CORRUPTION IN THE CZECH AND SLOVAK REPUBLIC: DID THE EU PRESSURE IMPROVE LEGAL FRAMEWORK AND ITS ENFORCEMENT?

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Abstract

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Did the EU pressure improve legal framework and its enforcement in the Czech and Slovak Republic? The paper analyzes the current state of the Czech and Slovak quality of legal framework and its enforcement in the context of the European Union accession. We looked at a variety of corruption indicator data, such as statistics of revealed and clarified malfeasance connected with corruption per 100 capita and the composite indexes. These indicators suggest that the quality of the legal framework and its enforcement in the Czech and Slovak Republic has not improved after joining the European Union. More precisely, it can be argued that in spite of implementation of anti-corruption public policies proposed by EU institutions, perceived corruption of public officers has remained the same. This means that trustworthiness of legal framework and enforcement authorities responsible for deterrence and reduction of corruption remained the same as well. Therefore, in order to improve the quality of the legal framework and its enforcement, reduction of barriers to entry and more profound legislation reforms is suggested.

anti-corruption public policy, corruption, Czech Republic, EU accession, Slovak Republic

Institutional framework and its enforcement plays a significant role in the allocation of resources (Coase, 1960) and in economic development (North, 2002). The reason is that the institutional framework and its enforcement determines human interaction and thus determines if the human behavior is productive and leads to economic development, or if it is unproductive and restricts economic development. Unproductive human behavior is rent-seeking (Tullock, 1967; Krueger, 1994).[1]

From this perspective, the transition from the dictatorial communist regime to democracy was the transition of the institutional framework and its enforcement. The dictatorial communist regime allocated the privileges through bureaucratic decision making and competition for privileges which resulted in creation of pervasive shortages to extract bribes induced the firms rather to rent-seeking than to productive behavior (Shleifer and Visny, 1992). The question of transition from the dictatorial communist regime to democracy was thus the question of the transition of the institutional framework and its enforcement to restrict among others rent-seeking.

Geršl (2006) argues that, although the improvement of the institutional framework in Central and East European countries has been driven by pressure from EU institutions, the quality of law enforcement in the Czech Republic still allows the informal sector and interest groups to influence formal institutions through corruption. To solve this situation, Geršl (2006) suggests the removal of barriers to entry, improvement of the business environment and reform of law enforcement. These measures should increase the pressure of foreign capital on politicians and improve the quality of the legislative framework and its enforcement in the Czech Republic.

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1 For historical literature survey see Grochová and Otáhal (2010).

Žák and Vymětal (2006) support Geršl's (2006) conclusion. They use Governance Metters indicators to provide the evidence supporting Geršl's findings. More precisely, Žák and Vymětal (2006) use the Rule of Law and Control of Corruption indexes constructed by World Bank to provide evidence that the legislative institutions in the Czech Republic in comparison with other European countries did not improve after joining the European Union. Anna Kadeřábková (2007) also supports this conclusion, but Kadeřábková (2007) uses Doing Business data provided by the World Bank with a focus on the Czech Republic.

In this paper, we want to provide additional evidence monitoring the progress of institutional transition in the Czech Republic and compare it with institutional transition in the Slovak Republic.[2] Using the selected corruption indicators, we evaluate the development of corruption in the Czech Republic and compare it with the Slovak Republic to show how the institutional framework and its enforcement improved in these two countries after joining the European Union. We assume that the perceived corruption situation approximates the trust of citizens in authorities (Shleifer, 1997), which are also responsible for reduction of both political and petty corruption. Thus, when corruption in a country is perceived as a serious issue the responsibility of legal framework and law enforcement should be lifted. Consequently, we state that the pressure of EU institutions did not improve the trust in the legal system and its enforcement. We thus argue that in spite of the EU pressure the law enforcement system responsible for deterrence and reduction of corruption is still untrustworthy. For this reason, in compliance with Geršl's (2006) general findings, we argue that although the improvement of the institutional framework and its enforcement in Central and East European countries has been driven by pressure from EU institutions, the quality of law enforcement in the Czech Republic still allows the informal sector and interest groups to influence formal institutions through corruption.

The difference between our analysis and Geršl's (2006), Žák and Vymětal's (2006) and Kadeřábková's (2007) studies is that we do not use general institutional quality indicators provided by the World Bank, but different kinds of corruption measurements which were statistically tested. Our empirical evidence thus makes our analysis more complex.

In the next section, we describe the anti-corruption public policies targeted to the setting of parameters of law enforcement. In the second section, we run several regressions of the evidence based on perception-based composite corruption indexes. In the conclusion with reference to all illustrated corruption measurements the summary of the argumentation is presented.

1 Description of anti-corruption public policies

Before fall of the Berlin Wall, the formal institutional framework and its enforcement structured the human interaction in the Czech and Slovak Republic similarly. The reason for this similarity is the fourty year period of the same dictatorial communist regime. In the first stage of the transition period, the fast for-market reforms were established. The old legal framework was destroyed and a new for-market one started to be developed.

The establishment of the for-market legal framework was highly inspired by future EU countries, especially Germany. Consequently, an entry to the EU was a logical decision of the transition governments. In our opinion, however, the EU membership was promising stabilization of the institutional framework development and its enforcement (Sachs, 1996).

The crucial legislation reform in the transition was the legalization of private property rights. Naturally, the private property rights were respected in the Czech and Slovak Republic even before the fall of the Berlin Wall, but this respect was not officially recognized. Unofficial respect for private property rights allowed the firms and bureaucrats to keep revenues from corruption (Shleifer and Vishny, 1992). Upon the legalization of private property rights, the allocation of state ownership was largely determined by the ex-communist private property rights structure. Privatization of the state ownership officially targeted to general public, thus, in most cases led to the legalization of the ex-communist private property claims.

Before the EU entry, the Czech Republic and the Slovak Republic had been pressured by the EU institutions to improve their state of corruption. It was the obligation of the Czech and the Slovak governments to improve the legal frameworks and its enforcement before the entry. The Slovak government led by Vladimír Mečiar decided to employ a slow privatization strategy and retain political control over the legislation and the law enforcement. As a result, corruption in the Slovak Republic was worse than in the Czech Republic.[3]

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2   Preliminary data were published in Otáhal (2008a). Previous studies were published by Otáhal (2010, forthcoming.).

3   In 1993 The Czechoslovak Federative Republic split into two sovereign countries the Czech and Slovak Republic. The reason for this separation was that the Klaus's government (the future Czech government) wanted to employ the big bang transition strategy while the Mečiar's government (the future Slovak government) wanted to keep tight control over the process of transition. While Klaus's government employed the voucher privatization, Mačiar's government opted for direct sales. It is believed that the direct sales provide to politicians and bureaucrats more opportunities to extract bribes (Otáhal forthcoming).

In this section, we describe the public policies carried out by the two governments to show their response to the pressure of the EU institutions. We assume that the quality of the legal framework is approximated by corruption of public officials. Our reasoning is the following. When the corruption occurs, the legal framework and its enforcement is not appropriately functioning thus its quality is inadequate.

For anti-corruption public policies description we use Becker and Stigler's model (1974). This model is generally referred to as the principal-agent model. The model of rent-seeking is another theoretical model tackling the corruption problem (Tullock, 1967; Krueger, 1974). In this section, we do not concentrate on the impact of corruption on the allocation of resources. Therefore, the principal-agent model will serve perfectly for a description of anti-corruption public policies of the Czech and Slovak Republic.

According to Becker and Stigler (1974) the principal has three possibilities how to fight corruption of the agent. Firstly, he can raise salaries or *rewards (w)*, secondly he can raise *punishments (F)*, and thirdly he can increase the *probability of detection (p)* and thus increase the incidence of rewards and punishments. The agent's utility function for *n* period is thus following,

$$w_n = p(v_n - F) + (1 - p)(b + w_n), \qquad (1)$$

where $(v - F)$[4] is a negative reward when the agent's corruption is revealed, p is the probability of detection and $(b + w)$ is sum of bribes and rewards in case when the agent's corruption is not revealed.

The shortcoming of the principal-agent model (Becker and Stigler, 1974) is that it assumes exogenously given institutional framework and its enforcement (Otáhal, 2007). While the institutional framework in the Czech and Slovak Republic was continuously transforming deeper reforms in the law enforcement were not implemented. This model thus might be suitable for description of public policies targeted to the reduction of corruption via setting the parameters in the law enforcement.[5]

The public choice literature (i.e. Benson, 1990) argues that inefficiently controlled public officers have very low motivation to discipline themselves. Because the public officers are inefficiently controlled by politicians and the citizens are rationally ignorant of controlling bureaucrats, the corruption is hardly reduced via setting the parameters of law enforcement. For this reason, we assume that the setting of law enforcement

parameters is done by bureaucratic decision-making (Niskanen, 1968).

1.1 Anti-corruption strategies of the Czech and Slovak Governments

In this subsection, we will describe the public policies used by the Czech and Slovak governments to reduce the corruption of public officers.

The period of the nineties was the start of negotiations between the Czech government and the EU institutions. Anti-corruption measures were the condition of the EU membership, therefore the Czech government started an anti-corruption governmental program. In 1997, the governing coalition, led by Civic Democratic Party (ODS), decided to "propose an offensive approach to detect corruption in the public sector".[6] Later in 1998, when the Czech Social-Democratic Party (ČSSD) won the elections, the new ruling coalition continued with this program.[7]

Lízal and Kočenda (2001) provide institutional analysis of this anti-corruption governmental program. Using sociological surveys and composite corruption indexes they prove that even though the Czech government promised to reduce the state of corruption, the results of the anti-corruption policies were not visible. The reason for the lack of the effect is that the first steps were aimed only at the educational programs. Nevertheless, in 2002, Act No. 265/2001 coll. came into force and enabled better coordination of repressive forces. The Act was in accordance with the EU legislation and international treaties.[8] This anti-corruption governmental program was targeted to increase the *probability of detection (p)* of public officers' corruption.

After the elections in 2002, the government ruled by the Czech Social-Democratic Party continued in the anti-corruption program. The government was in the middle of preparations to enter the EU, and thus accomplished a series of steps improving the controlling mechanisms. The major aim remained, *to increase the probability of detection (p).* This was to be achieved by more efficient cooperation among different controlling departments. These were supported by independent organizations such as Transparency International. Educational programs of public officers ran at the same time.[9]

The Slovak government was more criticized for corruption. The negative evaluation of corruption situation in the Slovak Republic had a negative impact on the preparations for the EU entry. The reason was that the EU institutions perceived corruption in candidate countries negatively. In 1998, when the Slovak Democratic Coalition (SDK)

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4   Variable *v* presents alternative governmental official's remuneration when corruption is detected.
5   Tullock (1996) criticizes the Becker's and Stigler's assumption of benevolent dictator.
6   This decision was stated in Governmental decision No. 674/97.
7   This decision was stated in Governmental decision No. 129/99.
8   http://aplikace.mvcr.cz/archiv2008/dokument/2002/korupce/ukoly.html.
9   http://aplikace.mvcr.cz/archiv2008/dokument/index.html.

won the elections, the government stressed the necessity to fight corruption. As a result, in June 2000, the government started a national program against corruption (a part of the intended National Action Plan against Corruption).

Zero tolerance to public officials' corruption was declared and special anti-corruption units were set up at police departments. They had the authority to investigate and intervene in corruption cases at the ministries and impose charges and penalties. This anti-corruption public policy was targeted to improve *probability of detection (p) supported by the severe punishment (F)*.

Another important measure in the Czech Republic was the establishment of the Special Court for Corruption and Organized Crime (Act No. 458/2003 Coll.). It came into action in 2004. The newly established court, in cooperation with the anti-corruption units, led to a stronger of repression of public official's corruption. New techniques of proving corruption crimes were used, such as the state's list and agent provocateur.

Both the Czech and Slovak anti-corruption governmental programs targeted the reduction of high-level and low-level corruption. High-level corruption involves elected and senior bureaucrats: "This category covers, in particular, financing of political parties and their election campaigns, parliamentary lobbying and public tenders at any level of state administration" (Lízal and Kočenda, 2001, p. 132). Low-level corruption involves middle and low level bureaucrats: *This classification refers to municipalities and all forms of public services provided by the state through regional and local agencies. It also includes state guaranteed health care. Such level also entails informal links among private companies and low-level state bureaucracy* (Lízal and Kočenda, 2001, p. 132).

1.2 Anti-corruption strategies in data

In this subsection, we present the official statistics of revealed and clarified malfeasance connected with corruption per 100 capita. The official statistics of revealed and clarified malfeasance connected with corruption per 100 capita is a useful corruption measurement that records the governmental effort to reduce corruption. The malfeasance connected with corruption is defined by the Czech and the Slovak law as the misuse of power by state officials, disturbing the objectives of the governmental officials through malpractice, receiving bribes, bribery and indirect bribery. This in both countries similar legislative definition is very close to widely accepted general definition of corruption provided by Transparency International. Transparency International defines corruption as the misuse of public power.

The shortcoming of the official statistics of revealed and clarified malfeasance connected with corruption is that it does not record the state of corruption in the society but only the governmental effort to reduce the legally defined corruption of public officials. As we show on the other corruption

indicators it is not guaranteed that the corruption in society might be reduced if the government increases its effort to reduce the legally defined corruption of public officials. However, our main focus is on the public officials' corruption and thus it is relevant for our study.

Graph 1 shows the development of revealed malfeasance connected with corruption per 100 capita in the Czech and Slovak Republic. This development demonstrates the increased effort of the Slovak government to reveal the corruption of public officials after the implementation of described anti-corruption policies. The development of the Czech Republic is different; despite the pressure of the EU institutions, the effort of the government to reveal public officials' corruption did not increase. More precisely, the development of revealed malfeasance connected with corruption per 100 capita in the Czech and Slovak Republic shows that the implementation of described governmental anti-corruption strategies led to increased effort of the Slovak government to reveal corruption of public officials while the Czech government decreased its efforts as supported by indexes measuring corruption. After joining the EU the effort of both governments shows decreasing trend.

Increased or decreased governmental effort to uncover the corruption of public officials, however, does not mean that the disclosed corruption will be fully investigated and the corrupt public officers forced to take full responsibility. Graph 2 thus shows the development of clarified malfeasance connected with corruption per 100 capita. The development again demonstrates that, despite the pressure of the EU institutions, the effort of the government to punish public officers' corruption in the Czech Republic decreased after joining the EU. This conclusion reflects the evolution of indexed measuring corruption. The development of the Slovak clarified malfeasance connected with corruption per 100 capita records a positive trend. Nevertheless, while the effort of the Slovak government to clarify malfeasance connected with corruption of public officials increased before the EU entry, it decreased to the level of the Czech Republic after the EU accession.

The trends of the official statistics of revealed and clarified malfeasance connected with corruption per 100 capita demonstrate that the effort of public officials to repress legally defined corruption of state officials in the Czech Republic remained in effect the same or decreased while the effort of the officials to repress the corruption in the Slovak Republic adjusted to the development in the Czech Republic in the period when the public policies described in the previous subsection were implemented.

In other words, the trends of official statistics of revealed and clarified malfeasance connected with corruption of public officials per 100 capita demonstrates that while the pressure of the EU institutions led to the implementation of anti-
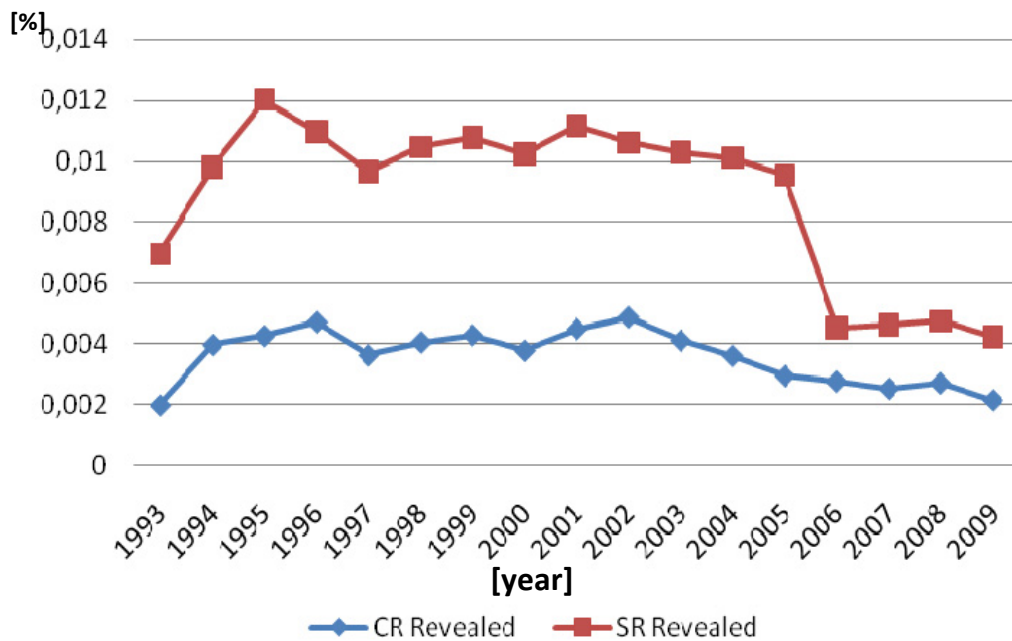
1: *Revealed malfeasance connected with corruption per 100 capita*
Source: The Ministry of Interior of the Czech Republic and the Slovak Government Office, Czech Statistical Office and Slovak Statistical Office
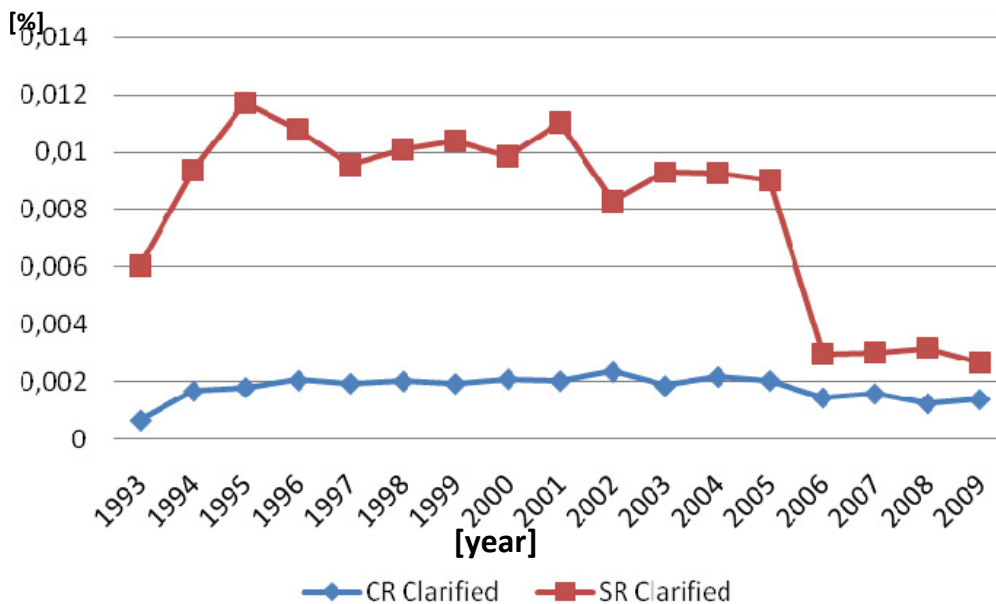
2: *Clarified malfeasance connected with corruption per 100 capita*
Source: The Ministry of Interior of the Czech Republic and the Slovak Government Office, Czech Statistical Office and Slovak Statistical Office

corruption governmental policies, the effort of the governments decreased few years after joining of the EU. The explanation of this conclusion is twofold. First, one can argue that the corruption of public officials was not so prevalent thus the increased activity was not needed. However, when studying the indexes measuring corruption we believe this is not the case of the Czech and Slovak Republic.

The second, more plausible explanation is that the pervasive corruption of ex-communist bureaucrats became transparent during the transition process. This state of affairs demanded implementation of anti-corruption governmental policies in order to stabilize the state of corruption in both countries. However, according to our findings this effort did not last after EU accession.

2 Other corruption measurements

In the previous section, we described the effect of anti-corruption policies of the Czech and the Slovak

government implemented before the EU entry. We showed that the ambitious election programs of Czech political parties to reveal and clarify malfeasance connected with corruption was not put into action, but rather decreased. Trends in the Slovak Republic were different. The effort of public officials to reveal and clarify malfeasance connected with corruption increased for a short period of time but later adjusted to the development in the Czech Republic. With reference to presented facts in previous section we have to conclude that the effort to improve the quality of legal framework in these countries was not recorded.

This firm conclusion is based on the reference to the development of the law enforcement in the Czech and Slovak Republic. Precisely, while the fast transition reforms were partly targeted to establish the for-market legal framework the law enforcement did not undergo an overhaul. Thus the "new" legal framework was enforced by "old" and corrupt law enforcement system. Žídek (2005), for instance, points out that in the Czech Republic in 1999 commercial disputes took on average 478 days and restitution disputes took on average 1206 days (Žídek, 2005).

In this section, we would like to provide an additional item of evidence. We do not only concentrate on the effort of state officials to reveal and clarify malfeasance connected with corruption of public officials, but we concentrate on progression of corruption in the Czech and Slovak society.

2.1 Composite Indexes

For comparison of perceived corruption in the Czech and Slovak Republic before and after the EU accession, we have chosen two perception-based composite corruption indexes: the Corruption Perception Index (CPI) published by Transparency International (TI) and Control of Corruption (CC) published by the World Bank (WB). The reason for the use of these two indexes is that they cover the longest available time-period. Other perception-based composite corruption indexes such as the Opacity index provided by PricewaterhouseCoopers, Business Risk Service provided by Business Environments Risk Intelligence (BERI), Business Environment Ranking provided by Economist Intelligence Unit (EIU) do not cover a time period long enough or report rather on general business environments and political risks than on corruption of public officials.

Both CPI and CC are composed of a number of perception-based sources, especially from rankings provided by business agencies and foreign entrepreneurs.[10] While TI defines corruption as the misuse of power by public officials (Lambsdorff,

2006, p. 84), the definition of the WB is broader, because the CC includes broader cross-country indicators reporting ratings of countries based on boarder aspects of corruption (Kaufmann, Kraay and Mastruzzi, 2009, p. 6). Even though Control of Corruption defines corruption broadly, both indicators are similarly constructed and generally consider corruption to be: "Behavior which deviates from the formal duties of a public role because of private-regarding (close family, personal, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private-regarding influence" (Nye 1967, p. 419).[11] From deeper analysis we have learned that every kind of corruption measurement defines corruption in a slightly different way. Even though the definition by particular legislation against corruption is close to the definition of TI which is widely accepted, we have noticed slight but significant differences. It must be noted that every ranking from which the CPI or CC are composed defines corruption in slightly different way. And finally, every sociological survey, which asks the respondent how often they offer bribes to public officials, defines corruption in different way. Perceptions of what a bribe exactly is often depend on the respondents' understanding. Thus even though the institutional analysis based on different kinds of corruption measurements is more complex and detailed, it is quite likely that diverse phenomena are measured.

Moreover, the perception-based composite corruption indexes are composed of a number of perception-based sources, which must be aggregated. The aggregation of different perception-based sources is accompanied by two measurement shortcomings. First, the changes in numbers of sources and methodology make the year-by-year comparison less valid. Second, the aggregation of different sources which is based on slightly different definitions of corruption, makes the country score comparison less valid as well (Körner and Kudrna and Vychodil, 2002). These are not, however, very important shortcomings for CPI, because the Transparency International provides the standard error of CPI aggregation therefore the size of "uncertainty" connected with the aggregation of a number of perception-based sources is estimated.

The comparison of the perception-based composite corruption indicators collected in Central European and Baltic states is shown in Graph 3 and Graph 4. Graph 3 demonstrates that the transitional public policies had positive effect on the development of the perceived state of corruption in the Czech and Slovak Republic. It is confirmed by the CPI score that indicates positive development in the period from 2004 to 2008 in both countries. On the other hand Graph 4 demonstrates that despite

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10 For more detailed information on CPI construction and determination see Grochová (2006) and Soreide (2003).
11 For discussion see Otáhal (2006).

the transition development of public policies, the perceived state of corruption remained the same in both countries. The CC score also confirms the lack of positive development in the period from 2004 to 2008 in both countries.
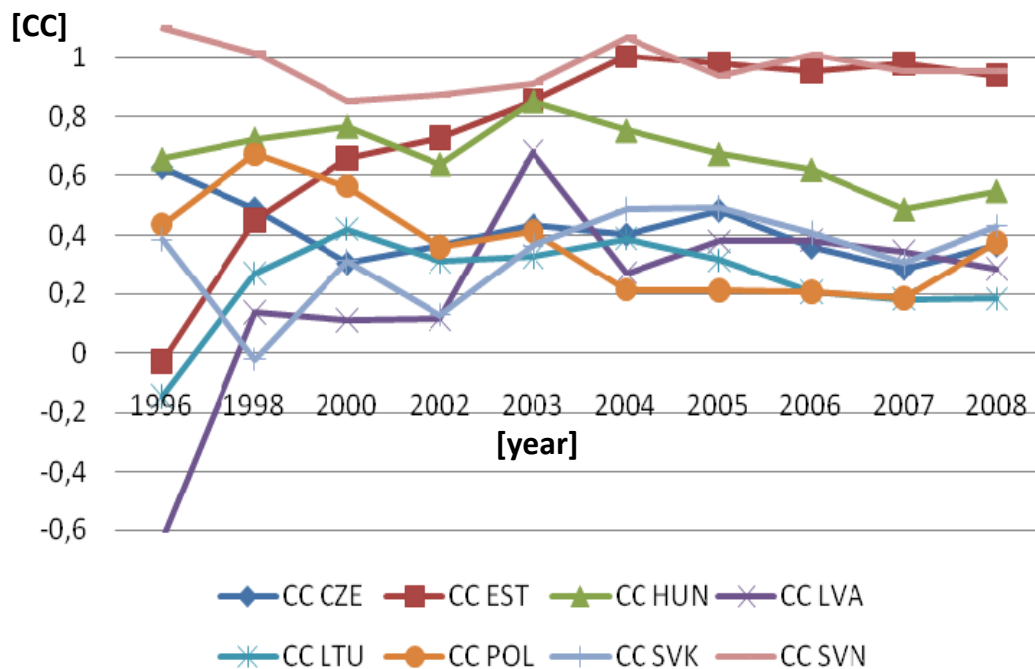
The data in the period from 1996 to 2002 are discrete because data for 1997, 1999 and 2001 are
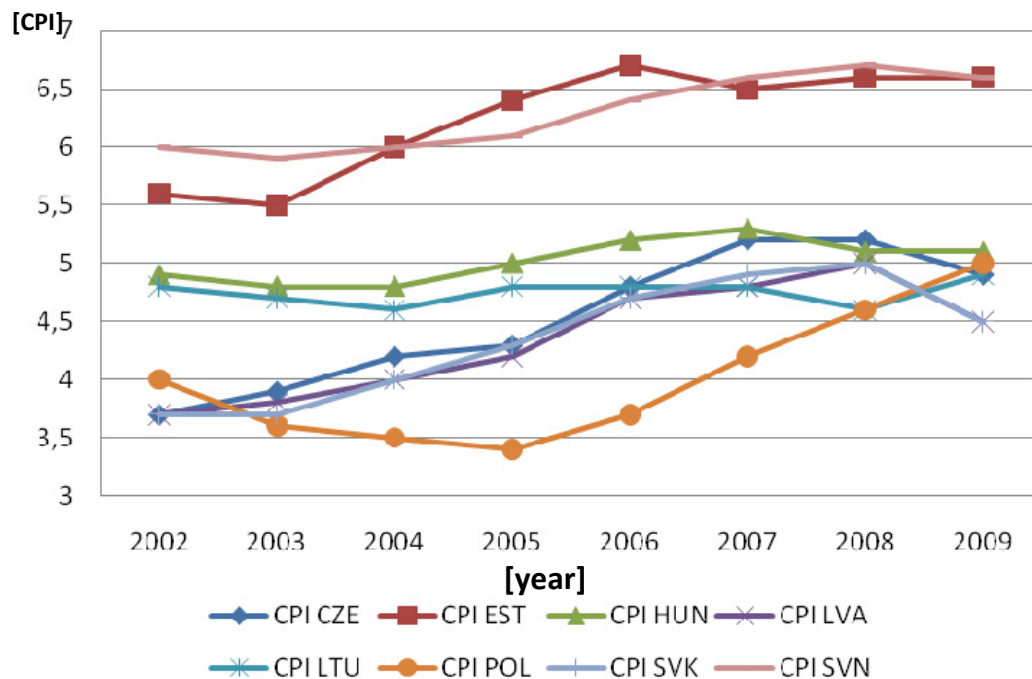
3: *CPI development in Central European and Baltic states*
The range of CPI score is 0–10 when 10 is the best score
Source: Transparency International (http://www.icgg.org/corruption.cpi_2009.html)

4: *CC development in Central European and Baltic States*
The range of CC is –2,5–2,5 when 2,5 is the best score
Source: World Bank (http://info.worldbank.org/governance/wgi/index.asp)

not available. These are approximated by mean value.

We have tested the Czech CPI and CC and the Slovak CPI and CC by Pearson chi-square test. The correlation coefficient between Czech CPI and CC in period from 2002 to 2008 was -0,561. The correlation coefficient between Slovak CPI and CC in period from 2002 to 2008 was 0,315. These results demonstrate the variability in the development of these two indexes in the period from 2002 to 2008. It is likely that variability is caused by different perception-based sources which are aggregated in the composite indexes. It is clear that subjective evaluation of the state of corruption in the society is influenced by the respondent's personal perceptions of what corruption exactly is and their experiences. These are influenced by the media or other indirect sources in many cases. Thus, even though the perception of corruption in the society could be better, open discussion about it can negatively influence the perception-based composite indexes score. In the previous section it was argued that it is realistic to assume that with fast transition reforms and full integration into EU the state of corruption in the Czech and Slovak Republic became better.

More importantly, Graph 3 and Graph 4 show the comparison of the perception-based composite corruption indicators collected in Central European and Baltic states. This comparison is useful for demonstration of the progression of perceived corruption in institutionally similar countries. Despite the fact that the development of perceived corruption in Central European and Baltic states is different from the perspective of CPI and CC (the visible example is the development of perceived corruption from the perspective of CPI and CC in Poland), the convergence of the Czech Republic, Hungary, Latvia, Lithuania, Poland and Slovak Republic could be recognized. The more important fact is, however, that the convergence tendency is stabilizing at the level of CPI and CC score that could be hardly considered satisfying. This evidence thus supports the hypothesis that the corruption in the Czech and Slovak Republic is still the topic to discuss.

2.2 Corruption malfeasance and composite indexes statistical test

We provide an additional empirical evidence to support our hypothesis. It demonstrates that even though formal institutional changes took place corruption perceptions remained almost unchanged. Our econometric analysis represents an additional illustration of our institutional description. The econometric analysis is based on the study of annual data from the fourteen-year period 1996–2009 for the Czech Republic and eleven-year period for the Slovak Republic. We have used these data to estimate our model. The total sample contains 104 annual records, including data on CPI, revealed malfeasance, and number of corruption articles presented in the Czech and Slovak media.

The first step of our analysis is based on the estimation of a linear function of CPI. According to a theory (Becker and Stigler 1974) the CPI should improve when a number of revealed malfeasance increases, i.e. the institutional framework and its enforcement is well established and executes its tasks well which is reflected in better position when evaluating corruption.[12] We can thus assume that corruption perception approximates perceived quality of law enforcement. The second step regards the study of a system of simultaneous equations on a data considering both the Czech and the Slovak Republic CPI. The data are tested for time-series and panel unit root with augmented Dicky-Fuller test and Im, Pesaran and Shin and Hadri tests, respectively, and for co-integration with Westerlund and Johansen tests. Next, the tests of heterogeneity, autocorrelation and multicollinearity are carried out.

In our first model we consider the CPI to be a function of revealed malfeasance. The initial model, therefore, assumes the following form:

$$CPI\_cr_t = \alpha_1 + \beta_1 \ln(mal\_cr) + \gamma_1 legal\_change\_cr + \varepsilon_{1t} \quad (2)$$

$$CPI\_sr_t = \alpha_2 + \beta_2 \ln(mal\_sr) + \gamma_2 legal\_change\_sr + \varepsilon_{1t}, \quad (3)$$

where *cr* or *1* and *sr* or *2* represent each country, respectively, *t* indicates year, and *mal* the revealed malfeasance. We use a *legal change* dummy to control for the (in)efficiency of legislative changes of institutional environment and its enforcement.[13]

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12 At this point, it must be stressed that CPI measures perception of corruption therefore the increased number of revealed malfeasance connected with corruption might decrease the CPI score. Revealed malfeasance connected with corruption includes both political and petty corruption so that its negative influence is distributed. We accept that corruption of public officials even if not promoted affects the CPI score. It is, however, usually assumed that publicly presented corruption scandals negatively influence corruption perception. For this reason we distinguish between revealed malfeasance that need not to be necessarily promoted (and stays for public officials' initiative), and the influence of the media that inform about corruption and so it makes it more visible (represented by the number of contributions related to corruption in all media). This idea is developed later in the second versions of the models.

13 We have chosen only the legislative changes that are comparable with the Slovak ones. However, more detailed citation of legislative and other changes of institutional environment and its enforcement can be found in the study of Volejníková (2003).

The second step of the econometric analysis regards the estimation of a simultaneous equation model. In particular, a seemingly unrelated regression (SUR) method is used. For the SUR model the relationship between the dependent variables is indirect; it comes through correlation in the errors across different equations. Estimation combines observations over both equations and countries. When we use the SUR method our model takes the following form:

$$\begin{cases} CPI\_cr_t = \alpha_1 + \beta_1 \ln(mal\_cr) + \gamma_1 legal\_change\_cr + \varepsilon_{1t} \\ CPI\_sr_t = \alpha_2 + \beta_2 \ln(mal\_sr) + \gamma_2 legal\_change\_sr + \varepsilon_{1t}. \end{cases} \quad (4)$$

The reason for this choice of analysis is that we have two different CPI functions and we study the malfeasance and legislative changes effects taking into account the simultaneous influence of these variables.

In order to distinguish a possible effect of corruption promoted in the media and its potential negative impact on CPI from the public officials' initiative the model is extended with a variable that controls the media influence. The number of contributions about corruption in all media is used for this purpose. The new versions of the models are then formalized as follows:

$$CPI\_cr_t = \alpha_1 + \beta_1 \ln(mal\_cr) + \gamma_1 \ln(media\_cr) + \\ + \delta_1 legal\_change\_cr + \varepsilon_{1t} \quad (5)$$

$$CPI\_sr_t = \alpha_2 + \beta_2 \ln(mal\_sr) + \gamma_2 \ln(media\_sr) + \\ + \delta_2 legal\_change\_sr + \varepsilon_{1t}, \quad (6)$$

and

$$\begin{cases} CPI\_cr_t = \alpha_1 + \beta_1 \ln(mal\_cr) + \gamma_1 \ln(media\_cr) + \\ \qquad + \delta_1 legal\_change\_cr + \varepsilon_{1t} \\ CPI\_sr_t = \alpha_2 + \beta_2 \ln(mal\_sr) + \gamma_2 \ln(media\_sr) + \\ \qquad + \delta_2 legal\_change\_sr + \varepsilon_{1t}, \end{cases} \quad (7)$$

respectively, where *media* stands for the number of contributions on the topic of corruption.

The third step consists in panel analysis that provides two-dimensional (over time and individuals) estimations. The new form of the model can be then written as:

$$CPI_{it} = \alpha + \beta \ln(mal_{it}) + \gamma_1 \ln(media_{it}) + \delta_1 legal\_change_{it} + \varepsilon_{1t} \quad (8)$$

Consequently, particular models are tested for omitted variables and parameters stability.

2.3 RESULTS

Given that we are using time series the first difficulty is that spurious results can arise if the series are not stationary (Enders 1995). In this study, the ADF (Augmented Dickey-Fuller) test is used to check for the unit roots of the time series variables. The results are shown in Table I. In all cases except for the CPI variable and media_cr, the null hypothesis of no stationary cannot be rejected at the 1 or 5% level of significance. Media_cr is stationary at first differences and CPI at second differences.

Applying the OLS method to the first model both revealed malfeasance and dummy variable are negative so that it seems that they worsen the situation of corruption in both countries. In other words, an increase of public officials' efforts makes the corruption more visible and so it lowers the

I: *Unit roots tests*

Variable	Variables		Variables in first differences	
	ADF	Critical Value	ADF	Critical Value
mal_rev_cr		–3.750 (1%)		
	–3.934	–3.000 (5%)		
		–2.630 (10%)		
cpi_cr		–3.750 (1%)		–3.750 (1%)
	–1.110	–3.000 (5%)	2.960	–3.000 (5%)
		–2.630 (10%)		–2.630 (10%)
media_cr		–3.750 (1%)		–3.750 (1%)
	–1.772	–3.000 (5%)	–3.294	–3.000 (5%)
		–2.630 (10%)		–2.630 (10%)
mal_rev_sr		–3.750 (1%)		
	–5.210	–3.000 (5%)		
		–2.630 (10%)		
cpi_sr		–3.750 (1%)		–3.750 (1%)
	1.058	–3.000 (5%)	–3.662	–3.000 (5%)
		–2.630 (10%)		–2.630 (10%)
media_sr		–3.750 (1%)		
	–3.294	–3.000 (5%)		
		–2.630 (10%)		

CPI ranking.[14] Nevertheless, the variables are not always significant (see Table V). Because of a strong correlation among errors both in the Czech and Slovak data that is revealed by Durbin-Watson d-statistic (Durbin-Watson d-statistic_cr (3, 14) = 1.217563, Durbin-Watson d-statistic_sr (3, 11) = 1.827637[15], respectively), estimation of parameters is continued with GLS applying Cochrane-Orcutt regression AR (1). It supports the previous results that both revealed malfeasance and legal changes have only a minor impact on the state of corruption in the Czech and Slovak Republic. The estimations present a quite high R squared.

It is likely that because of a low number of observations we face of low statistical significance. These results improve considerably when we consider the second model estimations. At the end of Table V the test for model specification (RESET test) tells us that there are no omitted variables in the model.

The purpose of the second model of this paper is to study more carefully the relationship between Czech and Slovak CPI indexes. In the previous part of the text we have found that Slovak CPI adjusted the development of the Czech one. The same institutional framework before the fall of Berlin Wall in 1989 and now the close cooperation imply the corruption may be also interrelated.

The seemingly unrelated regression method involves one dependent and one dummy variable that, in our case, are the malfeasance and legislative institutional changes. The estimated results are shown in Table V.

The estimation presents a quite low R squared for the Slovak CPI, while the statistical significance of regressors increases for both countries. Moreover, the correlation matrix of the residuals (not shown in a table) indicates statistically significant correlation between the errors in the two equations, as expected.

The next step lies in extending the models with a *media* variable for the reason of a control for a possible negative impact of corruption promoted in the media on the corruption perception. Running the Durbin-Watson test a strong correlation among errors is revealed: Durbin-Watson d-statistic_cr (4, 11) = 1.163067 and Durbin-Watson d-statistic_

II: *Panel unit roots tests*

Variable	IPS				Hadri	
	Levels		The 1st differences		Levels	the 1st differences
	t–bar	Critical Value	t–bar	Critical Value	p–value	p–value
Cpi		–2.540 (1%)		–		
	–2.648	–2.210 (5%)	–	–	0.0001	0.1249
		–2.060 (10%)		–		
mal_rev		–2.540 (1%)		–2.540 (1%)		
	–1.262	–2.210 (5%)	–2.498	–2.210 (5%)	0.0005	0.5802
		–2.060 (10%)		–2.060 (10%)		
media_cr		–2.540 (1%)		–2.540 (1%)		
	–1.471	–2.210 (5%)	–2.996	–2.210 (5%)	0.0002	0.6963
		–2.060 (10%)		–2.060 (10%)		

III: *Panel Westerlund co–integration test*

Statistic	Value	Z–value	P–value
Gt	0.343	3.651	1.000
Ga	0.318	2.129	0.983
Pt	1.195	3.503	1.000
Pa	0.620	1.640	0.950

sr (4, 11) = 1.321539. As a consequence, the estimation is again continued with GLS applying Cochrane-Orcutt regression AR (1) and with SUR (see Table VI). The same analysis is applied also on panel data employing GLS regression with an AR (1) disturbance (see Table VII).

IV: *Johansen estimation of the co–integrating rank*

Maximum rank	r = 0		r = 1		r = 2	
	Trace statistic	Critical value	Trace statistic	Critical value	Trace statistic	Critical value
Czech Republic	53.255	35.65	15.023*	20.04	2.622	6.65
Slovak Republic	68.101	35.65	28.762	20.04	3.562*	6.65

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14 In fact, we need to distinguish public officials' initiative and informing about corruption. This rationale takes place later in the extended version of the model.

15 Null hypothesis: errors are serially independent.

V: *Basic models – the CPI estimation*

	OLS		AR (1)		SUR	
	CPI_cr	CPI_sr	CPI_cr	CPI_sr	CPI_sr	CPI_sr
mal_rev_cr	–0.002		–0.001		–0.004	
	–0.002		–0.001		(0.002)**	
legal_change_cr	–0.036		–0.011		0.199	
	–0.399		–0.118		–0.295	
mal_rev_sr		–0.003		–0.006		–0.003
		–0.005		–0.004		(0.001)**
legal_change_sr		–0.06		–0.187		–0.126
		–0.211		–0.161		–0.14
Constant	5.565	5.254	5.173	7.11	5.883	5.477
	(0.862)***	–2.983	(0.538)***	(2.039)**	(0.703)***	(0.304)***
Breusch–Pagan	2.45	4.55				
	(0.29)	(0.10)				
White's test	9.63	6.81				
	(0.05)	(0.15)				
Reset test	0.52	0.59				
	(0.68)	(0.72)				
R–squared	0.31	0.26	0.81	0.79	0.3553	0.758

Standard errors in parentheses
* significant at 10%; **significant at 5%; *** significant at 1%

VI: *Extended models – the CPI estimation*

	OLS		AR (1)		SUR	
	CPI_cr	CPI_sr	CPI_cr	CPI_sr	CPI_sr	CPI_sr
mal_rev_cr	–0.002		–0.02		–0.003	
	–0.002		–0.069		(0.002)***	
media_cr	–0.0002		–0.008		–0.001	
	0.001		–0.06		0.001	
legal_change_cr	–0.11		0.054		0.115	
	–0.007		(0.026)***		0.206	
mal_rev_sr		–0.082		–0.131		1.562
		–0.032		(0.088)*		(0.479)***
media_sr		1.885		–0.01		–0.082
		–0.954		–0.018		(0.018)***
legal_change_sr		–0.585		0.142		–0.584
		–0.284		(0.034)***		(0.145)***
Constant	–0.007	0.255	0.005	0.023	0.700	0.252
	0.132	–0.127	–0.031	(0.015)*	0.097	(0.068)***
Breusch–Pagan	1.98	0.48				
	(0.58)	(0.92)				
White's test	9.34	2.06				
	(0.23)	(0.96)				
Reset test	1.58	0.71				
	(0.33)	(0.59)				
R–squared	0.20	0.81	0.4	0.91	0.3553	0.758

Standard errors in parentheses
* significant at 10%; **significant at 5%; *** significant at 1%

VII: *Extended models – the CPI panel estimation*

|	AR(1)	DOLS
mal_rev	–0.002	–0.004
	(0.001)**	(–0.005)
media	0	0
	(–0.001)	(–0.008)
legal_change	–0.063	0.326
	(–0.113)	(–0.159)
Constant	5.204	
	(0.352)**	
R–squared	0.72	0.67

Standard errors in parentheses
* significant at 10%; **significant at 5%; *** significant at 1%

As a consequence of a positive result for a unit root in each time series we run a panel unit root test (Im *et. al.*, 2003; Hadri, 2000). This implies a panel unit root (see Table II). We thus test the data for co-integration with Johansen test (1988) (see Table III) signalling a presence of co-integration vectors. It is demonstrated that the OLS estimation of co-integration regression is biased due to serial correlation and endogeneity (Aslan, 2008). The panel OLS estimator is asymptotically normal but with a nonzero mean. For this reason Kao and Chiang (2000) proposed to use fully modified (FMOLS) or dynamic (DOLS) estimators in panel data estimation. Both approaches take the potential endogeneity of involved variables into account. Kao and Chiang found that while FMOLS exhibits substantial bias in panels up to $N = 60$ and $T = 60$, DOLS does not and so it is superior to FMOLS. That is why we continue with DOLS (dynamic OLS) in order to estimate long-run effects.

Interpreting the results we can say that the media really have a moderate negative impact on the CPI, as expected, that specifies originally negative impact of public officials' initiative. In this way we distinguish a negative effect of the media and the public officials' (in)efficiency. The inefficiency of the formal changes is again demonstrated. Legislative changes have nearly zero effect on the CPIs in both countries (see Tables V and VI). A very slight difference between the short-run and the long-run results can be observed on the magnitudes of legislative changes effects. For both cases it is close to zero, however in the long-run an improvement can be seen as a little bit stronger impact was demonstrated. This can be explained with a path dependent behavior that can be changed only after an adaptation on formal institutional framework in the long run. For this purpose we suggest further removal of barriers to entry and to reform legislative framework.

As for the resulting constants, it is interesting to interpret them in the basic models. We can imply that without the institutional reforms, mainly legislative changes, the CPI would be even higher. This suggests that the formal changes are not efficient enough because of unchanged informal institutions that prevent the efficient enforcement of new laws. The results, thus, show again the inefficiency of external pressures on institutional changes because of institutional enforcement rigidity. Both public officials' initiative and legislative changes that were mainly called for by the EU have not reduced corruption perception in both countries. As it can be seen in Graph 5, the Czech initial legislative changes seem to have had a possible positive short run effect. A slight, if any, effect can be observed in the long run.
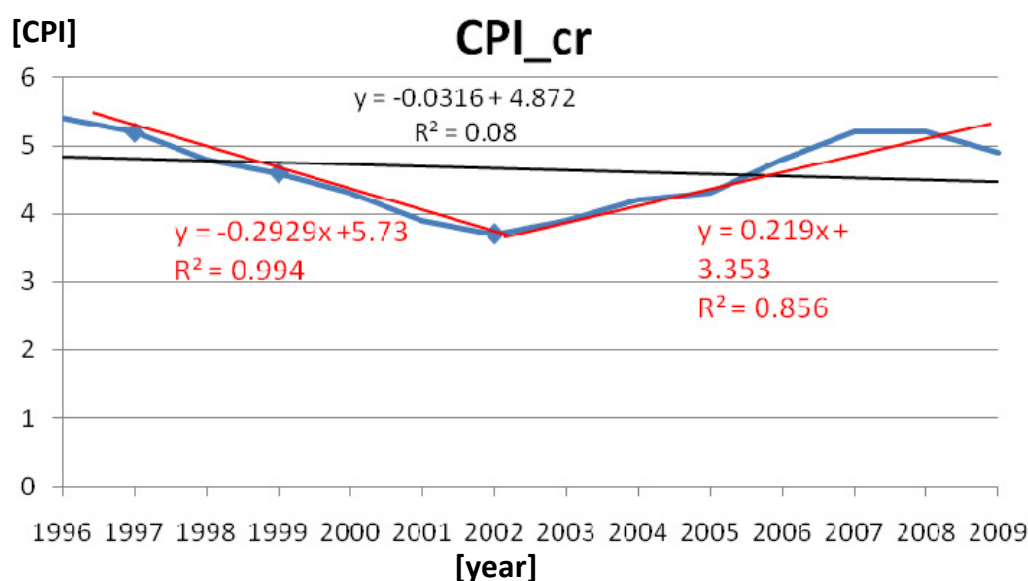
5: *The Czech CPI development and trends*
Source: Transparency International (http://www.transparency.org/policy_research/surveys_indices/cpi/2009)
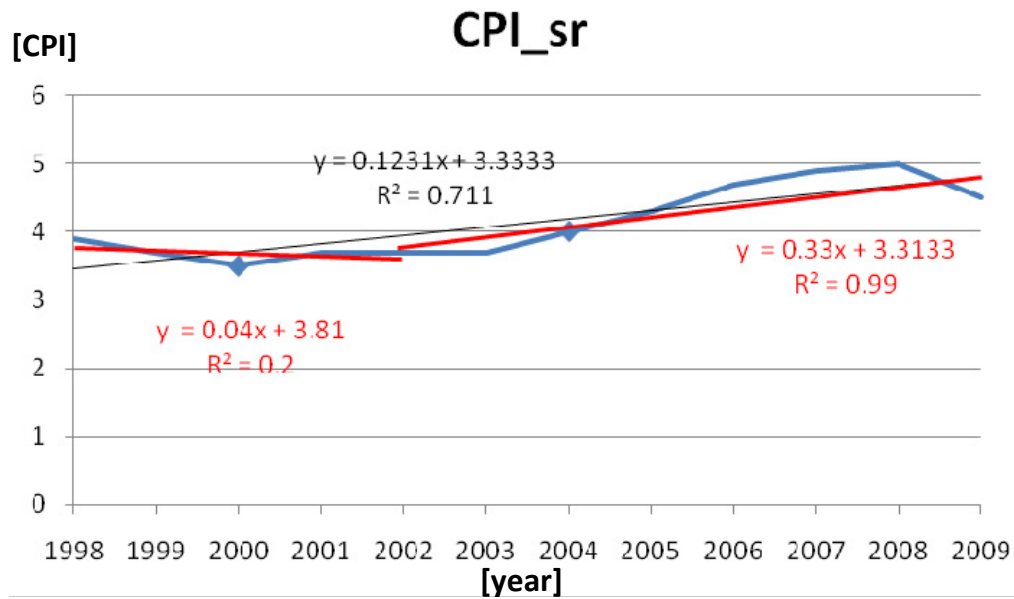
6: *The Slovak CPI development and trends*
Source: Transparency International (http://www.transparency.org/policy_research/surveys_indices/cpi/2009)

When considering the whole period of CPI measures in the Czech Republic, it is demonstrated that during the period in which new anti-corruption laws were established the CPI had a slightly decreasing trend. If we point our attention, however, to the pre-entry and post-entry period we can observe a possible delay in effects of newly established legislative changes in formal institutional framework (1997, 1999, and 2002 in the case of the Czech Republic) with a consequence of a slight CPI growth. It implies a positive and statistically highly significant (at the 1% level) mild effect of formal institutional changes in the short run during a period 2002–2007 (not presented in tables, available upon request).

Because of the short time-series available, the future CPI development and the long run effect of formal institutional changes is quite unclear. Based on the observation of the recent development we can see a possible declining trend, hence a CPI stagnation followed by a new fine decline took place. A short increase of the CPI after the EU accession is, thus, followed with a suggestion of a new decrease. It implies again that only the pressure of the EU institutions is not enough to create long term changes. Assuming that the corruption of public officials approximates the quality of law enforcement we stress the necessity of removal of barriers to entry and fundamental legislative reforms to improve of the quality of law enforcement in the Czech Republic.

The Slovak CPI development had a positive trend during the whole observed period. After 2000, when the corruption problem was reflected in legislative changes we can observe an increasing development of CPI deducing these changes to be efficient. The positive parameters of CPI development result to be significant both in the whole period and in post-entry period in the estimation (not presented in tables, available upon request).

Nevertheless, after 2008 the data foreshadow a possible decline and adjustment to the Czech CPI development and, thus, inefficiency of the adopted legislative changes in the long run. As a consequence, in order to make the EU pressure on law enforcement efficient and to reduce corruption in both countries we recommend to reduce barriers to entry and to carry out profound legislative reforms.

CONCLUSIONS

In this paper, we compared the state of corruption progression in the Czech and Slovak Republic with the help of several corruption indicators with the assumption that they approximate the quality of the legal framework and its enforcements. The comparison of the selected perception-based composite corruption indexes which measure the progression of the state of corruption suggests that the development of corruption in the compared countries remained almost on the same level throughout the period from 1998 to 2006. In accordance with this evidence we suggest that the pressure of the EU institutions did not significantly improve the quality of the legal framework and its enforcement approximated by different kinds of corruption measurement.

The hypothesis is supported with results of the empirical study in which we demonstrate a slight, if any, influence of the formal institutional framework imposed by the EU institution both before and after

the EU accession. These, however, have only a slight temporary impact on corruption perceptions in the short run. A subtle improvement can be seen focusing us on the long term impact. However, our illustrative empirical analysis suffers from a very short time-series that is given by a short history of existence of both countries.

One might ask what the precise link between improvement of legal frameworks and its enforcement and the results of different kinds of corruption measurements is. We have assumed that perceived corruption environment approximates the trust of citizens in formal legal framework and its enforcement, which influences the reduction of both political and petty corruption. Thus when corruption environment in a country is perceived as bad the responsibility of law enforcement should be lifted.

Some authors also argue that institutions and institutional environment are path dependent (i.e. North, 2002). The social rigidities, source of path dependency, can hinder the process of legal improvement, in case of deeper reforms in particular. Path dependency thus implies that profound reforms can take a longer time to realize. Thus we cannot accurately say whether the pressure of the EU institutions resulted in a positive effect on the quality of legal frameworks and their enforcements in the Czech and Slovak Republic. In addition, we can state that the existence of the positive effect, was not apparent on presented evidence, especially a very weak, if any, response was shown in the short run. Therefore we argue that in order to ensure that the Czech and Slovak Republic will experience visible positive effect of the pressure of the EU institutions on legal frameworks and their enforcements, reduction of barriers to entry in international trade and fundamental legislative reforms must be carried out. We thus believe that the path dependency is the reason why the positive effect of the pressure of the EU institutions on the legal frameworks and their enforcements in the Czech and Slovak Republic will not occur in long run without further reforms.

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