_{countryY} + (PC_{qogregionXincountryY} - CPC_{qogcountryY}), \quad (2)$$

where $RIC_{regionXincountryY}$ is the resulting *Regional Index of Corruption* for each region of a given country,

$CC_{countryY}$ is the national indicator value of *Control of Corruption (GM6)* from the *Worldwide Governance Indicators*,

$PC_{qogregionXincountryY}$ is the score from a regional survey focused on corruption, thus *Pillar of Corruption*,

$CPC_{qogcountryY}$ is the value for the *Pillar of Corruption* from the regional survey of all regions in a country weighted by the proportion of the

population in each region on the national population of the country.

3.2.1 Verification of the Proposed Index

This method was by authoress of this paper subsequently verified for the following use at national and sub-national level as well. The time period from 2008 - 2013 was analysed. Kendall's coefficient of concordance was used for mathematical verification. This is a non-parametric statistical method and is mainly used for the assessment of conformity assessment of individual evaluators. Its value ranges between 0 (no agreement) and 1 (complete agreement). [1]

Rankings of countries according to the regional index of corruption are compared with rankings of the existing index measuring the level of corruption at the national level. The selected indicator is the Corruption Perception Index (CPI) of Transparency. Kendall's coefficient showed at least a 95 % level of consensus between the regional index of corruption and all selected indicators.

For verification at regional level are used corruption offenses in NUTS II regions published statistics of the Police of the Czech Republic. The Regional index of corruption is consistent with police statistics at level at least of 40%.

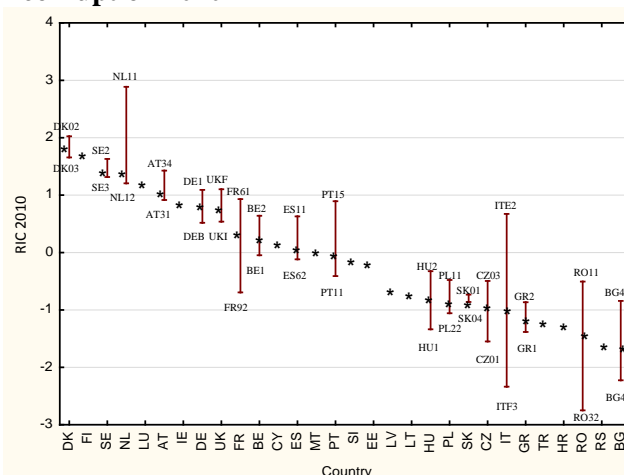
3.3 Cross-National Comparison of Regional Corruption Variability

The following two figures show a graphic model of Regional Index of Corruption (RIC) variability in 30 countries evaluated for the years 2010 and 2013. Box plots use the method of min-max comparison and show the range of RIC values labelled the best and the worst evaluated NUTS II region. Countries are plotted on the x-axis; the y-axis shows RIC values. The range of RIC values is complemented by the final value of RIC of the country which is represented by an asterisk.

The higher the RIC value, the better the rating. A higher index value means therefore a lower level of corruption in an area.

Figure 2 shows the range of RIC 2010 values. The greatest variability can be seen in the assessment of corruption in Italian regions. The most corrupt Italian region is Campania (ITF3), while the best rating was held by Umbria (ITE2). A high variability was also found in Romania, France and Netherlands. Rating corruption at the national level can thus be distorting for these countries.

Figure 2: Box plot of the Regional index of corruption 2010



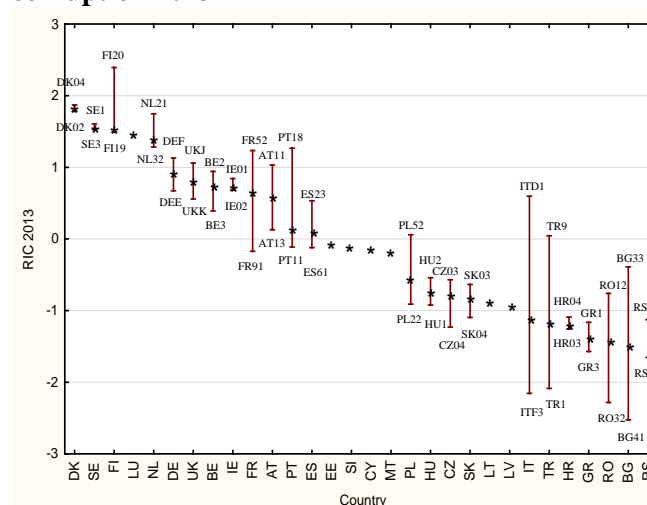
Source: own processing

Figure 3 shows the range of RIC 2013 values. The region with the lowest level of corruption was Aland in Finland (FI20) with a value of 2.3932. The most corrupt region was Yugozapaden in Bulgaria (BG41) with a value of -2.5237.

A high variability in the level of regional corruption was found again in Italy, as well as Bulgaria, Turkey and Romania. The inhabitants of these countries have different opinions on the level of corruption in their regions and the national corruption evaluation may not correspond to the actual situation in some regions.

In contrast, in Danish, Swedish, Irish and Croatian regions only very small deviations were found in the RIC 2013 values and evaluation of the national level of corruption relevantly reflects also the evaluation of individual NUTS II regions.

Figure 3: Box plot of the Regional index of corruption 2013



Source: own processing

The highest variability in the regional corruption rate was found in Italian regions in both regional indices of corruption. Several studies have been written up in Italy focusing on the topic of regional corruption. Del Monte and Papagni, Fiorno, Galli and Petrarca state in their studies that the variability in the level of corruption in Italian regions is very high. [2,5] Italian regions can be found with very high level of corruption and regions with very low levels of corruption as well. According to the authors Fiorno, Galli and Petrarca the most corrupt regions are Campania and Sicilia. The RIC ratings for the years 2010 and 2013 in principle agree with the conclusions of these authors.

Corruption in Italian society is not perceived more strongly than in other countries but specific historical and geopolitical conditions appeared which created presumptions for an explosive course of its investigation. For decades, the Italians have been living with the awareness that politicians are corrupt, that some of them are connected with the Mafia and that those who were elected by the citizens have no power in the country. Political machinations, occult-like power, intrigues and unexplained political murders seem to belong to political folklore, mainly in the south.

It is obvious that corruption behaviour has its own specifics which are determined even by a given method of coordinating economic activities. We can say that the nature of the economic order of the society, or its economic organisation, determines individual spheres of the occurrence and forms of corruption behaviour.

4 Conclusion

Although the issue of corruption has been current for some time, this topic is very much neglected at the regional level. The main reason is a lack of data. There has been no method of quantifying the phenomenon of corruption at the regional level until now. Due to the different socio-economic development of regions it can be assumed that even corrupt environments in these regions differ. If corruption is one of the variables that are degrading economic performance, as many studies claim, the elimination of corruption itself in certain regions may be the key to eliminating regional economic disparities and may thus increase the economic performance of the country.

The European Commission highlights the increasing corruption in some regions in connection with the misuse of European funds. These resources paradoxically often do not help remove the undesirable regional disparities, but the distribution

of these resources demonstrably increases the opportunities for corruption. This in turn brings to the region additional negative economic consequences, which may cause an increase in the disparities within the country as a whole. The goal of regional politics is to sustain positive disparities and restrain or eventually completely remove the negative ones.

From the viewpoint of the corruption rate, a sub-national distinction of regions would pose a completely new development of the theory of cause and effect of regional disparities. The possibility of defining regions more affected by corruption would allow the tools of anti-corruption policies to be concentrated primarily on regions which are most heavily affected by corruption and this would create a new tool for eliminating regional disparities. The diversification of individual regions would also be a valuable benefit for current anti-corrupt policies in a country.

Based on the values of the Regional Index of Corruption, it was found that the level of corruption is heterogeneous in the NUTS II regions and areas more affected and less affected have been identified. The stated hypothesis has been confirmed.

Confirmation of this hypothesis is consistent with the claim of authors Del Monte and Papagni as well as Fiorno, Galli and Petrarca. Based on an analysis of Italian regions, it was found that the level of corruption in various regions is not homogeneous. The construction of the Regional Corruption Index offers the possibility to also verify these conclusions on NUTS II regions in other EU countries.

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