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Measuring corruption in developed countries

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Declaration of Authorship

The author hereby declares that she compiled this thesis independently, using only the listed resources and literature.

The author solemnly declares that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate.

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Abstract

The complex issue of corruption has attracted much attention over the last 20 years. The problem was analyzed mostly in the context of developing and transition countries, though not only the recent financial crisis showed the severity of corruption also in the world's most developed countries. This thesis analyzes twelve currently available corruption assessments for a cross section of 39 developed countries in the period 2007-2010. The thesis categorizes these assessments into three basic generations and characterizes the weaknesses and limitations of particular methods. The analysis is based on determination of relationship between individual corruption measures and recognizes specific aspects of corruption actually measured by particular indices. With the exception of strictly opinion poll-based corruption indices, the first and the second generation of corruption indices correlate well for a set of developed countries. This indicates that the sector specific indices, e.g. expenditure corruption assessment, are in analyzed countries closely related to the overall political corruption levels. An applied hierarchical cluster analysis gives better picture of otherwise inconsistent developed countries corruption rankings and divides countries into ten homogeneous groups. However, the analysis failed to rebut the criticism that there is no clear order of countries that are considered the least corrupt. Based on our analysis, 13 out of a total 39 countries do not display any fundamental differences in the extent of overall political corruption. The analysis of all available corruption measures also aims to find the most suitable corruption assessment for further study of impact of corruption on some economic indicators. Based on empirical analysis of available corruption measures and conclusions from literature, the political risk assessments provided by commercial business providers are sufficient for these purposes and enable us to derive a unique assessment of political corruption risk. This assessment derived from indices of corruption, law and order, and bureaucratic quality can serve as a proxy for the level of political corruption in developed countries.

JEL Classification D73, H83, K42, P52, O57

Keywords Advanced economies, illegal behavior, indices, institutional quality, measuring corruption, public administration

Abstrakt

Problém korupce si v posledních 20 letech získal velkou pozornost akademiků, ale i politických činitelů. Dosud byla korupce analyzována především v kontextu rozvojových a transformujících se zemí, avšak nejen nedávná finanční krize poukázala na závažnost korupce i v nejvyspělejších zemích světa. Tato práce se zabývá dvanácti v současnosti dostupnými hodnoceními korupce pro průřez 39 rozvinutých zemí světa v letech 2007 až 2010. Práce rozděluje tato hodnocení na tři základní typy a charakterizuje omezení a slabé stránky jednotlivých metod. Analýza vychází ze stanovení vztahů mezi jednotlivými měřeními korupce a snaží se rozeznat, které specifické aspekty korupce každý z indexů skutečně měří. S výjimkou indexů korupce čerpajících data čistě z průzkumů veřejného mínění, první a druhá generace indexů korupce je pro soubor zkoumaných zemí vysoce kladně korelovaná. Docházíme tak k závěru, že specifické indexy, zkoumající např. míru transparentnosti státních rozpočtů, ve sledovaných zemích úzce souvisí s celkovou mírou politické korupce. Použitá hierarchická shluková analýza přináší lepší přehled o jinak někdy zcela neslučitelném hodnocení vyspělých zemí a rozděluje země do deseti homogenních skupin. Analýza nicméně nedokázala vyvrátit kritiku, že není možné určit jasné pořadí zemí považovaných za nejméně zkorumpované. Na základě analýzy konstatujeme, že 13 (z celkového počtu 39) nejlépe hodnocených rozvinutých zemí podle míry celkové politické korupce nevykazuje zásadní rozdíly v hodnocení. Dále práce navrhuje nejvhodnější způsob měření korupce k analýze jejího vlivu na vybrané makroekonomické ukazatele. Empirická analýza dostupných měření korupce naznačuje, že hodnocení politických rizik komerčními poskytovateli informací je pro tyto účely dostatečně spolehlivé. Hodnocení rizika politické korupce vycházející z indexu korupce, práva a pořádku a byrokratické kvality může sloužit jako proxy proměnná pro míru politické korupce.

Klasifikace JEL D73, H83, K42, P52, O57

Klíčová slova Indexy, institucionální kvalita, protiprávní jednání, měření korupce, veřejná správa, vyspělé ekonomiky

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Master Thesis Proposal

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Proposed Topic:

Measuring political corruption: A cross-country analysis of developed countries

Topic Characteristics:

A corruption problem has gained importance over the last 30 years. Corruption can be used to explain varying levels of volatility in global financial markets. In addition, international bodies such as the World Bank, International Monetary Fund (IMF), United Nations, OECD, European Union, and others are emphasizing corruption control in their recommendations for growth. These international institutions charge high prices for the countries corruption rankings used by the international companies and banks emphasizing the importance of this topic for the economic analysis.

Empirical research on this topic has been hampered by the lack of adequate data until 1995, when the most popular measure of corruption, Transparency international's Corruption Perceptions Index (CPI), was launched. The research on corruption has come under the limelight recently. Nevertheless, there is still a need for further research in macroeconomic areas of this problem. Macroeconomic consequences of corruption did not get as much attention as the microeconomic aspects discussed within the framework of the rational-choice theory, public choice theory, or even a principal-agent problem.

The thesis focuses on the consequences of corruption on the macroeconomic performance of developed countries. Particularly, even though the distinction between different types of corruption can be blurred, the thesis focuses on the most dangerous and hidden kind of corruption, i.e. grand or political corruption, and its determinants. What is particularly questionable is on which scope CPI captures this kind of corruption as proclaimed in its methodology. The main contribution should be a critical assessment of the CPI's ranking for the developed countries. The alternative methodologies of the so-called "second stage corruption measures" such as indices published by the Global Integrity or the Open Budget Survey will be compared for a set of countries.

The main area of the interest is the economic and institutional environment of the Czech Republic and other EU countries with the sufficient data. However, for a comprehensive analysis of institutions driving corruption, other advanced economies worldwide (as characterized by IMF) will also be used. This enables us to conclude with the case studies presenting successful policy implications of anti-corruption programs in particular countries worldwide as well as characterize the main limitations of the CPI's rankings. This is a very new research area that is gaining on importance and can serve as a useful diagnostic tool for further economic research.

Hypotheses:

1. There is a statistically significant relationship between the determinants of political corruption and the relevant data on the economic performance of advanced economies.
2. An impact of political corruption determinants on the economic performance of developed countries is negative and stronger than the effect of factors of economic corruption.
3. Some outliers among developed countries are expected when plotting CPI against the alternative measures of political corruption. This arises from the expectation that the political corruption in some CPI leading countries can be significantly higher than the economic corruption (e.g. Singapore).
4. The CPI is more sufficient in capturing perception of economic corruption rather than the political corruption. This fact is frequently omitted in the literature.
5. The informative value of the CPI for the EU countries is limited and does not offer very accurate order of countries. The confidence intervals provide more rigorous comparisons.

Methodology:

A review of the literature on political corruption and CPI will be provided in the first part of thesis. The main knowledge and ideas established on a topic will be listed, and what their strengths and weaknesses are will be discussed. The emphasis is going to be placed on the thesis's research objective. A critical appraisal will be used to identify biased estimations in the literature.

The data will be analyzed for period of 1995 until now. The analysis will include the correlation tables among various measures of corruption levels across the countries. The critical analysis of the CPI will be in the first stage conducted through the construction of confidence intervals for a list of 30 developed countries. Moreover, plots of the CPI against various alternative corruption measures help to identify outliers in the CPI's assessment.

The regression analysis of the political corruption determinants on the GDP will be provided, followed by the robustness analysis. This is due to the possible causal relationships between explanatory and dependent variable. A possible endogeneity problem can be eliminated by use of the instrumental variables.

Outline:

1. Introduction
    a. Definition of political corruption
    b. Literature overview
    c. Determinants of political corruption
2. Indices measuring corruption
    a. CPI – methodology and its limitations
    b. Correlation among indices
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3. Accessing impact on GDP
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4. Country Case Studies
    a. New Zealand, Hong Kong, Finland
    b. Limitations of the research
5. Conclusion

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Supervisor

Contents

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Acronyms

AUS	Australia
AUT	Austria
BEL	Belgium
BI	Business International
BPI	Bribe Payers Index
CAN	Canada
CBIP	Commercial Business Information Provider
CHI	Chile
CPI	Corruption Perception Index
CR	Czech Republic
CYP	Cyprus
CZE	Czech Republic
DEN	Denmark
EIU	Economist Intelligence Unit
ESP	Spain
EST	Estonia
EU	European Union
FIN	Finland
FRA	France
GBR	United Kingdom
GCB	Global Corruption Barometer
GCR	Global Competitiveness Report
GER	Germany
GI	Global Integrity
GRE	Greece
GWP	Gallup World Poll
HKG	Hong Kong
HUN	Hungary
ICE	Iceland
ICRG	International Country Risk Guide
IMD	Institute for Management Development
IMF	International Monetary Fund
IRL	Ireland
ISR	Israel
ITA	Italy
JPN	Japan

KOR	South Korea
LUX	Luxembourg
MEX	Mexico
MLT	Malta
NED	Netherlands
NOR	Norway
NZL	New Zealand
OBI	Open Budget Index
POL	Poland
POR	Portugal
PRS	Political Risk Service
SAR	Special Administrative Region
SIN	Singapore
SLO	Slovenia
SUI	Switzerland
SVK	Slovakia
SWE	Sweden
TI	Transparency International
TUR	Turkey
TWN	Taiwan
UNODC	United Nations Office on Drugs and Crime
USA	United States
WB	World Bank
WEF	World Economic Forum
WGI	Worldwide Governance Indicators
WMO	Global Insight Business Risk and Condition

Chapter 1

Introduction

The emergence of global economy and a growing international movement of production factors have resulted in the need for assessment of not only economic, but also wider social conditions to win long-term contracts and foreign investment. The country's score indicating the corruption levels, political risks, the amount of red tape, the efficiency of the judicial system, and other institutional indicators has become an important signal for government action since growth and competitiveness increases with social conditions stability.

In particular, over the last two decades, increasing attention is given to the problem of corruption mostly in the developing and transition countries receiving international aid. Even though developed countries appear to be less corrupt than the majority of developing countries, the recent global financial crisis highlighted the issue of rampant corruption firmly entrenched also in the most developed countries.

This thesis is a contribution to the relatively scarce literature on assessment of corruption levels among the most developed countries in the world. We analyze the performance of 39 developed countries – 34 OECD member countries and five additional countries or regions included on the IMF's List of advanced economies – in the various corruption assessments in the period 2007-2010. The novelty of this approach does not lie only in the fact that to our knowledge there are no other academic sources discussing the problem of corruption strictly for the set of developed countries. The main contribution of this thesis is the in-depth analysis of all currently available corruption assessments. This is in contradiction with the existing literature on a topic. The current literature uses frequently a single corruption estimator for an empirical study of corruption, or alternatively, compares up to four corruption measures falling into the same category.

Our analysis of twelve currently available corruption assessments for a cross section of 39 developed countries in the period 2007-2010 consists of four major elements: In the first step, all existing and still emerging corruption measures are categorized into three different generations of corruption indices. Secondly, weaknesses and limitations of particular methods are discussed based on literature review and our own analysis of data for a set of analyzed countries. In addition to all the foregoing, the analysis tries to recognize specific aspects of corruption actually measured by particular corruption indices. Finally, to illustrate the level of association among the first and second generation of corruption indices, and to determine the relationship between individual corruption measures, a correlation matrix for all available corruption rankings for the set of developed countries is provided.

We found that two out of a total of three corruption indices generations – indices derived from the opinion polls and based on expert assessments, as well as the indices taking an alternative approach to corruption or analyzing some sector specific data – are relevant in the analysis of corruption for a cross section of developed countries. With the exception of strictly opinion poll-based corruption indices (i.e. Gallup World Poll and Global Corruption Barometer), the first and the second generation of corruption indices correlate well for a set of developed countries. This indicates that the sector specific indices, e.g. expenditure corruption assessment published in Open Budget Index, are in analyzed countries closely related to the overall political corruption levels.

Despite this, the analysis of available corruption indices shows several inconsistencies in the rankings of developed countries across different corruption measures. To divide countries into homogeneous groups based on their corruption rankings, a hierarchical cluster analysis is used. Applied cluster analysis assigns an analyzed set of countries into two main clusters – dividing countries into more (17 countries) and less (22 countries) corrupted. Further clustering achieved by four basic algorithms yields the ten-cluster solution for otherwise inconsistent developed country rankings. However, analysis fails to rebut the criticism that there is no clear order of countries that are considered the least corrupt. Based on our analysis, 13 out of a total 39 countries do not display any fundamental differences in the extent of overall political corruption level assessed by corruption indices.

A number of indices measuring corruption are not only evidence that corruption is an important topic for economic analysis. However, the macroeconomic work is still rare on this issue particularly in developed countries. Finding the right measurement for

corruption is crucial for any further empirical analysis of economic data. A thorough analysis and discussion of the available corruption measures enables us to derive a proxy for the level of political corruption in developed countries. The political risk assessments provided by commercial business providers such as International Country Risk Guide are sufficient for these purposes. We derive a proxy of the countries' political corruption level from three individual indicators of political risk: corruption, law and order, and bureaucratic quality. This proxy is applied in further analysis of the relationship between corruption and economic indicators such as GDP per capita, GDP growth, government and budget expenditure.

To smooth abrupt changes in opinion surveys and other rankings based to a greater extent on soft data and to minimize the impact of time lag in some corruption assessments, the simple averages of each corruption indicator for the period 2007-2010 are compared. Nonparametric statistical methods including rank correlations are provided to prove obtained results from simple correlations as there is a reason to believe that for a set of analyzed developed countries are the corruption rankings not normally distributed with a presence of outliers.

The main limitations lie in the nature of the corruption problem and shortcomings of particular corruption measures discussed in detail on the following pages. Corruption is illegal and thus usually done in secret. Given the hidden nature of corruption, typically involving two parties both having an interest for a transaction to be kept secret, only a small portion of total corruption is revealed. Corruption is thus not only difficult to quantify and measure, but also to test. Further restrictions come from a relatively small coverage of analyzed countries in the corruption indices. Out of a total 28 corruption assessments described in Appendix A, only seven have covered an entire set of 39 developed countries. In spite of all, even the biggest critics of the methodology underlying corruption indices should remember that this is a very young and still developing area of research. It is still undergoing significant development as it grows in importance.

The thesis is structured as followed. The following chapter introduces and contextualizes the problem of corruption for the developed countries and provides a theoretical introduction to the issue. In Chapter 3 we define corruption, review the relevant literature, and describe the data. The wide concept of corruption offers a number of different definitions and typologies that need to be clarified in order to proceed further with the analysis. The core of the thesis is Chapter 4 and 5: Chapter 4 presents an in-depth analysis of the available corruption assessments. It categorized indices into three groups,

discusses the limitation of particular approaches, and tries to determine the level of association among particular measures of corruption. The next chapter presents correlations among individual indices, finds the homogeneous country clusters, and applies a derived political corruption risk indicator in analysis of the relationship between corruption and economic data. Finally, Chapter 6 concludes by suggesting directions for further research.

Chapter 2
The problem of corruption in developed countries

It is undisputed that the problem of corruption is as old as mankind. For example, already the Code of Hammurabi contains the measures against corruption. However, it seems that especially over the last two decades there has been increasing attention paid to the phenomenon of corruption. This subchapter reveals some of the reasons behind the increased interest in this problem, presents recent perceptions on corruption prevalent in our society, and in particular emphasize the long-overlooked problem of corruption in developed countries.

2.1Interest on the upswing

Even though the character of academic fashion and social trends are fickle, there has been a sharp increase in the amount of both academic and public attention given to corruption in governmental systems worldwide in the recent years. Some 30 years ago, no one in western countries has seriously paid attention to the problem of corruption. In the past 15-20 years,[1] as a result of globalization, the fall of the Soviet Union, and post-communist transition, corruption has become a major subject of study as international donor organizations like the World Bank (WB), International Monetary Fund (IMF), European Union (EU), etc. want to make sure that donor money does not end up in the pockets of governmental officials. Also Gregory (2002, p. 17) thinks that "*much of the growing attention has resulted from the endeavors of international organizations like the WB to try to ensure that developing countries take serious steps to reduce governmental corruption*".

[1] A number based on Ondráčka (2011). David Ondráčka, M.A. is a director of Transparency International - Czech Republic. He has almost 10 years of professional experience in anti-corruption, fraud prevention, public procurement and governance.

The global scope of economy and economic interdependence is adding urgency to the problem of corruption not only in the developing and transition economies. The reasoning is clear - the effects of corruption spill over the world economy and resonate throughout it. In addition, the international financial system has become an electronic network in which opportunities for corruption are greater, the difficulty of controlling it is substantial and the potential damages are immense. Last but not least, both within countries and across borders has been an increase in the number of cooperative alliances. These, for example, the European Union want to make sure that the EU funds for development are not looted by corrupted governmental officials, and depend on mutual trust to a greater extent than the traditional hierarchical companies.

The primary driving forces behind the increased attention of public to a phenomenon of corruption are according to Glynn, Kobrin, and Naim (IN: Elliott (1997), p. 8) "*growing affluence and education and the emergence of the Information Age*". Besides of real increase of corruption in some parts of the world; technological change which enabled increased consumption of information available worldwide and through investigative media, led to a perceived increase in the phenomenon. Corrupt actions that were previously partially overlooked or totally ignored have been declared unacceptable by voters and newly empowered media. Governments are now forced to be more responsive to an international audience (i.e. international investors, journalists, politicians, etc.) than ever before.

2.2 Scope of the problem

A problem of corruption is also the problem of the world best-ordered industrial countries as not only the circumstances of the late-2000s global financial crisis have showed. Major industrialized and "clean" countries like Switzerland, Luxembourg, Singapore and others[2] provide banking and investment safe havens for looted public funds and corruptly obtained fortunes (see Elliott (1997), Galtung (2006), Ondráčka (2011)). Only recently in 2009 has the Swiss government made major progress in loosening its strict bank secrecy laws partially because of the financial crisis.

Another long-standing problem of developed countries is the bribery in the international business transactions. With the exception of the U.S. which criminalized

[2] Also Austria, United Kingdom, U.S., and Hong Kong are sometimes mentioned by authors.

overseas bribery in The Foreign Corrupt Practices Act (FCPA)[3] of 1977, many countries permitted bribery of foreign officials in order to start a business. As if that were not enough, some advanced countries even allowed corporate tax deductions for overseas bribes as legitimate business expenses (see OECD (1995) IN: Elliott (1997), p. 16). For example German companies could deduct bribes to foreign officials from taxes so long as the recipient was named until 1998, when it ratified the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions (OECD Anti-bribery Convention, see Figure 2.2).[4] In addition, we should not forget that neither the U.S. is an ideal example of corrupt-free country as it has gradually created a totally unique legal environment for legal corruption of top officials – lobbying.

The last global financial crisis could be seen as a spillover of corruption effects, loss of trust and a belief that others play by the rules. Similar spillovers in the interconnected financial sectors were seen already before, although to a much lesser extent, and have not posed the systematic danger to the financial centers of leading industrialized countries. For example, when the corrupt Bank of Credit and Commerce International was locked down, it also was a tragedy for Gabon, the social security fund, which was wiped out.[5]

Besides other things, the global financial crisis has showed that the top economists, the highest state officials, CEO of both public and private enterprises in the most advanced countries are involved in corrupt practices while immune from disclosure and personal responsibility. This is given by the ineffective or missing anti-corruption mechanisms at the national and international level; large-scale deregulation of financial sector; greed and conflict of interests at the highest levels; and the great economic power of international banks, corporations, etc. All these together create an illusion of omnipotence.

[3] Despite its loopholes FCPA placed U.S. companies at a disadvantage compared to its foreign competitors (Kimelman (1994) IN: Elliott (1997), p.18). In study of 250 companies from 1981, 60% felt that FCPA affected the ability of American firms to compete abroad.

[4] Figure 2.2 at the end of this chapter provides the list of three most widely recognized international legal frameworks on corruption, and whether developed countries in our interests have signed and subsequently ratified particular international convention. Ratification is only the first step as it must be complemented by commitment to enforce the law. For example, TI's Progress Report (2011) found that 21 of the 38 signatory countries show little or no enforcement of the OECD's convention.

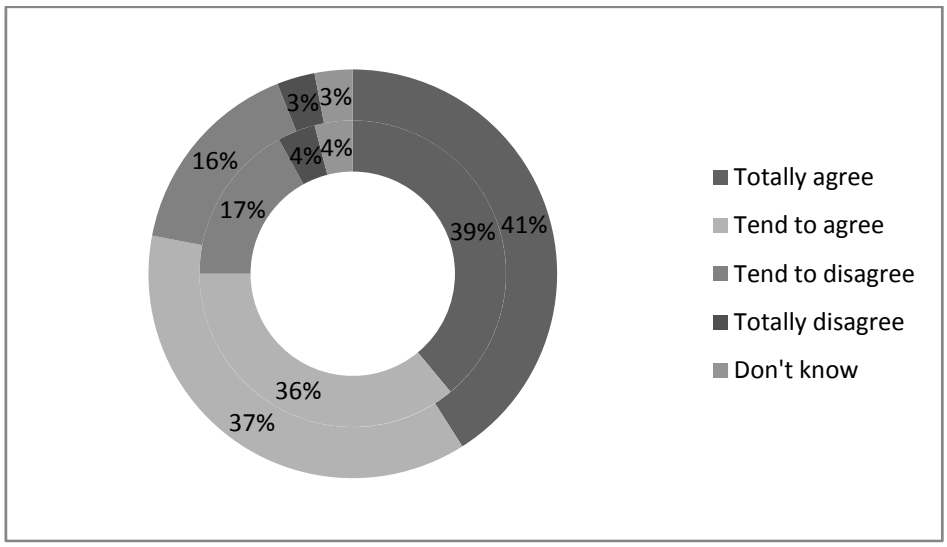
[5] Pessas (1994) IN: Elliott (1997), p. 12.

2.3 Current perceptions

Nothing corrodes democratic principles and the legitimacy of democratic governments as much as corruption as Susan Rose-Ackerman, Professor of Law and Political Science at Yale University and a board member of Transparency International, claims.[6] Is not the general distrust and dissatisfaction with many long-lasting democratic governments in Europe and other developed countries also stemming from the penetration of political corruption and resulting economic problems?

This problem is reflected in the public opinion polls. According to the recent report by Transparency International - Global Corruption Barometer (2010, p. 3): *"Corruption levels around the world are seen as increasing over the past three years"* and *"the biggest increase is perceived by respondents in North America and EU."*[7] This global survey confirms that corruption is not a problem of smaller importance even in the most developed countries in the world. The similar results apply for all EU countries as the latest Eurobarometer survey initiated by European Commission in 2009 reveals that the majority of Europeans (78%) agree that corruption is a major problem in their country and is of greater severity – at least perceived – than some three years ago.

Fig. 2.1: Question: Corruption is a major problem in our country



Note: Inner pie - EB 68.2 Oct/Nov 2007, Outer pie - EB72.2 Sept/Oct 2009. Source: European Commission (2009), p.7

[6] IN: Elliott (1997), p. 45.

[7] *"Almost six out of 10 report that corruption levels in their country have increased over time"*, and "*eight out of 10 judge political parties as corrupt or extremely corrupt, followed by the civil service, the judiciary, parliaments and the police* (Global Corruption Barometer (2010), p. 3)."

Situation is no better at the national level. In 2011, the Czech Republic's Prime Minister Petr Necas said that one of the main tasks of many governments to which the crisis brought an attention is the elimination of corruption in public procurement and the state deficit reduction.[8] The public opinion poll mediated by Ipsos for the *10th Gold Crown Forum on Corruption as economic phenomenon* reflects the actual perceptions of corruption in the Czech Republic. According to the survey, 84 percent of respondents said that the Czech Republic is a highly corrupted country. The majority of respondents (70%) think that corruption is a major problem in the country, greater than a problem of unemployment, inflation, government instability, or any other.

Despite all, it is indisputable that democracy regimes have over the long run the most powerful tools against corruption. As Glynn, Kobrin, and Naim[9] put it: *"A regime that has frequent elections, political competition, active and well-organized opposition forces, and independent legislature and judiciary, free media, and liberty of expression is bound to generate more limits on scope and frequency of corruption than one that does not have them."*

[8] Nečas (2011) has further added that only 5% decrease in cost of public procurement would save CZK 25 billion annually, what is equal to an annual government spending in research and innovation in the Czech Republic.
[9] IN: Elliott (1997), p. 11.

Fig. 2.2: Signatories of international legal framework on corruption

Country	UN Convention against Corruption		OECD Anti-bribery Convention		Council of Europe's Criminal Law Convention on Corruption	
	Signature	Ratification	Signature	Ratification	Signature	Ratification
Australia	9 Dec 2003	7 Dec 2005	N/A	18 Oct 1999	..	..
Austria	10 Dec 2003	11 Jan 2006	N/A	20 May 1999	13 Oct 2000	..
Belgium	10 Dec 2003	25 Sep 2008	N/A	27 Jul 1999	20 Apr 1999	23 Mar 2004
Canada	21 May 2004	2 Oct 2007	N/A	17 Dec 1998	..	..
Chile	11 Dec 2003	13 Sep 2006	N/A	18 Apr 2001	..	..
Cyprus	9 Dec 2003	23 Feb 2009	N/A	..	27 Jan 1999	17 Jan 2001
Czech Republic	22 Apr 2005	..	N/A	21 Jan 2000	15 Oct 1999	8 Sep 2000
Denmark	10 Dec 2003	26 Dec 2006	N/A	5 Sep 2000	27 Jan 1999	2 Aug 2000
Estonia	..	12 Apr 2010	N/A	23 Nov 2004	8 Jun 2000	6 Dec 2001
Finland	9 Dec 2003	20 Jun 2006	N/A	10 Dec 1998	27 Jan 1999	3 Oct 2002
France	9 Dec 2003	11 Jul 2005	N/A	31 Jul 2000	9 Sep 1999	25 Apr 2008
Germany	9 Dec 2003	..	N/A	10 Nov 1998	27 Jan 1999	..
Greece	10 Dec 2003	17 Sep 2008	N/A	5 Feb 1999	27 Jan 1999	10 Jul 2007
Hong Kong SAR	..	..	N/A	..	..	..
Hungary	10 Dec 2003	19 Apr 2005	N/A	4 Dec 1998	26 Apr 1999	22 Nov 2000
Iceland	..	1 Mar 2011	N/A	17 Aug 1998	27 Jan 1999	11 Feb 2004
Ireland	9 Dec 2003	..	N/A	22 Sep 2003	7 May 1999	3 Oct 2003
Israel	29 Nov 2005	4 Feb 2009	N/A	11 Mar 2009	..	..
Italy	9 Dec 2003	5 Oct 2009	N/A	15 Dec 2000	27 Jan 1999	..
Japan	9 Dec 2003	..	N/A	13 Oct 1998	..	..
Luxembourg	10 Dec 2003	6 Nov 2007	N/A	21 Mar 2001	27 Jan 1999	13 Jul 2005
Malta	12 May 2005	11 Apr 2008	N/A	..	20 Nov 2000	15 May 2003
Mexico	9 Dec 2003	20 Jul 2004	N/A	27 May 1999	15 May 2002	..
Netherlands	10 Dec 2003	31 Oct 2006	N/A	12 Jan 2001	29 Jun 2000	11 Apr 2002
New Zealand	10 Dec 2003	..	N/A	25 Jun 2001	..	..
Norway	9 Dec 2003	29 Jun 2006	N/A	18 Dec 1998	27 Jan 1999	2 Mar 2004
Poland	10 Dec 2003	15 Sep 2006	N/A	8 Sep 2000	27 Jan 1999	11 Dec 2002
Portugal	11 Dec 2003	28 Sep 2007	N/A	23 Nov 2000	30 Apr 1999	7 May 2002
Singapore	11 Nov 2005	6 Nov 2009	N/A	..	..	..
Slovakia	9 Dec 2003	1 Jun 2006	N/A	24 Sep 1999	27 Jan 1999	9 Jun 2000
Slovenia	..	1 Apr 2008	N/A	6 Sep 2001	7 May 1999	12 May 2000
South Korea	..	..	N/A	4 Jan 1999	..	..
Spain	16 Sep 2005	19 Jun 2006	N/A	4 Jan 2000	10 May 2005	28 Apr 2010
Sweden	9 Dec 2003	25 Sep 2007	N/A	8 Jun 1999	27 Jan 1999	25 Jun 2004
Switzerland	10 Dec 2003	24 Sep 2009	N/A	31 May 2000	26 Feb 2001	31 Mar 2006
Taiwan (Province of China)	..	..	N/A	..	..	..
Turkey	10 Dec 2003	9 Nov 2006	N/A	26 Jul 2000	27 Sep 2001	29 Mar 2004
United Kingdom	9 Dec 2003	9 Feb 2006	N/A	14 Dec 1998	27 Jan 1999	9 Dec 2003
United States	9 Dec 2003	10 Jan 2007	N/A	8 Dec 1998	10 Oct 2000	..

Source: UNODC (2011), OECD (2009), and Council of Europe (2011).

Chapter 3

Defining corruption and further review of literature

3.1 A complex issue of defining corruption

"… where if everything is corrupt then nothing is."

Robert Gregory, 2002[1]

Kimberly A. Elliot, an editor and contributor to the book *Corruption and the Global Economy*, has noted: *"The challenges facing corruption analysts begin with how to define it"* (Elliott (1997), p.177). The problem of defining corruption is intertwined throughout entire history of scientific interest in this phenomenon. The problem does not lie in the fact that no definition exists. In fact, there are several definitions of corruptions and yet are quite different from each other.

3.1.1 Evolution in defining corruption

Harvey Kebschull[2] has blamed for the lack of serious academic analysis of corruption in the early 90's problems with its definition. At the same time, he divided definitions of corruption into the following four types:

1. Definitions describing corruption as "the misuse of public office for private gain";
2. Definitions describing corruption as "acting contrary to the public interest";
3. Definitions relying on public opinion to determine which actions are corrupt;
4. Market-oriented definitions; i.e. corruption is when the state officials are trying to get as much economic benefit as possible given the market price of service

[1] Professor Robert Gregory, B.A., M.P.A, Ph.D., is an Associate Professor in the School of Business and Public Management, Victoria University of Wellington, New Zealand. An author has met Professor Gregory when he was visiting at City University of Hong Kong and has taught course Governance in Asia.
[2] Kebschull (1992) IN:Bulva (2007), p. 4.

provided. In making this, they are using a market demand curve to determine what the market can bear.

All definitions above agree on the fact that there is always involved a public official at least on one side of corrupt action. Thus such definitions virtually eliminate corruption between private parties. Besides the common problem of elimination of the private sector corruption, each type of the above definitions carries its own distinct set of weaknesses. While the second and third type of definitions is working with the vague concepts of public interest and public opinion (on which there is certainly no general agreement), the fourth type is highly theoretical and in practice virtually inapplicable, especially with regard to setting the market price of public goods and constructing the market demand curve.

From this point of view the first type seems to be the most passable and thus this type of definitions has anchored in economic literature. This has also been greatly helped by the fact that the international institutions such as IMF, WB, and others that created a relatively large part of the literature dealing with corruption have usurped the first definition of corruption. The most commonly specified definition is something along the lines of *the abuse (or misuse) of public office (or entrusted power) for (illegal) private gain* (Elliot (1997), Bulva (2007), TI, WB, and others[3]). This definition encompasses corrupt practices in both the public and private sectors (Transparency International, 2010, p. 4).[4] But as noted by Mark Philp (1997, p. 446) in his paper on *Defining Political Corruption*, "one line definitions of corruption are inherently misleading".[5]

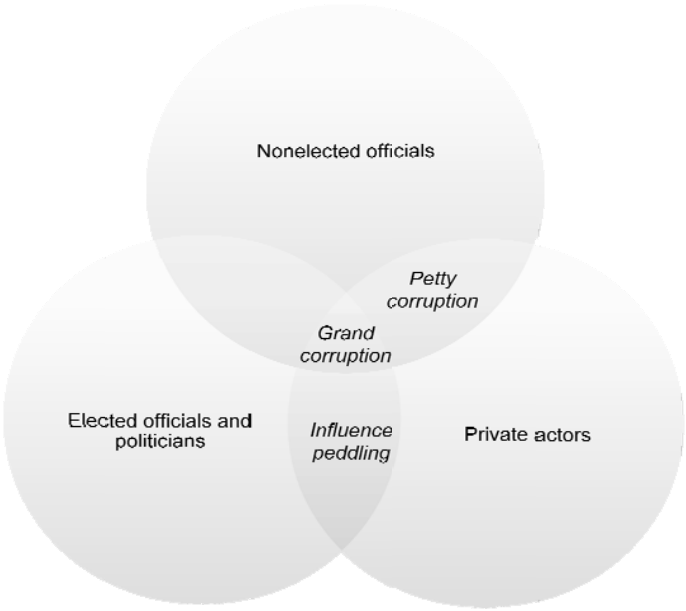
United Nations Convention against Corruption (UNCAC) is the only global initiative that provides a framework for curbing corruption on the global scope and was signed and ratified by many countries that are subject of our analysis. The U.N. defines corruption as *„a complex social, political and economic phenomenon that affects all countries. Corruption undermines democratic institutions, slows economic development and contributes to governmental instability. Corruption attacks the foundation of democratic institutions by distorting electoral processes, perverting the rule of law and creating bureaucratic quagmires,* (UN, 2003)." To conclude, no precise definition which applies to all forms, types and degrees of corruption can be found.

[3] Klitgaard (1991), etc. In this lines goes also definition by Shleifer and Vishny (1993), p. 599: "*The sale of government property by government officials for personal gain"*.
[4] As Gregory (2002), p. 23 points out, "TI's surveys focus on bribe-taking by public officials in public procurement".
[5] Rowher (2009), p. 42 states that this definition is culturally biased and excessively narrow.

3.2 Corruption typology

After we have defined corruption, this subchapter analyses typology of corruption. This is crucial in order to provide a meaningful analysis of corruption in the industrial world. Rose-Ackerman, a professor of jurisprudence, observes: *"Corruption occurs at the interface of the public and private sectors"* (IN: Elliott (1997), p.31). Figure 3.1 shows this interface in the graphical form.

Fig. 3.1: Types of corruption



Source: Based on Elliott (1997), p. 179

However, the figure above illustrates only one possible set of arrangements and does not provide a definition for corruption occurring between the elected politicians and the nonelected officials. It leaves the intersection where these two spheres overlap empty. The predominant type of corruption between elected and nonelected officials is the grand corruption, given our discussion in following two subsections and Figure 3.2. In addition, the relative size of the overlapping areas in Figure 3.1 may vary considerably from country to country based on cultural settings, institutional quality, balance of power between branches of government, and other factors.

Corruption can be divided into various forms depending upon the criterion used. The criterion may be (de)centralization of corruption, its organization, frequency, the area of occurrence and the origin of actors of corruption (such as in the Figure 3.1), its active or passive approach, etc. The simplest and the most common division of corruption is based on the criterion of corruption severity – petty and grand corruption.

3.2.1 Private sector corruption

There are several reasons behind the considerably lower interest in the private sector corruption. First of all, similarly to public sector corruption, there is an absence of evidence of such behavior since disclosure would hurt the company's reputation. Secondly, on the contrary to corruption in the public sector where all taxpayers bear costs of corruption, corruption is perceived as the social evil, and the pressure to investigate corruption is significant from NGOs, the public, and the media; in case of private sector corruption is the arising loss more concentrated, affecting a limited number of entities - typically company owners. Corruption in the private sector surpasses also in other sectors such as sport, media, university education, healthcare, etc.

This analysis tries to exclude behavior that occurs entirely within the private sector (e.g. insider dealing, bribes to secure private contracts, etc.) not because their economic effects are small, but because the topic is already complex.[6]

3.2.2 Governmental corruption

"Political corruption takes various forms and is practiced under all forms of government, including well-established democracies".

Ibrahim Shihata (1991)[7]*, World Bank's General Counsel*

We can divide corruption within the public sector based on the political system level and its severity into two major categories: grand corruption (or political) and petty (or administrative) corruption. Since the early nineties, especially in the context of transition economies, are often applied terms of *state capture* (i.e. influencing laws, regulations, and ordinances through illicit and non-transparent private payments to public officials), *influence* (i.e. affecting the legal process by a company without direct payments through such means as the company's size, ownership ties to the government, and repeating interactions with governmental officials), and *administrative corruption.*[8] In addition, it might be difficult to make a difference between influence peddling (i.e. trading in influence) and some extreme and poorly regulated forms of *lobbying*.

[6] Some indices used in this thesis measure, however, corruption in both public and private sectors.
[7] IN: WB (1997), p. 20.
[8] Unexpectedly, Hellman *et al.* (2000) (IN: Körner *et al.* (2002), p. 685) found that only few companies with state influence belong also among companies capturing the state. Thus, these strategies are alternative to each other – almost perfect substitutes. Market power (or the degree of monopoly power) measured by price elasticity of demand increases the influence and reduces the need of state capture.

While the first two terms aim at influencing the content of laws and regulations, the purpose of administrative corruption is to affect their implementation. Such categorization is, however, parallel to the general division of corruption, because the state capture can be expected at the highest levels of the political system and administrative corruption at lowest. It is so even though this classification refers to the relation between private companies and the state, and is omitting households and corruption within the public sector. Thus, it is not surprising the concepts of state capture and grand corruption on one hand and administrative and petty corruption on the other are mutually entwined.

Definitions of grand and petty corruption may differ slightly in the literature, but generally could be characterized as follows: *Petty corruption* refers to low (or street) level, small-scale corrupt practices usually involving relatively small amounts of money. It occurs when local, low- to mid-ranking government officials (e.g. policemen, judges, doctors, etc.) charge money for services that should be free or accept bribes to perform small favors. Victims of such offenses are directly citizens.

In contrast, *grand corruption* is the most hidden and dangerous type of corruption. It occurs where the policy proposals, decisions, and their implementation are influenced by corrupt practices. It is usually found where the high public officials in the decision-making process for projects of significant economic value require bribes to ensure tenders and contracts in favor of one of the parties.[9] It occurs in the center of the financial, political and administrative power. Grand corruption is sometimes used as a synonym for political corruption.

Hayllar [2011], p. 37 defines political corruption as follows: "*Political or grand corruption takes place at the high levels of the political system, when politicians and state agents entitled to make and enforce the laws in the name of the people, are using this authority to sustain their power, status and wealth.*" This definition of political corruption is in line with that by OECD: "*The misuse by government or political officials of their governmental powers and resources for illegitimate, usually secret, private gain*" (IN: Hayllar (2011), p.36).

According to Hayllar (2011) political corruption does not lead only to the misallocation of resources, but it also perverts the manner in which decisions are made. Political corruption is when the laws and regulations are abused by the rulers, side-stepped,

[9] In the Czech Republic is the discussion concerning grand corruption connected mainly to the public procurement and its abuses. Also Bergsten (IN: Elliott (1997), p. IX) claims that the much grand corruption occurs in government procurement.

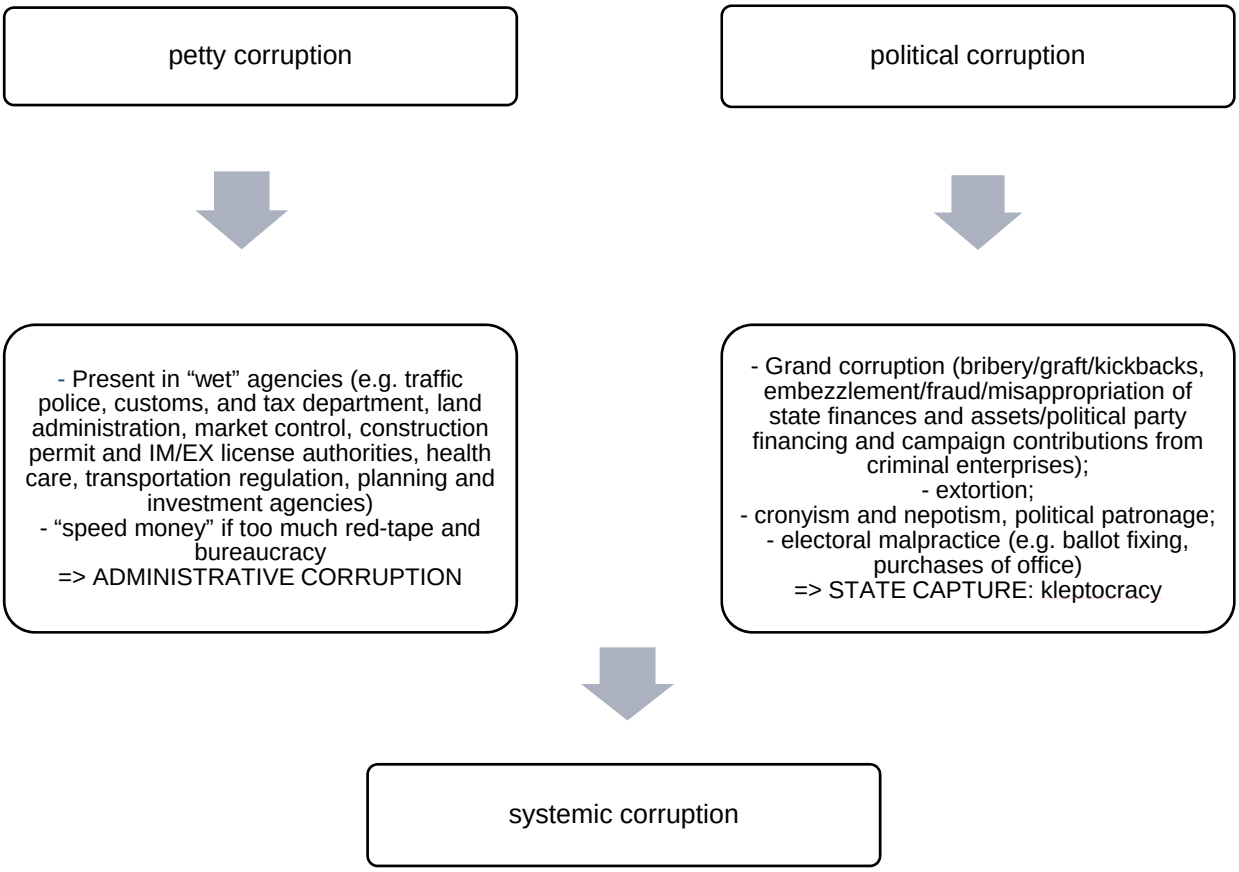
ignored, or even tailored to fit their interests. Further, political corruption may include any transaction between private and public sector actors through which collective goods are illegitimately converted into private profits as already depictured in Figure 3.1 above.

Rose-Ackerman[10] warns on severity of grand corruption and points out that illicit funds gained by corrupt higher-ups may be used in several ways (e.g. consumption by top bureaucracy, investment in legitimate businesses at home or abroad, etc.), but more likely they will be diverted into illegal businesses or foreign bank accounts. The reasoning is straightforward: These funds are already illegal and must be kept secret. In addition, concentrating on reducing low-level petty corruption is unlikely to succeed if civil servants are aware of the grand corruption.

Political corruption might also sometimes refer to corruption associated with the electoral process, which is more typical for developing and less developed countries.[11] Figure 3.2 shows numerous examples of both types of corruption in the public sector.

[10] IN: Elliott (1997), pp. 39-44.
[11] In our set of developed countries, the exception would be Singapore, where these practices are common.

Fig. 3.2: Political corruption vs. petty corruption; forms of governmental corruption



Source: Based on analysis of Bulva (2007), Hayllar (2011), Philp (1997), and others.

As shown in Figure 3.2, grand corruption might be a form of political corruption. In addition to the political corruption characterized by practices as ballot fixing, manipulation of electoral boundaries, nepotism, cronyism, political patronage, and others; grand corruption is narrowly defined as *a misuse of public funds by governors in top public positions.*[12] The most common forms of grand corruption are: embezzlement, wasteful and inefficient use of public resources, the private benefits of privatization, the abuse of official authority for awarding public contracts and allocation of monopolistic or quasi-monopolistic licenses, nepotism, clientelism, selling of positions and the access to information not made publicly available. All of these may also be referred to as so-called *white collar crimes*.

[12] Gregory (2011)

3.2.3 Alternative typologies

Alternative typologies of political corruption based on criteria mentioned in the beginning of this sub-chapter also exist. Michael Johnston[13] identifies four types of corruption: *interest-group bidding* (as in the United States and other liberal democracies), *elite hegemony* (as in China), *fragmented patronage* (as in Russia today), and *patronage machines* (as in Mexico). On the other hand, Anja Rohwer (2009), p. 42 identifies these four main forms of corruption: *bribery*, *embezzlement*, *fraud*, and *extortion*.

Rose-Ackerman[14] claims that bribes can be paid for two reasons: either to *obtain government benefits* or *to avoid costs*. Corruption may be initiated by the bribe-giver or the bribe-taker; it can result from the *mutual agreement* of both parties or one party can be *forced* into corrupt behavior by threats and other means (i.e. *extortion*); it may be *arbitrary* or *pervasive*; *active* or *passive*. In addition, corrupt activities may include financial transaction, but does not have to.

Other classification of corruption divides it into *centralized* and *decentralized*, i.e. regional, municipal, etc. Shleifer and Vishny (1993) show in their influential paper that centralized corruption (for example as in Singapore or in the former Soviet Russia) is less harmful for the society because once the money is paid, no other official will ask for more, however, Rose-Ackermam[15]disproves their findings as a simplified conclusion.

Gregory (2011) identifies also *fiscal* and *expenditure* corruption. Fiscal corruption includes all types of corruption relating to tax administration or spending policies (i.e. tax evasion, customs fraud, tax administration corruption, service procurement corruption, etc.). Expenditure corruption, on the other hand, is found in the bad budgetary process (e.g. incomplete and biased budget, inadequate control of spending through transfers between levels of government, lack of public information about budgets and spending, etc.), in the civil service and pensions, and in poorly designed public procurement.

[13] IN: Elliott (1997), p. 4.
[14] Idem, p. 34.
[15] Idem, p. 39.

3.3 Literature review

A review of literature on corruption as an economic phenomenon can be generally categorized into two different strands. The first strand is empirical based, using either time series or panel data of some corruption indicator to estimate its impact on economy. The second strand is theoretical, occasionally analyzing real data on firms or individuals. Given these two approaches, the literature can be macroeconomic (based on empirical data) or microeconomic in nature. A set of macroeconomic studies of corruption usually examines the impact of corruption on the economy as whole, considering its impact on economic growth, investment, etc., while the microeconomic set of studies is more focused on the impact on individuals (e.g. contribution to income inequalities, social unrest, poverty, reducing net social surplus, etc.), comparison of corruption to the taxation or models of imperfect competition (comparing public official with the monopolist maximizing its profits, cartel, etc.).

3.3.1 Microeconomic approaches for analyzing corruption phenomena

Microeconomic approaches represent political and other forms of corruption through a number of ways including standard utility maximization, modeling bribe taking as monopolistic or oligopolistic profit maximization, game theory, and the principal-agent models of corruption.[16]

Rational choice theory The public choice theory, a branch of rational theory, assumes that all state servants (i.e. politicians and government officials) are primarily rational egoists controlling something valuable and maximizing their opportunity and self-interest. Some authors even claim that the political activity is a form of rent-seeking which wastes public resources. Based on the **rational choice theory**, motivation for corruption increases as: There is a decrease in the public sector wages, an increase in difference between public and private wages, an increase in expected personal gain from corrupt behavior, and a decrease of detention probability and the cost of penalty.

The effect of public sector pay bills on corruption can be explained by theory that well-paid state servants will not be so easily corrupted. This theory stresses the idea of decreasing of the difference between public and private wages and has led to the high

[16] Following analysis of Becker and Stigler (1974), many studies has focused on the principal – agent model of corruption (see Shleifer and Vishny (1993), p. 599).

levels of civil service pay bills in some countries with initially high-levels of administrative corruption. [17] However, it is widely argued that in order to minimize corruption only through increase of public salaries a significant increase is required and the state servants with high salaries have incentives to ask for a larger sums of money in bribes because an eventual job-loss would for them result in a greater income loss.

Some suggest that detention probability could be across the countries objectively quantified by number of prosecutions in corruption cases and by the length of prison terms imposed. However, as the Lambsdorf (2006) (IN: Bulva (2007), p.9) comments, a number reflects quality of public prosecutors and anti-corruption legal framework rather than the actual level of corruption in the country. Finally, the cost of penalty is not only the money paid in fees. In the society with effective anti-corruption legal framework it includes also return of all proceeds of bribery, confiscation of assets, and lost of civil service job and pension.

Political economy Douglass North (1990) [18] in his classical work *Institutions, Institutional Change, and Economic Performance* writes*: "I wish to assert a much more fundamental role for institutions in societies; they are the underlying determinant of the long-run performance of economies"*. By the late 1990s, Douglass North and the school of New Institutional Economics made economists aware of the importance of political institutions such as property rights, legal systems, check on executive power, etc. for economic growth. The truth is that many economic processes are now politically driven and there is a strong penetration of state into economic affairs. A major problem is that the politics has become a business - rather than a path to public service.

Study of rent-seeking and more specifically of political corruption in developed democratic countries, combines the study of a market economy with that of government. Its basic thesis is that when both a market economy and government are present, government agents provide numerous special market privileges. Here arises immediately a question whether corruption has in the developed world become a complement of free markets allied with free politics.[19] A major endemic problem is not only that the party has

[17] The theory has effectively minimized administrative corruption in for example Singapore. Singapore civil service is amongst the best paid public servants in the world (Hayllar (2011), p.6). Teo Chee Hean, a Singaporean Defense Minister and Minister for Civil Service said to this point: "We do not want pay to be the reason for people to join us. But we also do not want pay to be the reason for them not to join us or to leave after joining us" (IN: Hayllar (2011), p.19).
[18] D. North (1990) IN: Aron (2000), p.99.
[19] This question has been also asked during the discussion at the Institute of Economic Studies "Down to Earth – Economics, Politics and Reality" on October 6th, 2011.

become a shield for corrupt cadres, but also that corruption causes erosion of political legitimacy (and democracy) over time and opens door for more radical groups.

3.3.2 Macroeconomic approaches to corruption: Theory

"The quality of the institutions in a country – such as a sound regulatory environment, political stability, and the control of corruption – has important effects on growth."

Alan Greenspan, 2002

Corruption is believed to affect a variety of macroeconomic variables, such as public expenditure, total investment, capital flows and FDI, volume of international trade, inflow of foreign aid, GDP per capita, economic growth, etc. Below are discussed only variables that we believe are the most crucial for the analysis of corruption in developed countries.

Corruption, GDP, and economic growth Corruption is a major hindrance of the economic development reducing the country's competitiveness, causing deformation of the free market, and hampering the effective allocation of factors of production. All these "constitute a severe obstacle to investment, entrepreneurship, and innovation" (Mauro (1995), p.681). Estimates in different studies vary considerably, depending on the sample of countries and corruption measurement. Nonetheless, the relation between reducing corruption and increasing GDP per capita is generally positive. A reduction in corruption level by a single point on a ten-point scale (as in the case of the CPI) is estimated to increase annual GDP growth per capita from 0.3 to 1.8 percentage points.[20]

[20] See Davoodi (2000): *Corruption, Structural Reforms, and Economic Performance in the Transition Economies* (increase annual GDP growth per capita of 1.0-1.3%)*;* Leite and Weidmann (1999): *Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth* (increase annual GDP growth per capita of 0.7-1.2%); Mauro (1996): *Corruption and the Composition of Government Expenditure* (increase annual GDP growth per capita of 0.3-1.8%); Tanzi and Davoodi (1998): *Corruption, Public Investment and Growth* (increase annual GDP growth per capita of 0.6 %) IN: Galtung (2006), p.15 and Žák (2002), p.17.

Fig. 3.3: Estimated decrease of annual GDP growth per capita depending on a single point increase in corruption level measured by CPI

Author	Decrease of annual GDP growth per capita (in %)
Mauro (1996)	0.3 - 1.8
Mauro (1995)*	1.3
Leite - Weidmann (1999)	0.7 - 1.2
Tanzi - Davoodi (1998)	0.6
Davoodi (2000)	1.0 - 1.3
Svensson (2005)	0.8 - 1.7

Note: *One-standard-deviation improvement in the bureaucratic efficiency index by Business International. Source: Galtung (2006), p.15; Mauro (1995), p.701; Svensson (2005), p.28; and Žák (2002), p.17

Some 15 years ago, when Paolo Mauro wrote the first systematic empirical analysis of corruption, *Corruption and Growth*, the debate on the effects of corruption on economic growth was more fervent and ambiguous. From the mid-1960s to the mid-1990s some authors (beginning with Leff (1964) and Huntington (1968)) found that corruption can have a positive impact on growth.[21] The most common reasoning was that corruption can be a welcome way how to circumvent the pervasive, cumbersome and inefficient regulation in instances where there are such pre-existing policy distortions. The argument however relies on a single, fundamentally unrealistic assumption: namely, that governmental regulation is exogenous, so that the officials who are accepting bribes have no discretionary powers. This could be true in the case of a small-scale petty corruption, but in fact, even there officials often have such authority, and in order to optimize their revenue from corruption, they are introducing additional bureaucratic obstacles.

Secondly, the debate was connected to so-called "*speed money*" which can *"grease the wheels of commerce"*, i.e. corruption would avoid bureaucratic delay in, for example, issue of a license, permit, etc., and thereby reducing costs in terms of saving time. This assertion could be true only in the case when the bribes and kickbacks were not required repeatedly. The third argument is in lines of economic argumentation: corruption is a result of both the supply and demand for it. Let's take for example one of the major grand corruption opportunities - public procurement in construction. According to the economic argumentation, the highest bribe could pay a company with the lowest costs and therefore the most effective company. We can find several problems in such reasoning: To begin, this form of bribe clearly is a theft from state budget. Additionally, the company could offer higher bribes to the detriment of a lower quality of realized project. And finally, the governmental official does not make a decision only based on the bribe offer, but also

[21] Also Lui (1985), Beck and Maher (1986), Lien (1986), Bardhan (1997), and others.

according to the extent of disclosure risk. That means official will primarily choose a trusted partner. The common obstacle in all three theories justifying positive effects of corruption is a difficulty to limit corruption only to areas in which it might be economically desirable.

Nowadays are these kinds of discussions particularly in the developed countries totally out of date and a strand of literature that finds corruption having a negative impact on growth is strongly dominating[22]. To conclude, James Wolfensohn, the World Bank former president, said: *"We need to be clear: corruption is not the grease that oils the economy. Corruption undermines economic stability, deters foreign and domestic investment, and erodes support for development assistance."*[23]

Corruption and public expenditure Economic consequences of corruption are perhaps the most visible in their influence on the government sector and public expenditure. First of all, political corruption undoubtedly increases the pressure on the budget deficit, which had reached astronomical levels in some of the most developed countries and has led to the severe debt crisis in Europe. Secondly, it distorts the allocation of government spending. In particular, corruption is associated with higher military spending as a share of GDP and thus the reduction in corruption should improve composition of government spending towards more productive, non-military outlays such as education.[24]

Some studies have already analyzed the relationship between government spending and political corruption at municipal levels. For example, Brollo *et al.* (2010) use data from Brazil over period 2001 to 2008 and find that a 10% increase of federal transfers to municipal governments increases political corruption at local levels by 17%. With increased federal transfers it is easier for politicians to be corrupt because they have more funds to keep voters happy and distract them from the corruption. We could expect the same relationship between government spending and political corruption also at the federal level. In addition, Brollo *et al.* (2010) find a negative relationship between government spending and the quality of local politicians.[25] An increase of 10% in federal transfers

[22] As far as known, all the literature from 1998 onwards has found that corruption has a negative impact on growth.
[23] IN: Gregory (2011), p. 25.
[24] Corruption increases uncertainty, hence reducing investment in physical and human capital, i.e. reduction in share of spending on education (Mauro (1995), p.706).
[25] Hayek (1998) IN: Zak (2003), p. 14 warns that the public sector might easily become hierarchical and structurally rigid with public servants chosen according to adverse-selection rule. Public administration is then unattractive for qualified individuals and the higher-ranking public officials choose their subordinates

reduces fraction of political candidates with college degree challenging the incumbent mayor by 7%.

Undoubtedly has the role of government massively expanded after World War II what resulted in a significant increase in the government spending. In the literature, we often come across an idea that the corruption level is proportional to the scale of public sector. A Gary Backer's remark follows this reasoning: *"if you want to cut corruption cut government"* (IN: Hopkin and Rodriguez-Pose (2007), p.4). The argument that corruption necessarily follows from the opportunity is weakened by the existence of countries with low to non-existent corruption but large public sectors, like the Nordic countries.[26]

3.4 Data description

This section describes the dataset used for the analysis of measuring of corruption levels across a below specified set of developed countries. The same data set is used repeatedly in subsequent two chapters.

3.4.1 Country coverage

Countries worldwide have been classified into different groups according to some criterion or set of criteria. Analyzing 34 OECD member countries extended by five additional developed countries according to the IMF's classification seems to be the most reasonable to provide an up-to-date analysis of political corruption also for the Czech Republic. IMF's List of advanced economies classifies countries as being developed according to the economic criteria.[27] And the final data set of 39 countries covers the area of North America, European Union, Asia Pacific and Middle East (represented by a single country – Israel).

As a result of geographical location and historical background of the Czech Republic, research articles have referred to the problem of corruption in the Czech

among less capable. Adverse selection follows this logic: The higher education has an employee reached, the greater possibility for differentiation in opinion. In addition, the higher-up is more likely to convince those without their own opinions. Thus, adverse selection opens the door for grand corruption.

[26] Sachs (2006)

[27] While Chile, Estonia, Hungary, Mexico, Poland and Turkey are the OECD members not included on the IMF's list of advanced economies, Cyprus, Hong Kong SAR, Malta, Singapore and Taiwan (Province of China) are not members of the OECD. Otherwise, countries on the IMF's List of advanced economies overlap with the OECD member countries.

Republic in connection with Central and Eastern European area by now.[28] From a current perspective, 22 years since the beginning of transition when the process should be more or less completed, analysis of the Czech Republic as one of developed countries in the world seems the more reasonable. The reason for this is that the Czech Republic is in the implementation of reforms and adjustment of governmental policies from the beginning of the transformation process, but mostly now, looking firmly to the West and trying to converge to the West (more or less successfully depending upon the area of concern), where many countries belong among the most advanced.

Tab. 3.4: List of advanced economies according to IMF country groupings

Australia	Hong Kong SAR	Norway
Austria	Iceland	Portugal
Belgium	Ireland	Singapore
Canada	Israel	Slovakia
Cyprus	Italy	Slovenia
Czech Republic	Japan	Spain
Denmark	Korea (South)	Sweden
Finland	Luxembourg	Switzerland
France	Malta	Taiwan (Province of China)
Germany	Netherlands	United Kingdom
Greece	New Zealand	United States

Source: International Monetary Fund (2010).

3.4.2 Analyzed period

The data set employed in the empirical analyses consists of annual data from twelve different corruption measures from the period 2007-2010. The corruption indicators were obtained from the PRS Group's extract on the ICRG Political Risk data and publicly available country rankings published by Transparency International, World Bank, Global Integrity, and Open Budget Partnership. Please see Appendix A and E on detailed sources. All economic data are 2007-2010 estimates by the Economist Intelligence Unit and do not cover Ireland, Luxembourg and Malta.

There are several factors behind the decision to analyze the period of 1995-2010 with the corruption indicators referring to their four last assessments. Firstly, macroeconomic data referring to the Czech Republic have the reasonable informative capability from 1995 further on. In addition, the annual Corruption Perception Index was

[28] See Körner, Kudrna, Vychodil (2002) who have critically analyzed the position of the Visegrad in TI's CPI, Bulva (2007) who has described the relationship between economic transformation and corruption in the transition economies, and many others.

for the first time published in 1995 and the publication of many other corruption measures has followed subsequently.

Secondly, to analyze the current situation and to provide the most exhaustive data set of available corruption indices for a set of 39 developed countries, each corruption indicator is the simple average for the period 2007-2010 for the country in question. The simple averages of corruption indicators are often applied in empirical analysis of corruption. For example, Mauro (1995) uses 1980-1983 average of Business International corruption indices, while the Transparency International consistently applies two years averages of input corruption indicators in their methodology. The simple averages of corruption indicators smooth abrupt changes in opinion surveys and other rankings based to a greater extent on soft data and minimize the impact of time lag in some corruption assessments. As a result, they provide a less noisy indicator of corruption.

It is arguable that the simple averages of corruption indicators for the five year period 2006-2010 should be used. However, the data from 2006 corruption indices refer strictly to the pre-financial crisis period and would pull up the corruption rankings for many developed countries. There is evidence in the CPI and other corruption indices that the corruption rankings of OECD countries went down as a result of the financial crisis. For this reason we decided to omit year 2006 in analysis.

The final remark refers mostly to the second generation of corruption indices such as Global Integrity's Indicators and Open Budget Index with restricted country coverage in the assessments from particular years. If the corruption ranking is not available for a particular year, we use the ranking from the last available assessment, but not older than a 2007 estimation. Since the second generation rankings capture some basic components of country's institutional framework and institutions do not change rapidly, there is no information loss when applying data from the previous available year.

Chapter 4

Measuring corruption

"… corruption can be measured. The questions remain as to how accurately, and to what effect?"

Fredrik Galtung, 2006[1]

In the previous sections we looked at the problem of corruption in the most developed countries in the world and at the basic problem of defining political corruption and other types of corruption. In this chapter we will deal with the equally important issue of measuring the actual incidence of corruption. The relationship between currently available methods for measuring, or rather estimating, extent of corruption in the developed countries will be determined. We will point out weaknesses of particular methods and try to specify what the ranking really tell us.

4.1 Typology of indices measuring corruption

Given the hidden nature of corruption, typically involving two parties both having an interest for a transaction to be kept secret, only a small portion of total corruption is revealed. Therefore, it is hard to measure corruption directly and an indirect method – often in the form of quantitative index – is usually used.

4.1.1 Three generations of corruption indices

A major factor in the expansion of literature dealing with the corruption phenomenon, in particular for empirical studies on macroeconomic effects of corruption,

[1] Fredrik Galtung is the CEO of Tiri, an NGO supporting integrity across the world, and the expert on measurements and metrics pertaining to corruption. He is the founding staff member and Head of Research of TI, responsible for developing the Bribe Payers Index and Global Corruption Barometer. He has lectured at Cambridge, Oxford, LSE, Central European University, Harvard, Hong Kong University, and many others.

was solution of problem with its measurement. Corruption is nowadays measured and quantified by wide range of surveys, opinion polls, expert assessment of in and out-country specialists or business people. Many economic subjects include corruption phenomena into their calculations. Some banks and multinational companies even set up their own analytical teams to quantify political and economic development and identify possible risks. Analysis based on strictly-defined methodological principles provides country rankings and allows international comparisons in the index form. In spite of all this, the economic community is facing the problem to effectively access corruption by now as new alternative methodologies still emerge.

Albeit there is no way to capture and directly measure corruption, we can distinguish three basic types of indices reflecting corruption in a country:

1. *Indices derived from opinion polls and surveys among public, company executives or entrepreneurs.* The first and perhaps the most plentiful group covers indices measuring perception of corruption. Within this group is found a number of one-shot indices. Many would argue that the annually published Transparency International's Corruption Perception Index (CPI) and World Bank's Worldwide Governance Indicators (WGI) are the most representative and well-known examples within this group. But both CPI and WGI are composite indices based on both surveys and expert assessments, so the more appropriate example of this type of corruption index we find Global Competitiveness Report (GCR) published by World Economic Forum and based on executive opinion survey or the Gallup World Poll (GWP) encompassing an annual survey of households.
2. *Indices based on evaluations of local country experts and regional experts.* The second group consists of political risk assessments, such as those produced by Political Risk Services' International Country Risk Guide (ICRG) and Business International Corporation (BI)[2].
3. *The new generation of indices analyzing some sector specific data or taking an alternative approach to corruption and its measurement.* This group may also be called a second wave of corruption metrics. The best known alternative assessment with over hundred countries assessed is the assessment by Global Integrity Indicators (GI). The best know sector specific assessment with world coverage is the Open Budget Index emphasizing state budgeting.

[2] Now know as Country Viewswire Service published by Economist Intelligence Unit (EIU).

While the first two groups belong to the first generation of corruption indices and its goal was to raise awareness about an issue among policy-makers or to provide a risk guide for multinational corporations, the second generation of corruption metrics aims to better understand how corruption works. In addition, Heller (2011) and others[3] point out that currently is emerging and gaining in importance the third generation of corruption indices based on national, sub-national and sector level data.

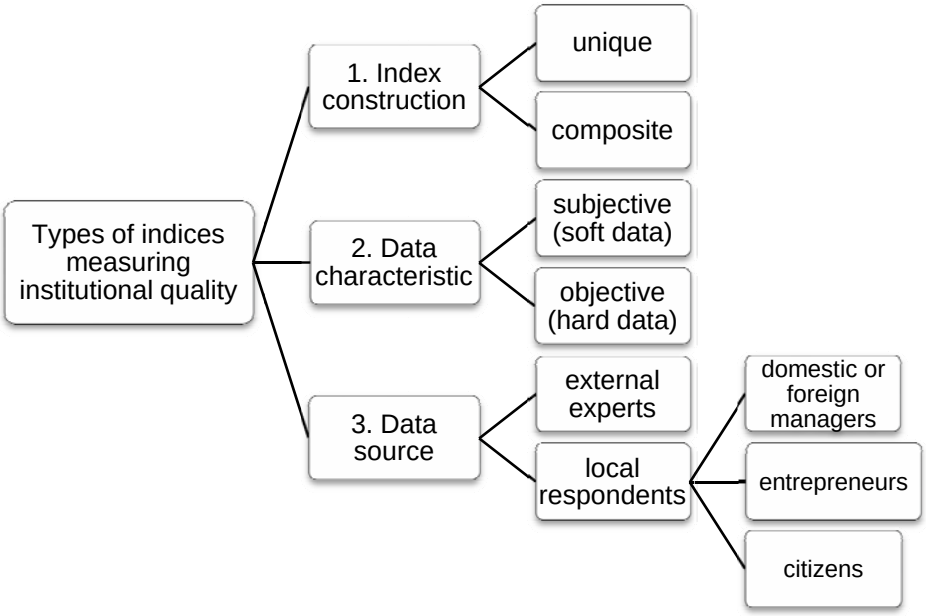
The third generation might often focus on a single country, use highly disaggregated indicators, mixed-method research and other innovative features as pointed out in Graycar and Smith (2011), p. 20. Examples range from unique projects of local NGOs or individual researches to annual assessments by independent organizations tracking corruption trends around the world. However, we will omit the third generation of corruption indices as they can not be employed in the cross-country analysis and make the problem of corruption even more complex. We will do so despite the fact that sub-national and sector-level assessments of transparency and related issues could yield more immediate reforms for particular country than the national-level approaches. Further, we believe that the future of corruption measuring lies in these sub-national approaches to governance.

4.1.2 Measuring corruption within institutional quality

A level of corruption is an inherent part of country's overall institutional framework quality. Measuring of institutional quality is possible through several approaches reflected in a wide range of indices. Körner *et al.* (2002) offer a generalized review of indices quantifying quality of the business environment as shown in Figure 4.1.

[3] Heinrich and Hodess IN: Graycar and Smith (2011), pp. 18-32.

Fig. 4.1: Types of indices measuring institutional quality



Source: Based on Körner, Kudrna, Vychodil (2002), pp.674-675, own modification

Firstly, the index can be *unique* or nonunique, i.e. *composite*. Unique indices are based on data from a special survey or analysis. Composite indices are aggregating final ranking from several already completed surveys, indices, or analyses. Composite indexes usually cover more countries, but inputs can be incompatible as it may suffer from heterogeneity of methodologies across time and countries. Often it is not clear what is actually being measured.

Secondly, indices may be *objective*, i.e. based on measurable data such as the existence of particular law, a number of documents required to export, a number of days to obtain an electricity connection, recovery rate for creditors in insolvency, etc., or more frequently *subjective*, i.e. based on respondents' subjective opinions. Objective indices are more suitable for cross-country comparisons, but only a limited number of aspects can be measured in this way. In contrast, subjective indices allow measuring almost all aspects of institutional framework, but the survey results may be affected by serious response bias. Thus, these issues need to be treated before making international comparisons.

Finally, indices can be divided according to the type of respondents. Respondents can be either *external experts* or *local respondents*. External experts evaluate country from outside, while local respondents are generally recruited from both domestic and foreign executives operating in the country, but they can be also local citizens or entrepreneurs. It is expected that local people are more familiar with the business environment and local rules than external observers, but their responses might be biased because of different

cultural background across countries. External experts may assess the institutional framework more independently, but generally having less information. Körner *et al.* (2002), p.675 suggest that respondents should be locally operated experts, who have experience from other countries used as a cultural benchmark. However, it is quite problematic to find high number of such respondents and practically responses from all types of respondents are combined.

In addition to the typology presented by Körner *et al.* (2002) and described above, Geršl (2006), p. 80 differentiates indices according to two other issues. Firstly, indices may differ in what they actually measure. They can either measure the extent to which existing institutions *correspond to some internationally agreed standards or benchmarks* (e.g. globally accepted levels as a result of international conventions, diplomatic agreements, academic consensus, etc.) or whether *local respondents consider them appropriate or inappropriate*. Geršl (2006) further points out that measure of correspondence to benchmark is rather helpful for foreign investors, while subjective assessment of local respondents is also important as it better reflects differing individuals' values across countries also due to cultural differences. We could, however, argue that this typology of institutional indices was already mentioned by Körner *et al.* (2002) as benchmarking is in parallel with objective indices.

We find the second addition to the typology of indices measuring institutions more important especially for distinction between the first and second generation of corruption indices. Geršl (2006), p. 80 noted that indices differ in terms of *how they can separate three basic components of* each country's *institutional framework*, i.e. formal institutions, their formal enforcement, and informal institutions. A larger part of corruption indices, especially the subjective ones from the first generation of corruption indices measure "a mixture of formal and informal institutions, and enforcement mechanisms (Geršl (2006), p. 80)". But the second generation indices, perhaps the most notably the Global Integrity's Integrity Indicators are able to separate between written laws and the actual practice.

Almost all the indices used to measure corruption are subjective, based on soft data, even though some surveys try to objectify their questions.[4] In the remaining two categories – index construction and data source – indices measuring corruption differ substantially from each other. Appendix A provides a detailed list of available corruption indices by category.

[4] For example, respondents are asked: "What percentage of annual income does your company spent on administrative corruption?" rather than "Evaluate the level of corruption on a scale of 0 to 10".

4.2 Corruption indices in detail

In the following section we look at the sample of corruption indices used in our cross-country analysis of political corruption in developed countries. This sample was chosen from all available corruption indices and surveys according to the availability of developed countries in particular corruption assessment (see Appendix A and Appendix E for more details). Figure 4.7 at the end of this chapter includes a list of developed countries sorted by their performance in the latest assessments by corruption indices described on the following pages. A distinct relative country order shows several inconsistencies in the assessment of corruption levels across the developed countries and indicates the complexity of a problem of corruption measurement.

4.2.1 Composite indices

Composite corruption indices cover a wider range of issues than unique indices because they combine a number of different third-party sources (business people opinion surveys and country expert and analysts risk assessments). Indices aggregated from various sources also enable to cover a large group of countries around the world, might reduce measurement errors by combining data from multiple sources, and are more reliable according to some authors. On the other hand, the inputs may be incompatible as there is heterogeneity of methodologies, there may be some inconsistency in the assessment of individual countries because an evaluation of each of them relies on a different set of surveys, and changes in methodology and resources make it difficult to compare results year on year.

In addition, we do not know exactly what composite indices measure because input indices vary conceptually[5] and the construction procedures are sometimes unclear. As a result, generally better for cross-country analysis are unique indices such as peer reviewed expert assessments with only limited number of aspects. The best known composite indices are Transparency International's Corruption Perceptions Index and World Bank's Worldwide Governance Indicators, both based on perceptions of corruption.

Corruption Perception Index (CPI) CPI is an example of annual composite index, which is aggregated from several already existing third-party surveys or indices. It was the first aggregated indicator measuring perception of corruption, published for the first time

[5] There are several different kinds of corruption. Sources which measure different aspects of corruption are in composite indicators averaged together.

in 1995[6] by Transparency International (TI). TI is a Berlin-based nongovernmental organization established in 1993 by a group of former World Bank executives to combat international corruption. In less than four years it has developed a network of over 60 national chapters throughout the world.[7]

There is no doubt that its CPI has brought attention of both governments and public to the problem of corruption as it increased awareness of corruption and created pressure on governments.[8] Since CPI was launched in 1995, it has become the most popular measure of corruption, contributed towards formation of widespread consensus against corruption, and has been cited in thousands of newspaper articles on a daily basis. TI has through this assessment secured a position of the leading global civil society organization fighting corruption. However, as we describe below, it has drawn much criticism and in the future may be declining in influence as the second generation of corruption indices becomes more widespread.

The last assessment from 2010 covers more than 170 countries worldwide and was aggregated from 13 sources produced by 10 different organizations (see Appendix A and Appendix E for a full list of third-party sources). An independent source must measure the overall extent of corruption in both public and political sector and provide a raking of countries to be included in the CPI. The extent of corruption must be measured by frequency or size of corrupt practices in at least few different countries. CPI ranks countries on a scale from 0 (highly corrupt) to 10 (very clean) according to mostly public sector's *perception of corruption among public officials and politicians.*

Worldwide Governance Indicators (WGI) WGI is a composite indicator, which adopted the basic approach of the CPI, but attempted to improve it in some aspects.[9] It was for the first time published in 1996, one year after the first release of CPI, and despite all weaknesses, the global coverage of dataset has led to its widespread adoption as in the case of CPI. One of the six dimensions of governance measured by the World Bank's WGI is Control of Corruption, which "*captures perceptions of the extent to which public power is*

[6] The first issue in 1995 covered 41 countries.
[7] It was loosely modeled on the concept of Amnesty International (see Elliott (1997), p. 16).
[8] A bad country ranking can help speed up the process of adopting effective anti-corruption measures. For example, South Korea has set specific objectives for reducing the high corruption because of its unfavorable position in CPI.
[9] WGI's score in Control of Corruption category is aggregated from the larger set of multiple sources than the CPI. Also, in contrast to the CPI's equal weighting, WGI assigns different weights to particular sources depending on their correlations among each other.

exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests".

While the definition is fairly precise, the data aggregated into the Control of Corruption composite indicator in the last assessment is based on six representative and 15 non-representative third-party sources. The sources are not consistent across countries and include any available polling with a range of different questions on corruption, but also expert assessments (e.g. Global Integrity Indicators, and others - see Appendix A for a full list of third-party sources) estimating the public access to information, etc. Thus WGI is faced with similar problems stemming from its composite nature as above-mentioned CPI. These are the inability to capture year-on-year changes and trends,[10] changing number of countries and sources included in WGI, overlapping confidence intervals, and lack of clarity about what is measured. In addition to all these, the WGI has it own shortcoming in assumption that the errors of the used sources are uncorrelated across sources and countries.

4.2.2 Criticism and limitations of CPI

A simple good topic of master thesis could be a critical valuation of CPI rankings. Several CPI's failings were addressed by a former Transparency International researcher, Frederik Galtung, in 2006 in *Measuring the Immeasurable: Boundaries and Functions of (Macro) Corruption Indices* and by many other authors (Körner *et al.* (2002), Lambsdorff (2002), Rohwer (2009), and others). The number of issues criticized on the CPI and described in paragraphs below applies, to a large extent, also at other composite corruption measurements using inconsistent third-party sources.

According to Galtung (2006, p.2), "the first criticism of the CPI is that it is one-sided". We can find three different dimensions of this one-sidedness. Firstly, the CPI's methodology casts spotlight on the major bribe takers of the world and does not exert legitimate pressure on the industrialized world.[11] To correct this imbalance, the *Bribe Payers Index (BPI)* – an index of leading exporting countries to track international bribery – was developed by Transparency International in 1999 (see the discussion in following

[10] WGI methodology assumes that the world averages are of governance scores are zero in each period.

[11] A number of studies have provided ample evidence that poverty itself contributes to corruption. If this is the case, countries with higher levels of industrialization and GDP per capita will be found at the upper end of the scale, while poorer countries come together at the bottom. Sweeney, Beaumont and Doyle (1998) In: Galtung (2006), p.3 have suggested weighting the corruption scores with a development indicator, like the UNDP's Human Development Index. This thesis overcomes this problem by focusing on a quite homogenous group of advanced economies as classified by the IMF.

subsection). However, this index is generally ignored by media and between the first launch in 1999 and 2011 was published only five times.[12] In addition, also the CPI's narrow definition of corruption constrains definition of worldwide anti-corruption efforts to anti-bribery.

Secondly, as already mentioned, corruption has a different meaning in different cultural backgrounds. The CPI has frequently been criticized for imposing moral viewpoints of the West. The cultural bias should be in our sample prevented by analyzing Westernized advanced economies out of which only five countries do not totally conform to the Western culture (i.e. Israel, Hong Kong, Singapore, South Korea, and Taiwan). A third dimension of the one-sidedness stems mainly from its orientation on private sector and business people, since "it is overwhelmingly male and economically well off (Galtung, 2006, p.5)".

The second criticism of the CPI is caused by its reliance on secondary sources. This reliance means that "TI cannot control countries dropping out of the index if the minimum number of three sources is missing (Galtung, 2006, p.4)". This second criticism of the CPI has, however, more to do with the poorly covered regions of Africa and the Middle East, where there is little foreign investment and only few corporate donors to pay for such surveys. The country coverage has significantly increased also in these parts of the world over the last years and for the developed countries is criticism totally off the point.

Another criticism of CPI is connected to the high level of variance between sources of this composite corruption rating. The third-party sources use different methodologies and different type of data, thus implicit definitions of corruption also vary as every unique corruption index measures different aspects of corruption. As a result, it is not clear what kind of corruption is actually being measured. In addition, a different set of initial sources may be used in the aggregated CPI's country scores because the input sources vary from country to country in a given year. An incorporation of various inputs based on mutually incompatible methodologies often results in high variance and large confidence intervals so that results are not statistically robust. Figure 4.2 illustrates large 90% confidence intervals of the CPI's scores for Iceland, the United States, Portugal and Hungary. The final CPI's scores are moreover not independent and can be significantly affected if any of

[12] „BPI evaluates the supply side of corruption - the likelihood of firms from the world's industrialized countries to bribe abroad" (TI, 2011). Yet, TI has only produced four BPIs in 1999, 2002, 2006, 2008, and 2011.

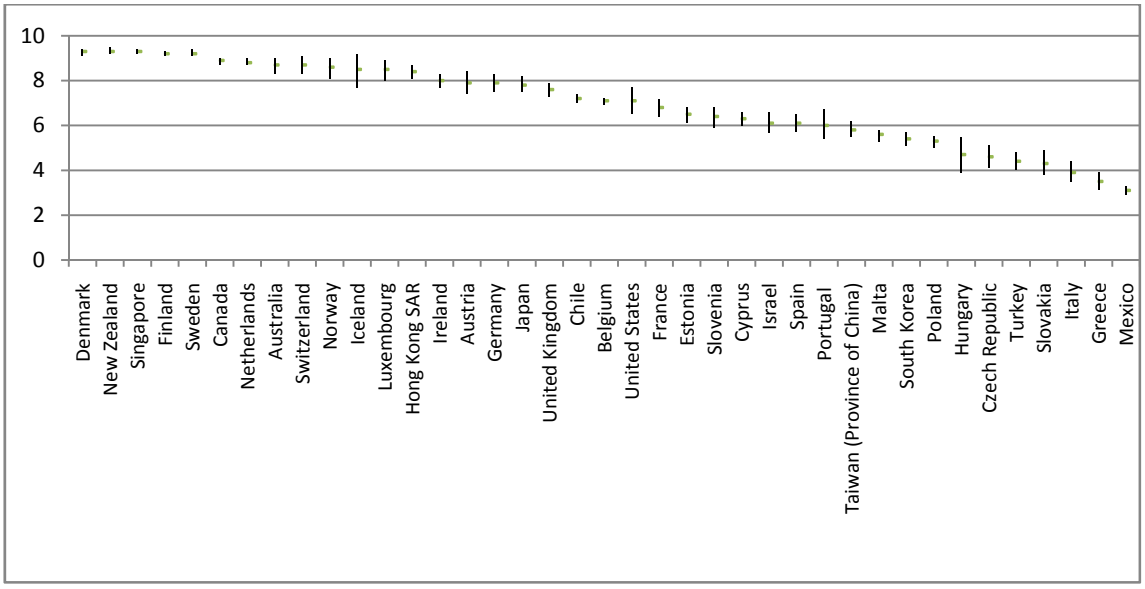
the sources has failed for any reason.[13] For all these reasons, Kaufmann *et al.* (1999) contend that "the data on corruption is only good enough to divide countries into three groups: the 20 or so least corrupt, the 20 or so most corrupt, and the vast majority in between".[14]

The fourth major shortcoming of the CPI is connected to its inability to capture year-to-year trends in country assessment and, as the case may be, reward successful reformers. For year to year comparisons cannot be used changes in the relative country rank ordering because of changing sample of countries (there is a growing number of countries through the years and few other countries could have dropped out). Neither, trends can be assessed in terms of changes in a particular country's scores because of "differing respondents and slightly differing methodologies (Galtung, 2006, p.12)". Despite this, media frequently refer to changes in a country's rank order. Additional criticism stems from a lack of transparency as aggregated index relies on sources that are not publicly available (e.g. IMD, WMO) and the CPI, on the contrary to the WGI, does not publish it source data.

The CPI, in spite of all errors, has the advantage of being transparent and honest about some of its failings. With the country scores it publishes the standard deviations indicating the difference in the values of sources, and the high-low range providing the highest and the lowest value of the different sources on a standardized basis. Under the normal distribution assumption, Figure 4.2 shows 90% confidence intervals to indicate true country scores for developed countries.[15] The greater is a number of sources used to generate country's composite indicator, and the higher correlation among them; country's confidence interval is smaller. According to this analysis there is no clear order and we can rather recognize several groups of countries since many confidence intervals overlap.

[13] For example, Körner *et al.* (2002) describe bias in 2001 Opacity Index used as source data for the CPI when the wrong methodology has enabled two respondents to affect considerably not only the overall legal system ranking, but also the total Opacity Index score.
[14] In: Galtung (2006), p. 6.
[15] The confidence intervals are defined as the country's score plus/minus 1.64 times its standard deviation.

Fig. 4.2: 90% confidence interval CPI



Source: Transparency International (2011), own calculations.

4.2.3 Unique indices using survey data[16]

Unique corruption perceptions indices are produced by its publisher and do not rely on third-party data. Surveys conducted among companies and citizens might be perhaps the most actual situation-biased. The assessment in these surveys is frequently correlated with current events in society such as the disclosure of corruption causes, etc. On the other hand, they represent the public opinion. Here arises another problem with corruption perception measurement – the respondents can be biased when filling in the questionnaire or can give the biased answers when being interviewed.[17] There is no approach to measure the honesty of responses.

Steves and Rousso (2003)[18] have thoroughly discussed anti-corruption programs of transition economies. Among other things, they found that the perception of corruption is correlated positively with the anti-corruption programs promotion intensity. Although the statistical result does no tell us anything about possible causality, it is consistent with the assumption that the perception of corruption is higher when the topic is discussed in the media, government, etc.

[16] In the Czech Republic are the public opinion polls conducted by e.g. GfK Praha – The Institute for Market Research or Public Opinion Research Center.
[17] Depending on respondent‘s actual experience, country of origin, bias towards either government or its opposition, etc. Thus objectivity is difficult to obtain.
[18] IN: Bulva, p. 11.

Thus, popular media games comparing annual changes in corruption perception indices and drawing from them conclusions about the actual incidence of corruption have rather low informative value. The most often is in such way used the CPI, which is for these purposes perhaps the least appropriate as described here and in the previous subsection.

Global Competitiveness Report (GCR) The World Economic Forum is the largest international organization of chief executives producing the GCR with the world coverage. Executive opinion survey published annually gathers the views of domestic and foreign-owned firms on a range of issues related to the business environment. Relevant for measuring of corruption is the pillar – Institutions and the data on corruption were obtained from the WGI's input sources. Questions are related to the different types of corruption occurring where the public and private sector encounter (i.e. petty corruption, grand corruption and influence peddling).

Bribe Payers Index (BPI) The Transparency International's BPI ranks the willingness of firms from 28 leading exporting countries to bribe abroad, and thus capturing the supply side of corruption, in addition to evaluation of bribery according to the business sector.[19] It is based on the views of more than three thousands company executives worldwide and was established in 1999 as a response to the criticism of CPI that it punishes only the demand side of corruption and the long-standing problem of developed countries with the bribery in the international business transactions as described in the second chapter of this thesis. The BPI ranks countries on a scale of 0 to 10, where a maximum score of 10 corresponds with a view that companies from the country never engage in bribery when doing business abroad.

Since 1999 was the BPI published only five times. Thus, the Figure 5.1 in the following chapter uses average of 2008 and 2011 ratings and shows that for available countries are the BPI rankings highly positively correlated with other executive opinion surveys (GCR and IMD) and composite indices (CPI and WGI). Correlation coefficient r = 0.95 between the CPI and BPI scores indicates the strong relationship between the perceptions of corruption in the public sector and the perceived likelihood of companies from a given developed country to bribe abroad.

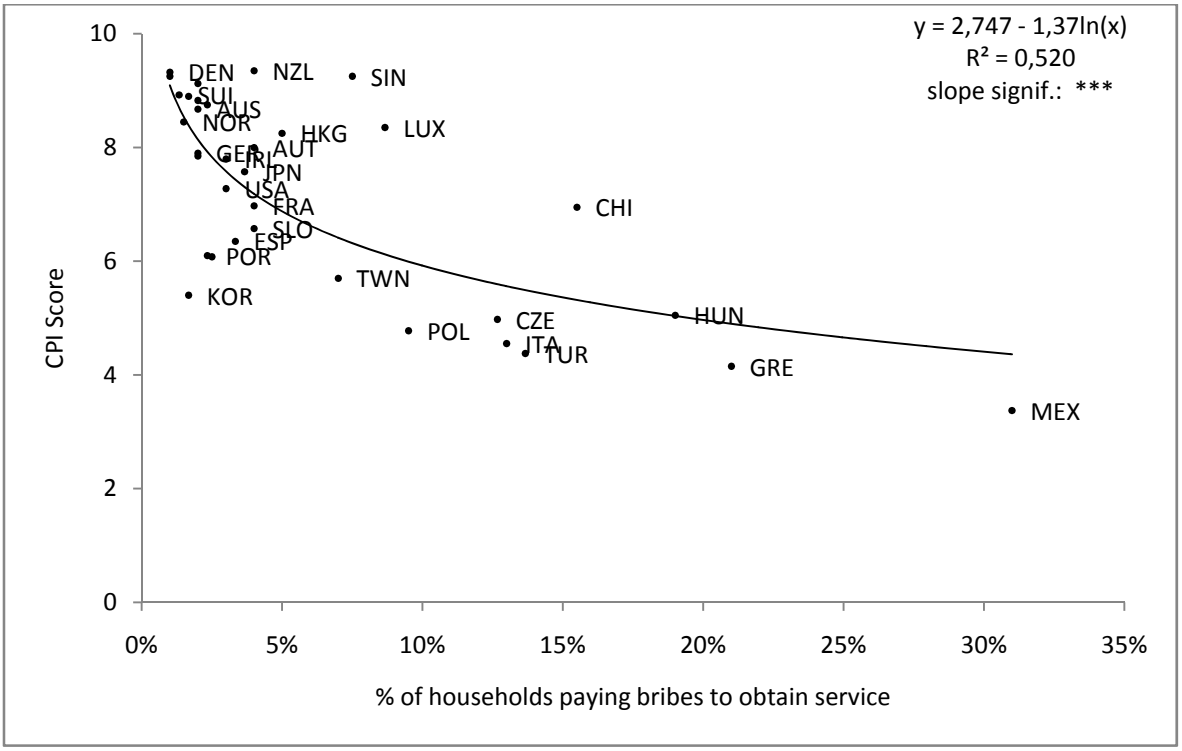
[19] The 28 countries were according to the TI (2011) selected based on the value of their FDI outflows, the value of their exports, and their regional significance. The index includes all G20 countries and 18 out of 39 developed countries in our focus.

Global Corruption Barometer (GCB) Transparency International's GCB is the experience measure based on a survey of general public attitudes towards the experience and perception of corruption. The GCB is published annually since 2003 and among other things measures the households' perception of how different institutions are affected by corruption.[20] In Figure 5.1 in the next chapter we provide a correlation matrix for rankings of perceived corruption levels in four components in which we believe the political corruption is found the most often – i.e. political parties, legislature, public officials and judiciary – and other corruption indices. Correlation matrix shows that these single components are usually not correlated with the more complex corruption measures.

In addition, Figure 4.3 shows the link between the general public's experience with corruption and the experts' views as captured in the CPI. Singapore, Luxembourg, and Chile appear to be clear outliers in a sense that the perception of public sector corruption as assessed by executives and experts seems to be much lower than is the actual experience of households with paying bribes to obtain services. Also in Hong Kong and New Zealand, often ranked among the least corrupt countries, experts have a more positive image than the general public. The second order polynomial regression $y = 8{,}616 - 27{,}66x + 35{,}38x^2$ with a value of R-squared equal to 54% and p-value 0,0063 yields similar results to those presented in the figure below.

[20] Initial rankings on a scale of 1 (not at all corrupt) to 5 (extremely corrupt) thus we have converted this scale in order to align with other corruption indices.

Fig. 4.3: Experience vs. perceptions of corruption



Note: Corruption indices refer to the average of the 2007-2010 ratings if available. Sample of 34 developed countries. Source: Own modification of data published by Transparency International.

4.2.4 Political Risk Assessments

An empirical work by economists drew attention mostly to the expert risk assessments. In 1995 Mauro published an influential empirical study from which benefited many other authors analyzing corruption. The above mentioned analysis proved a negative relationship between corruption accessed by Business International and output growth in 68 countries. Other commercial business information providers producing the political risk assessments are Political Risk Service, Economist Intelligence Unit (EIU), Global Insight Business Risk and Condition (WMO) and many others.

Business International (BI) BI is a commercial business information provider now incorporated into the *Economist Intelligence Unit*. Data sets are typically purchased by banks, multinational companies, international investors, and others for the considerable price. As noted by Mauro (1995), p. 684 this is the "*evidence for the accuracy and relevance of the indices*".

Factor assessment reports are filled in by BI's network of over 500 correspondents and reviewed for consistency by panels of regional experts, as well as BI's corporate headquarters in London. The indices reflect the analysts' perspective on risk and

institutional efficiency, including corruption, currently in 179 countries worldwide. BI assesses corruption as the degree to which business transactions involve corruption or questionable payments to public officials.

For his analysis, Mauro (1995), p. 684 has chosen nine indicators[21] of institutional efficiency based on two criteria: "First, they are assessed independently of macroeconomic variables; second, they refer to the interest of any firm operating in the country in question, rather than specifically to foreign-owned multinational companies.

International Country Risk Guide (ICRG) ICRG is a commercial provider of country risk analysis and ratings within the Political Risk Service (PRS) Group. Since 1980 ICRG provides ratings on a monthly basis and historic data are available back to 1984. In the last assessments are monitored 140 countries. ICRG is used by investors, multinational corporations, banks, foreign exchange traders, shipping concerns, importers, exporters, and others.[22]

A composite risk rating of ICRG is divided into three subcategories of risk: political, economic, and financial. For our analysis of political corruption in developed countries is crucial the political risk category. The Political Risk rating is covering both political and social attributes assessed on the basis of subjective analysis of the available information and following strict methodology, but independently of macroeconomic variables. The Political Risk assessment is comprised of 12 weighted indicators that add up to a maximum of 100 points. The ICRG indices range between 0 and 12. According to the ICRG methodology (see PRS Group (2011)) the highest value of an indicator means the lowest potential risk and vice versa.

The ICRG Researcher's Datasets on Political Risk used in this and following chapter provide annual averages of all twelve components of composite political risk rating for all countries covered by ICRG from 1984 to 2010. PRS's description and definitions of Political Risk components are reported below. [23]

[21] The nine indicators of institutional efficiency from BI chosen by Mauro (1995) are: Political change – institutional, Political stability - social, Probability of opposition group takeover, Stability of labor, Relationship with neighboring countries, Terrorism, Legal system and judiciary, Bureaucracy and red tape, and Corruption.

[22] Similarly to Mauro (1995) who in his paper used the BI Indices of Corruption and Institutional Efficiency also the ICRG data set we use in this subsection and further in the thesis would cost several thousands dollars if it were to be sold commercially. The PRS offers discounts on academic versions of its business products and Table 3B: Political Risk could be purchased for USD 438.

[23] The indices are described in more detail in PRS Group (2011), pp. 3-7.

1. *Government Stability*. "An assessment of the government's ability to carry out its declared program(s), and its ability to stay in office."
2. *Socioeconomic Conditions.* "An assessment of the socioeconomic pressures that could constrain government action or fuel social dissatisfaction based on unemployment, consumer confidence, and poverty."
3. *Investment Profile*. "An assessment of factors affecting the risk to investment such as a contract viability/expropriation, profits repatriation, and payment delays that are not covered by other risk components."
4. *Internal Conflict.* "An assessment of political violence in the country and its actual or potential impact on governance."
5. *External Conflict*. "An assessment of the risk to the incumbent government from foreign action, ranging from non-violent external pressure to violent external pressure."
6. *Corruption.* "An assessment of corruption within the political system."
7. *Military in Politics.* "An assessment of military involvement in politics."
8. *Religious Tensions.* "An assessment of the desire of a single religious group to dominate governance; the suppression of religious freedom."
9. *Law and Order*. "The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law."
10. *Ethnic Tensions.* "An assessment of the degree of tension within a country attributable to racial, nationality, or language divisions."
11. *Democratic Accountability.* "An assessment of how responsive government is to its people based on different types of governance (i.e. alternating or dominated democracy, de facto or de jure one-party state, or autarchy)."
12. *Bureaucracy Quality.* "An assessment of the institutional strength and quality of the bureaucracy such as its autonomy from political pressure, mechanism for recruitment and training, expertise to govern without drastic changes in policy or interruptions in government services when governments change, etc."

There are several advantages for using ICRG rating as corruption measure also in our further analysis: First, as already mentioned, all Political Risk components are assessed independently of macroeconomic variables. Second, ICRG data on Political Risk allow tracking the effect of a single risk component such as corruption, or group of components combined into composite rating to meet the specific requirements. Third, a data set of 140

countries with monthly data from 1984 to 2010 allows for a time series analysis. And four, experts assess political corruption, which is the main focus of our analysis.

Although ICRG's measure of corruption takes into account the most common forms of corruption faced by business (e.g. special payments and bribes connected with import an export licenses, taxes, loans, police protection, and others), "*it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business* (PRS Group (2011), pp. 4-5)". In PRS Group's view, the political corruption is of much greater risk to business than petty corruption.

Galtung (2006), p. 9 warns that the ICRG political rating results in anomaly that the political risk posed is greater in democratically accountable system than in one without existent democratic accountability (see Figure 4.4 for negative correlations of democratic accountability and other Political Risk components). This anomaly can be omitted in our analysis because we analyze quite homogenous group of developed countries with long established democracies mostly.

Figure 4.4 and Appendix B report the correlation matrix for the ICRG's Political Risk components. With the exception of democratic accountability component, which is for developed countries in part negatively correlated with other risks as mentioned above, all other categories of country risk tend to move together. The results broadly confirm those presented by Mauro (1995) for Business International Indices[24] and author notes that this multicollinearity problem makes it difficult to determine which of the components examined is crucial for investment, growth and other macroeconomic variables.

As a result, Mauro (1995), p. 686 combines simple averages of closely related judiciary system, red tape, and corruption indices into the composite index[25] and shows that this composite index is a more precise measure of corruption than the corruption index on its own. The reasoning behind is to eliminate measurement errors in each individual index and to yield a better estimate of the determinants of macroeconomic variables.

Similarly to Mauro (1995) we found for developed countries that the simple correlation between the corruption and law and order components of ICRG's Political Risk

[24] Mauro (1995) constructs similar correlation matrix for 67 observations in BI indices referring to the average of 1980-1983.

[25] In Mauro (1995), p. 707, the simple correlation between the corruption and red tape indices is 0.79 and 0.78 between corruption and judiciary indices.

is 0.77 and 0.70 between corruption and bureaucracy quality, see Figure 3.4.[26] The law and order component in ICRG's political risk is according to its definition equivalent to the Business International's assessment of judiciary, and similarly, ICRG's bureaucracy quality is equivalent to the BI's red tape assessment. In our analysis we combine the simple average of the corruption, law and order, and bureaucratic quality indicator to produce a better proxy for political corruption risk, while the same weight is assigned to all three components. Indeed, Figure 5.1 in the following chapter shows that our composite index of political corruption risk is better correlated with other corruption indices than the individual ICRG's corruption component.

In addition, similarly to Mauro (1995) we use the average over years 2007- 2010. The average over four years is a less noisy indicator of institutional variables such as corruption, which we may expect to change only slowly.[27] We could, however, use also the yearly data since the evidence shows that expert assessments such as ICRG are less prone to sudden fluctuations from one year to another than surveys. The reason is that the expert assessments are peer reviewed and therefore scores do not change abruptly (TI (2010b), p. 2).

[26] These findings also hold for a set of 140 countries assessed by ICRG's Political Risk. See correlation matrix for Political Risk components in Appendix B.

[27] Also TI (2010b), p. 2 uses two years averages in the CPI methodology to smooth abrupt changes in the opinion surveys.

Fig. 4.4: Correlation matrix for Political Risk components (developed countries)

	Gov. stability	Socioec. conditions	Invest. profile	Internal conflict	External conflict	Corruption	Military in politics	Religion in politics	Law and order	Ethnic tensions	Democrat. accounta-bility	Bureauc. quality
Government stability	1											
Socioeconomic conditions	0.29	1										
Investment profile	0.19	0.41	1									
Internal conflict	0.28	0.36	0.47	1								
External conflict	0.25	0.14	0.35	0.63	1							
Corruption	0.39	**0.63**	0.40	0.38	0.22	1						
Military in politics	0.15	0.31	0.49	0.60	0.67	0.41	1					
Religion in politics	-0.01	0.20	0.17	0.27	0.03	0.19	0.33	1				
Law and order	0.13	0.63	0.33	0.27	0.10	**0.77**	0.34	0.18	1			
Ethnic tensions	0.09	0.25	0.24	0.17	0.20	0.13	0.26	0.45	0.32	1		
Democratic accountability	-0.43	-0.03	-0.13	-0.03	0.04	0.06	0.24	0.06	0.12	-0.21	1	
Bureaucracy quality	0.12	0.69	0.41	0.31	0.13	**0.70**	0.35	0.05	0.69	0.13	0.16	1

Note: There are 39 observations in the sample. The sample covers all OECD countries including Cyprus, Hong Kong SAR, Malta, Singapore and Taiwan. The Political Risk components refer to the average of the 2007-2010 ratings. A high value of Political Risk component means the country has good institutions.
Source: Own calculation in EViews 5, based on the PRS Group's extract from ICRG Political Risk data (2011).

Fig. 4.5: Composite index of Political corruption risk based on ICRG's Political Risk components

3.1 - 4.0	4.1 - 5.0	5.1 - 6.0
Czech Republic	Cyprus	Finland
Slovenia	United States	Denmark
Hungary	Japan	Iceland
Poland	France	Austria
Greece	Israel	Luxembourg
Slovakia	Chile	Netherlands
Estonia	Hong Kong	New Zealand
Italy	Portugal	Norway
Turkey	Spain	Sweden
Mexico	Malta	Canada
	South Korea	Australia
	Taiwan	Germany
		Ireland
		Singapore
		Switzerland
		United Kingdom
		Belgium

Note: The composite index of Political corruption risk is computed as the 2007-2010 average of three ICRG Political Risk indices: corruption, law and order and bureaucratic quality and the same weight is assigned to all components. Values range from 0 to 6 and a high value of the index means that the country's political corruption risk is low. Source: Own calculations, based on the PRS Group's extract from ICRG Political Risk data (2011).

4.2.5 Alternative and sector specific indices

Alternative and sector specific indices belong to the second generation of corruption metrics. The second generation has appeared in the early 2000s, in part in response to the criticism of widely used composite corruption perception indices. On the contrary to the first generation of corruption indices, the purpose was not only to bring the problem of corruption into government and public attention, but to provide policy makers with a checklist of concrete steps towards improved governance. All in all, these approaches compliment the first generation awareness raising indices.

The second generation of corruption indices approaches the fight against corruption by setting focus on integrity, transparency, and accountability issues as part of the specific good governance agenda. An indisputable advantage of the second wave of corruption metrics over first is its ability to examine both the existing legal framework (i.e. what is on the books, in terms of law), as well as how the framework is implemented in practice. Geršl (2006), p. 80 pointed out an importance of differentiating between the formal and informal institutions, and their enforcement.

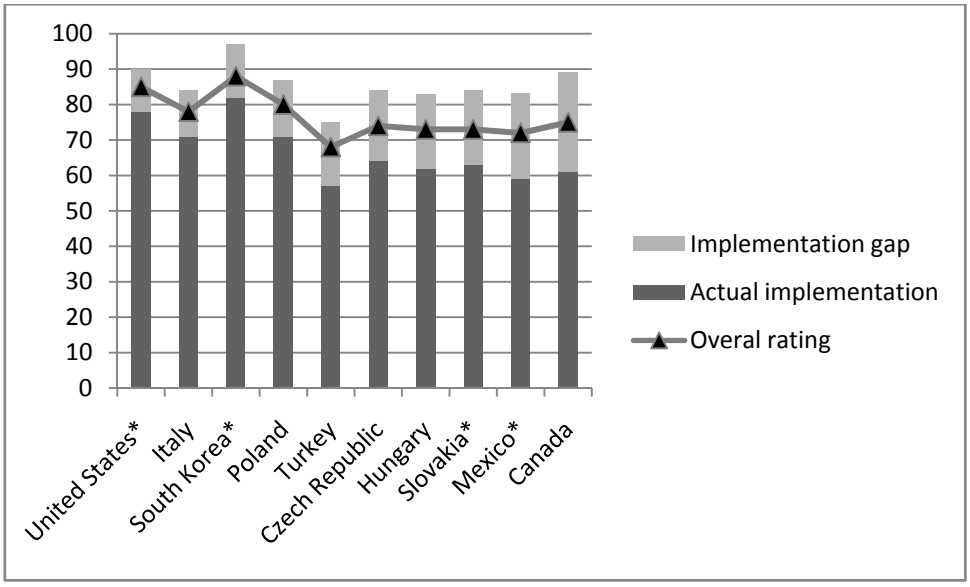
Typically, the second wave corruption metrics do not offer such extensive worldwide coverage as found in the first generation of corruption indices. This is for two

reasons: Firstly, the first generation indices are to a great extent based on public surveys, while the second generation indices commonly use in-country experts hired for this purpose. Secondly, the second generation indices gather information to very specific problem and create very deep content matching both quantitative and qualitative data. Thus the elaboration of the second generation corruption indices might be rather demanding.

Global Integrity Indicators (GI) The second generation of corruption indices started in 2004, when the first Global Integrity Report was published. GI evaluates the opposite of corruption, i.e. the existence and effectiveness of policies that prevent, discourage, or expose corruption, along with the citizen access to key governance and anti-corruption mechanisms. Country rankings are based on empirical research of in-country specialists and reviewed by both specialists in headquarters in Washington and in-country peer reviewers. In 2010, the GI has used 325 indicators to examine the countries' anti-corruption systems.

Indicators include both the quantitative scores (in range from 0 to 100, where 100 indicates the best anti-corruption mechanisms), as well as the brief qualitative comments by in-country experts. As already mentioned above, GI also measures the gap between actual implementation and what is written in law as it ranks countries according performance in both in law and in practice indicators. Although data is currently available for 104 mainly developing and transition countries, Figure 4.6 shows the implementation gap for 10 countries of our interest accessed in last two assessments. The implementation gap refers to the difference between the country's formal institutions (i.e. a legal framework for good governance and anti-corruption) and their actual implementation and enforcement. In 2010 and 2009 was the implementation gap between in law and in practice indicators the smallest in the U.S., Italy and South Korea (12, 13 and 15 points out of 100, respectively) and the largest in Mexico and Canada (24 and 28 points out of 100, respectively), see Figure 4.6.

Fig. 4.6 Implementation gap in available developed countries, 2010



Note: *Data for 2009. The score 100 indicates the best possible anti-corruption mechanism. Source: Global Integrity (2011), own modification.

Figure 4.6 above illustrates certainly not a trivial or even expected result regarding the Canada's largest implementation gap. Among available developed countries, Canada has the third most robust public integrity and anti-corruption system - right after South Korea and the United States – and reputation as one of the cleanest democracies. Despite all, the Canada's anti-corruption practice is equivalent to situation in the Czech Republic, Hungary and Slovakia.

There are several reasons for the Canada's biggest implementation gap among developed countries according to the Integrity Indicators Scorecard (*GI (2011)*): First of all, the access to information under the control of a government is not as effective as one might expect given the relatively low quality of prolonged government responses. Secondly, similarly to Czech Republic and many other countries, Canada does not have the official anti-corruption agency which would be protected from political interference and would effectively investigate and prosecute grand corruption across the public sector. The third factor driving down Canada's actual implementation score are the poor conflicts of interest safeguards in civil service and judiciary (e.g. lack of asset disclosure of judges and senior civil servants and its audit, eventually costly accessing of the asset disclosure records taking up to 120 days).

Open Budget Index (OBI) OBI is the younger from the second generation of corruption indices. It is published every two years by International Budget Partnership since 2006 and measures transparency and accountability of national budgets. It is based on a detailed

questionnaire administrated by in-country researcher. Typically for the second wave of corruption measures also this assessment covers only approximately a half of developed countries in our focus.

The correlations matrix in Figure 5.1 in the next chapter shows for the limited sample of 18 developed countries that this sector specific assessments correlates well with indices focusing on the overall level of country's political corruption (correlation range 0.61-0.9, mean 0.77).[28] This indicates that the expenditure corruption as defined by Gregory (2011) in previous chapter is in available developed countries related closely to the overall political corruption levels.

[28] With the exception of indices such as the GWP and GCR that based on the local citizens perceptions and tend to be correlated less or not with the remaining corruption indices from the first and second generation.

Fig. 4.7: Developed countries according to their performance in the latest assessments of corruption

CPI 2011 (183)	WGI - Control of corruption 2010 (210)	GCR - Corruption 2010 (140)	IMD - Corruption 2010 (58)	GWP - Corruption 2010 (146)	BPI 2011 (28)	GCB* 2010 (83)	ICRG - Corruption 2010 (140)	EIU - Corruption 2010 (179)	WMO - Corruption 2010 (202)	GI - overal 2010**(94)	OBI 2010 (94)
1. NZL	1. DEN	1. SIN	1. DEN	1. SIN	1. NED	1. DEN	1. FIN	1. AUS	1. AUS	1. KOR	2. NZL
2. DEN	2. NZL	2. NZL	2. NZL	3. DEN	1. SUI	2. NOR	2. DEN	1. CAN	1. CAN	3. USA	3. GBR
2. FIN	3. SWE	3. SWE	3. FIN	4. HKG	3. BEL	2. GBR	2. ICE	1. DEN	1. DEN	6. JPN	4. FRA
4. SWE	4. SIN	4. NOR	4. SWE	5. SWE	4. GER	4. AUS	2. NZL	1. HKG	1. FIN	7. ESP	5. NOR
5. SIN	5. FIN	5. DEN	5. SIN	6. NZL	4. JPN	4. FIN	5. AUT	1. ICE	1. NED	9. POL	6. SWE
6. NOR	6. NED	6. FIN	6. SUI	7. SUI	6. AUS	4. GER	5. BEL	1. IRL	1. NZL	13. FRA	7. USA
7. NED	7. NOR	7. SUI	7. AUS	8. LUX	6. CAN	4. NED	5. CAN	1. LUX	1. SIN	13. ITA	8. CHI
8. AUS	8. CAN	8. LUX	8. LUX	11. NED	8. SIN	4. KOR	5. GER	1. NED	1. SWE	15. CHI	10. KOR
8. SUI	9. AUS	9. HKG	9. NED	14. AUS	8. GBR	4. SUI	5. LUX	1. NZL	10. AUT	19. CAN	11. SLO
10. CAN	10. SUI	10. CAN	10. AUT	15. NOR	10. USA	10. ICE	5. NED	1. NOR	10. BEL	20. CZE	12. GER
11. LUX	11. LUX	11. NED	11. CAN	19. FIN	11. FRA	10. POR	5. NOR	1. SIN	10. CHI	25. HUN	16. POL
12. HKG	12. HKG	12. ICE	12. JPN	21. CAN	11. ESP	13. CAN	5. SWE	1. SWE	10. GER	25. SVK	17. ESP
13. ICE	13. ICE	14. AUS	13. NOR	22. AUT	13. KOR	13. IRL	13. AUS	1. SUI	10. HKG	29. MEX	18. CZE
14. GER	15. GER	17. AUT	15. HKG	28. GBR	15. HKG	13. ISR	14. FRA	16. AUT	10. ICE	41. TUR	24. ITA
14. JPN	16. IRL	19. GER	16. GER	30. GER	15. ITA	13. NZL	15. CHI	16. BEL	10. IRL	..	25. POR
16. AUT	17. AUT	21. GBR	17. IRL	31. BEL	19. TWN	13. SLO	15. SIN	16. CHI	10. JPN	..	28. SVK
16. GBR	18. JPN	22. JPN	18. ICE	31. FRA	19. TUR	19. HKG	15. SUI	16. CYP	10. LUX	..	29. TUR
19. BEL	20. CHI	25. IRL	19. GBR	34. CHI	26. MEX	19. ESP	18. HKG	16. FIN	10. NOR	..	38. MEX
19. IRL	21. BEL	26. CHI	20. CHI	37. ICE	..	19. USA	19. JPN	16. FRA	10. POL	..	..
22. CHI	22. GBR	28. FRA	21. FRA	39. EST	..	23. FRA	20. CYP	16. GER	10. POR	..	..
24. USA	24. FRA	29. BEL	22. TWN	47. TUR	..	23. TWN	20. POR	16. JPN	10. SLO	..	..
25. FRA	31. USA	30. CYP	23. BEL	48. IRL	..	26. AUT	20. ESP	16. MLT	10. SUI	..	..
29. EST	37. CYP	33. TWN	24. EST	52. MLT	..	26. JPN	20. GBR	16. POR	10. GBR	..	..
30. CYP	40. POR	34. EST	25. USA	52. KOR	..	26. SIN	20. USA	16. SLO	10. USA	..	..
31. ESP	41. ESP	35. ISR	27. ESP	60. MEX	..	33. ITA	26. IRL	16. ESP	38. CYP	..	..
32. POR	44. MLT	37. USA	28. ISR	60. POL	..	34. CZE	26. MLT	16. GBR	38. CZE	..	..
32. TWN	45. EST	38. MLT	29. KOR	63. JPN	..	35. POL	29. ISR	16. USA	38. EST	..	..
35. SLO	52. SLO	39. POR	31. TUR	63. SLO	..	37. LUX	33. EST	42. CZE	38. FRA	..	..
36. ISR	55. TWN	42. ESP	34. SLO	69. CYP	..	42. GRE	33. HUN	42. EST	38. HUN	..	..
39. MLT	59. ISR	48. POL	35. POR	74. TWN	..	46. CHI	33. SLO	42. HUN	38. MLT	..	..
41. POL	63. POL	49. SLO	36. POL	90. ESP	..	52. HUN	33. KOR	42. ISR	38. SVK	..	..
43. KOR	65. KOR	57. KOR	37. ITA	90. USA	..	59. MEX	33. TWN	42. POL	38. ESP	..	..
54. HUN	71. HUN	65. TUR	38. GRE	93. ITA	..	61. TUR	56. CZE	42. SVK	38. TWN	..	..
57. CZE	73. CZE	69. HUN	41. CZE	93. SVK	..	..	56. ITA	42. KOR	64. GRE	..	..
61. TUR	75. SVK	72. ITA	48. SVK	110. POR	..	..	56. MEX	42. TWN	64. ISR	..	..

66. SVK	89. TUR	81. CZE	52. MEX	112. CZE	..	..	56. POL	72. GRE	64. KOR	..	..
69. ITA	90. ITA	86. SVK	55. HUN	130. ISR	..	..	56. SVK	72. ITA	64. TUR	..	..
80. GRE	94. GRE	94. GRE	..	134. GRE	..	..	56. TUR	72. MEX	89. ITA	..	..
100. MEX	117. MEX	100. MEX	..	144. HUN	..	..	80. GRE	72. TUR	89. MEX	..	..

Note: *Based on the percentage of users paying a bribe to receive attention from service providers. ** If ranking for 2010 not available, data are taken from 2009, 2008, or 2007 assessments. Numbers in parentheses specify the total number of countries assessed. Source: Own research; see Appendix A and Appendix E for detailed sources.

Chapter 5

Empirical analysis

Before we proceed to the empirical analysis of how derived political corruption risk rating influences selected macroeconomic indicators, we will try to find association between the first and second generation of corruption indices described in the previous chapter. On the top of this, developed countries will be grouped into the homogeneous clusters based on their rankings of corruption.

5.1 How do different corruption-measures correlate?

5.1.1 Simple correlations

To illustrate the level of association between the first and second generation of corruption indices, the Figure 5.1 below presents the correlations among corruption indices. Correlation coefficients refer to the rankings of all available developed countries assessed by corruption measures as an average for the period 2007-2010. For our set of developed countries, the results show overall strong correlations among corruption assessments by different institutions and approaches.

For the first generation indices holds that the developed country rankings tend to correlate well with each other. This is especially true for the composite indices (i.e. CPI and WGI) and executive opinion surveys (i.e. GCR, IMD and BPI). All these indices are highly correlated (correlation range 0.92-0.99; mean 0.95). Still positive, but considerably less significant correlations are among the first generation indices with the scores provided by local respondents (i.e. GWP and GCB's individual components) and both the composite or executive survey based corruption indices (correlation range 0.06-0.89; mean 0.52).

Similarly, indices based on experts' evaluations (i.e. ICRG, IEU and WMO) tend to correlate very well with composite indices and executive opinion surveys (correlation range 0.76-0.99; mean 0.9) and are less correlated or not correlated with the rankings derived from the public opinion surveys (correlation range -0.13-0.66; mean 0.36).

Our findings are in line with the findings of Galtung (2006) who found that the composite indicators such as the CPI usually contain two different types of sources – business people opinion surveys and expert risk assessments – and there is no bias in favor of one or the other view. We can add that these two types of sources are likely to be used as the composite indicator inputs for their high correlations and thus narrowing of confidence intervals of composite rating.

As Figure 5.1 further shows, correlations between first and second generation of corruption rankings vary for developed countries to a larger extent (correlation range -0.56-0.9; mean 0.42). The highest negative correlation (r = -0.56) was found between the expert assessment of country's anti-corruption legal framework (given by Global Integrity) and the perception of local citizen about how affected by corruption is the parliament and legislature in the country (given by Global Corruption Barometer). Given correlation indicates that in the period 2007-2010 people in developed countries generally demonstrated greater distrust in the legislative power, the stronger was the country's anti-corruption legal framework. The result does not appear to be so unexpected when we realize a huge difference between anti-corruption laws and institutions theoretically on the books and their actual enforcement and implementation. The graph in the previous chapter depicts this implementation gap for the available advanced countries.

On the other hand, Global Integrity overall rankings of developed countries are highly correlated with the corruption rankings based on executive opinion survey in the GCR (r = 0.82) and our proxy for political corruption derived from the ICRG's political risk assessment (r = 0.81). In addition, available Global Integrity's indicators in practice correlate very well with the executives' assessments of the likelihood of firms from leading exporting countries to bribe abroad (r = 0.85). High correlations, even though the scores are obtained by different approaches to corruption measurement and provided by different type of respondents, add credibility to these corruption evaluations.

Similarly to the GI, also rankings of the sector specific OBI correlate highly with the composite indices, indices based on executive opinion surveys, and the expert assessments, indicating that the national budget transparency goes hand in hand with the overall level of political corruption. Correlation between OBI and CPI is 0.85, and

correlation between OBI and WGI is 0.83. The high level of association is found even though the CPI and WGI do not use OBI as an input source for their composite corruption assessment. The highest correlation is between OBI and our proxy for political corruption derived from the ICRG's Political Risk assessment (r = 0.9).

As already described above, a proxy of political corruption constructed from the corruption, law and order, and bureaucracy quality components of ICRG's Political Risk assessment is better correlated with the first[1] and second generation corruption indices (correlation range 0.54-0.99; mean 0.87) than the ICRG's corruption component itself (correlation range 0.29-0.98; mean 0.8). For this reason and as a result of discussion in the previous chapter, in our further empirical analysis we decided to use as a proxy of political corruption composite indicator derived from the commercially available ICRG's Political Risk assessment.

[1] With the exception of indices such as the GWP and GCR that based on the local citizens perceptions and tend to be correlated less or not with the remaining corruption indices from the first and second generation.

Fig. 5.1: Correlation matrix for corruption indices

	CPI (39)	WGI (39)	GCR (39)	IMD (37)	GWP (39)	BPI (18)	GCB-polit. parties (34)	GCB-legisla-ture (34)	GCB-publ. officials (33)	GCB-judiciary (34)	ICRG-corrupt ion (39)	ICRG-compo site (39)	EIU (39)	WMO (39)	GI-law (14)	GI-overall (14)	GI-practice (13)	OBI (18)
CPI	1																	
WGI	0.99	1																
GCR	0.93	0.92	1															
IMD	0.99	0.99	0.94	1														
GWP	0.30	0.34	0.47	0.44	1													
BPI	0.95	0.92	0.91	0.94	0.41	1												
GCB-polit. parties	0.06	0.06	0.18	0.18	0.83	0.28	1											
GCB-legislature	0.29	0.32	0.29	0.38	0.81	0.47	0.81	1										
GCB-public officials	0.52	0.53	0.61	0.58	0.81	0.71	0.70	0.89	1									
GCB-judiciary	0.67	0.65	0.62	0.67	0.45	0.86	0.49	0.73	0.85	1								
ICRG-corruption	0.96	0.98	0.86	0.96	0.38	0.87	0.06	0.39	0.56	0.63	1							
ICRG-composite	0.99	0.98	0.94	0.97	0.25	0.89	**-0.05**	0.17	0.44	0.56	0.95	1						
EIU	0.82	0.85	0.76	0.79	0.22	0.79	**-0.13**	0.34	0.58	0.66	0.88	0.84	1					
WMO	0.93	0.94	0.88	0.97	0.48	0.85	0.23	0.35	0.49	0.54	0.92	0.92	0.65	1				
GI-law	0.42	0.39	0.57	0.36	**-0.19**	0.30	**-0.49**	**-0.56**	**-0.15**	**-0.12**	0.29	0.54	0.35	0.31	1			
GI-overall	0.79	0.75	0.82	0.71	**-0.04**	0.79	**-0.23**	**-0.08**	0.32	0.55	0.65	0.81	0.75	0.56	0.74	1		
GI-practice	0.79	0.74	0.80	0.71	0.01	0.85	**-0.10**	0.06	0.44	0.69	0.64	0.78	0.75	0.54	0.60	0.98	1	
OBI	0.85	0.83	0.78	0.80	**-0.11**	0.70	**-0.34**	**-0.25**	0.03	0.28	0.75	0.90	0.61	0.77	0.72	0.82	0.74	1

Note: Numbers in parentheses specify the number of observations in the sample. The full sample of 39 countries covers OECD countries including Cyprus, Hong Kong SAR, Malta, Singapore and Taiwan. Corruption indices refer to the average of the 2007-2010 ratings if available. A high value of indicator means the country has low corruption. Source: Own calculations in EViews 5, based on the PRS Group's extract from ICRG Political Risk data (2011) and publicly available country ratings of corruption indices (see Appendix A and Appendix E for detailed sources and descriptions).

5.1.2 Nonparametric statistic

There is a reason to believe that for a set of analyzed developed countries are the corruption rankings not normally distributed, with a presence of outliers and high level of variance. In addition, it is reasonable to proceed with the non-parametric statistics due to the fact that the pairwise correlation[2] of the same data set provided significantly different correlations between individual corruption indices (i.e. mostly the second generation indices with missing values for some of the countries). These differences are caused by the considerable inconsistencies in the corruption assessments of developed countries depending on the particular type of corruption index used. The nonparametric tests can be applied in order to control the results obtained by simple correlations between available rankings presented in the section 5.1.1. An evidence of nonparametric tests for analysis of corruption indices was found only in Dreher *et al.* (2007), p. 463.

In paper by Dreher *et al.* (2007), authors used the Spearman rank correlations to determine the association between the CPI and underlying causes and effects of corruption. Spearman's correlation coefficient measures the strength of association between two ranked variables. Corruption rankings in this analysis are ordinal numbers with monotonic relationships (see Appendix C for illustration), and thus the general assumptions of the Spearman rank correlation are not violated.

In this analysis is applied the second of the nonparametric tests – Wilcoxon Signed Rank test. This test is used when the variables follow symmetrical distribution, but there is a substantial variability between data with presents of outliers. The null hypothesis of the Wilcoxon Signed Rank test is that two medians are equal. For the CPI and other corruption measures, the null hypothesis can be rejected at the 1% significance level for: the IMD, GWP, WMO and all individual GCB indicators. In addition to the opinion poll-based indices of corruption not correlating well with other first and second generation of corruption indices, a nonparametric test points out also survey-based IMD and the WMO expert assessment as indices with the low level of association to the CPI indices. At the 10% significance level can be hypothesis rejected also for: WGI, BPI, ICRG and GI's in law indicator.

Beyond are expectations, the null hypothesis that the median of the CPI's rankings equal to the GCR, EIU, GI's overall and in practice score, and the OBI can not be rejected.

[2] The only difference between the ordinary correlations matrix produced by Eviews5 and pairwise correlations in Stata is the way the missing values are handled. In addition, pairwise correlations give the level of significance of their correlation estimates.

Thus also the nonparametric test shows that the CPI's corruption assessment is associated to a large extent with the second generation indices.

5.2 Cluster analysis

In order to partly rebut the criticism of corruption indices by Kaufmann *et al.* (1999) that the data on corruption is only good enough to divide countries into the least corrupt, the most corrupt and the majority in between, and at the same time actually indentify in the industrialized world the groups of countries with the political corruption practically at the same level, the cluster analysis will be used in this section.

5.2.1 Methodology

Due to small differences between corruption levels in many developed countries, a convenient method would compare the similar groups of countries rather than the individual countries. Cluster analysis is a method for identifying homogeneous country groups in large and multivariate data sets as ours. The main advantage of using this method is its ability to summarize data on corruption described in the previous section simply and practically without estimating particular quantities. This is particularly useful as the inherent problem of corruption is the problem how to quantify it. In addition, the analysis can help to indentify for the further empirical analysis potential data outliers in corruption assessments of developed countries.

The cluster analysis organizes observations into groups in a way that the degree of similarity is maximized for the observations within a cluster and minimized between clusters. The analysis can lead to an ideal outcome with relatively small number of clusters and high level of similarity. The most widely used for these purposes is the agglomerative hierarchical clustering with its four best known algorithms: average linkage, complete linkage, single linkage and Ward's linkage.[3] The Ward's method is distinct from all other agglomerative clustering methods because it analyzes variance to find the distances between observations and groups to build up clusters. This method is regarded as very

[3] Average linkage clustering uses the average similarity of observations between two groups as the measure between the two groups. Complete linkage clustering uses the farthest pair of observations between two groups to determine the similarity of the two groups. Single linkage clustering computes the similarity between two groups as the similarity of the closest pair of observations between the two groups.

efficient for identifying groupings based on the minimized sum of squares in the clusters, but it sometimes tends to create clusters of small size.

5.2.2 Findings

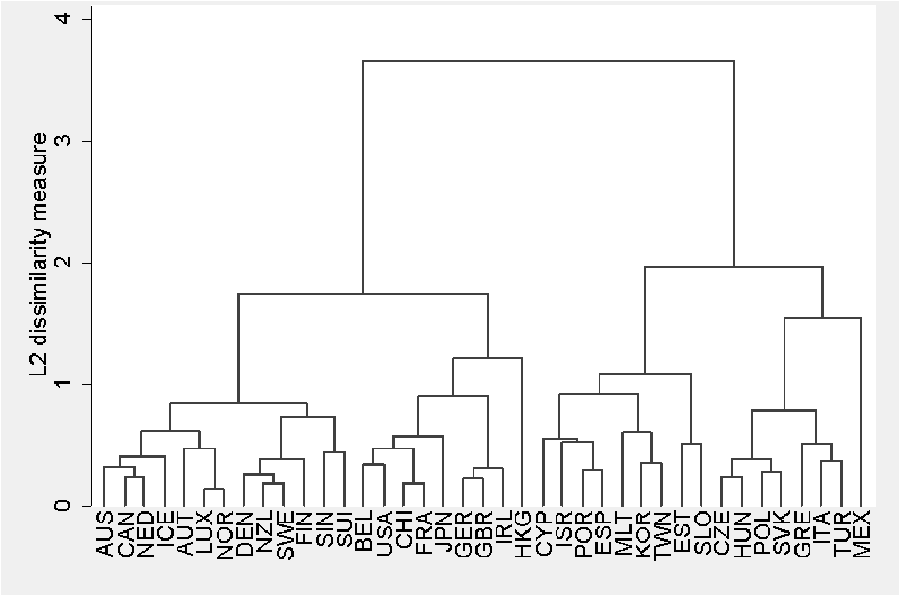
In our cluster analysis is used a data set of seven corruption indices, in which all indices provide rankings for the whole sample of 39 developed countries.[4] Again, as suggested by Mauro (1995) and others, to provide less noisy indicators of corruption the variables used in the analysis are 2007-2010 averages of corruption indices. Dendrogram, also know as a tree diagram, in Figure 5.2 summarizes the clustering process for our sample of 39 countries using the average linkage algorithm. The average linkage clustering and Ward's method produce almost identical countries grouping for our set of developed countries when organizing developed countries into two main clusters according to the corruption rankings based on data from the last four years (see Appendix D and Figure 5.2)[5]. The both algorithms divide countries into the more politically corrupt (17 countries) and the less politically corrupt (22 countries).[6]

[4] These are: Corruption Perception Index (CPI), Worldwide Governance Indicators (WGI), World Economic Forum's Global Competitiveness Report (GCR), Gallup World Poll (GWP), Economist Intelligence Unit's Country Viewswire Service (EIU, before know as Business International), and the political corruption risk indicator derived in the previous chapter from the International Country Risk Guide's (ICRG's) Political Risk components.

[5] On the contrary, complete linkage clustering divides countries into tree main clusters with the Visegrad Group countries, Italy, Greece, Turkey, and Mexico being the worst. The single linkage clustering puts both Mexico and Hong Kong separately of other countries; see Appendix D for the graphical representation.

[6] Countries in our sample with higher political corruption are: Mexico, Turkey, Italy, Greece, Slovakia, Poland, Hungary, Czech Republic, Slovenia, Estonia, Taiwan, Korea, Malta, Spain, Portugal, Israel, and Cyprus.

Fig. 5.2: Dendrogram for average linkage clustering of developed countries



Note: There are 39 observations in the sample. Variables are 2007-2010 averages of corruption indices covering all 39 countries (CPI, WGI, GCR, GWP, EIU, WMO, and ICRG). Source: Own calculations in Stata 9, based on the PRS Group's extract from ICRG Political Risk data (2011) and publicly available corruption indices country rankings.

Yet, for both methods is possible more detailed breakdown within two main clusters. Figure 5.3 compares the ten cluster solutions for each of the cluster methods so that the sample of 39 developed countries is grouped in blocks of ten. Cluster analysis found several groups of countries based on determination of similarities in political corruption rankings no matter which agglomerative clustering algorithm was used.

A developed country most threatened by political corruption is Mexico. The Visegrad Group countries form another cluster either separately or together with Italy, Turkey and Greece.[7] Estonia and Slovenia are according to the political corruption assessments grouped together so as Korea, Taiwan and Malta. It is not surprising that the neighboring Asian countries – Taiwan and South Korea – with a similar historical background are the most homogeneous in the ranking. Both Taiwan and Korea were under the Japanese-colonial influence before 1945 and developments during this colonial period are important in shaping not only the culture of corruption.[8] Neighboring Mediterranean countries Cyprus, Israel, together with the close neighbors, Spain and Portugal, form the last sub-cluster within the main cluster of more politically corrupt countries.

[7] While Italy and Turkey share more characteristics together than with Greece, the Czech Republic tends to be grouped with Hungary, and Slovakia with Poland.

[8] A number of empirical studies of corruption use colonial history (in the form of separate dummy variables for British, Spanish, Portuguese, French or other colonial background) as an explanatory or instrumental variable (e.g. Hibbs (1973), von der Mehden (1969) IN: Mauro (1995), p.694, Treisman (2000), and others).

There are more countries with the high level of similarities within sub-clusters in the main group of less politically corrupt developed countries. Only exception is Hong Kong, which similarly to Mexico in the more politically corrupted group of countries, forms a separate cluster in three out of a total of four cluster methods applied. However, the Ward's method groups Hong Kong together with the United Kingdom, Ireland and Germany. This is not surprising given over the 150 years of British colonial rule in Hong Kong.

Belgium, France, Japan, Chile, and USA form another cluster according their political corruption assessments even though these countries are as a group quite heterogeneous based on population, geographical location, and historical background. When searching for a common factor that makes a link between countries in this, at first sight, very diverse cluster, we find countries in which interest groups have a particularly important place. This characteristic of strong interest groups, however, is common in many other developed countries. Notwithstanding, these countries are often seen as elitist with society becoming always more class-divided on the basis of wealth or status. In addition to the foregoing, the U.S., Japan and France are undoubtedly countries in which a strong state is tightly interconnected with business.[9]

Another cluster is formed by Europe's Nordic countries (Denmark, Finland, and Sweden), New Zealand, Singapore and Switzerland. These countries are perceived as the world's most "clean-and-green" economies. In this cluster, tax heavens – Singapore and Switzerland – possess the most similar characteristics. Also Australia, Canada, Netherlands, Iceland, Austria, Luxembourg and Norway form a cluster, which is however intertwined with countries above depending on the clustering method used.

These findings are consistent with the criticism of Kaufmann *et al.* (1999). Agglomerative hierarchical cluster analysis using four different algorithms and analyzing data for 39 developed countries ranked by seven different corruption indices shows that 13 out of a total 39 countries do not display any fundamental differences in assessing the extent of political corruption. Therefore, based on our data, it is hard to determine which developed country has the lowest level of political corruption.

[9] I am grateful to my supervisor for bringing this point to my attention.

Fig. 5.3: The ten-cluster solutions for each of the cluster methods

Average linkage		Complete linkage		Single linkage		Ward's linkage	
Cluster 1	AUS	Cluster 1	AUT	Cluster 1	HKG	Cluster 1	GBR
	AUT		GBR				GER
	CAN		GER		AUS		HKG
	ICE		IRL		AUT		IRL
	LUX		LUX		CAN	Cluster 2	AUT
	NED		NOR		DEN		LUX
	NOR	Cluster 2	HKG		FIN		NOR
Cluster 2	DEN	Cluster 3	AUS	Cluster 2	GBR	Cluster 3	BEL
	FIN		CAN		GER		FRA
	NZL		DEN		ICE		CHI
	SIN		FIN		IRL		JPN
	SUI		ICE		LUX		USA
	SWE		NED		NED	Cluster 4	AUS
Cluster 3	BEL		NZL		NOR		CAN
	FRA		SIN		NZL		DEN
	CHI		SUI		SIN		FIN
	JPN		SWE		SUI		ICE
	USA	Cluster 4	BEL		SWE		NED
Cluster 4	GBR		FRA	Cluster 3	BEL		NZL
	GER		CHI		FRA		SIN
	IRL		JPN		CHI		SUI
Cluster 5	HKG		USA		JPN		SWE
Cluster 6	CYP	Cluster 5	CYP		USA	Cluster 5	EST
	ESP		ESP	Cluster 4	EST		SLO
	ISR		ISR		SLO	Cluster 6	CYP
	POR		POR	Cluster 5	CYP		ESP
Cluster 7	KOR	Cluster 6	KOR	Cluster 6	ESP		ISR
	MLT		MLT		ISR		POR
	TWN		TWN		POR	Cluster 7	KOR
Cluster 8	EST	Cluster 7	EST	Cluster 7	MLT		MLT
	SLO		SLO	Cluster 8	KOR		TWN
Cluster 9	CZE	Cluster 8	CZE		TWN	Cluster 8	CZE
	GRE		HUN	Cluster 9	CZE		HUN
	HUN		POL		GRE		POL
	ITA		SVK		HUN		SVK
	POL	Cluster 9	GRE		ITA	Cluster 9	GRE
	SVK		ITA		POL		ITA
	TUR		TUR		SVK		TUR
Cluster 10	MEX	Cluster 10	MEX		TUR	Cluster 10	MEX
				Cluster 10	MEX		

Note: There are 39 observations in the sample. Variables are 2007-2010 averages of corruption indices covering all 39 countries (CPI, WGI, GCR, GWP, EIU, WMO, and ICRG). Source: Own calculations in Stata 9, based on the PRS Group's extract from ICRG Political Risk data (2011) and publicly available corruption indices country rankings.

5.3 Corruption and macroeconomic data: Some evidence

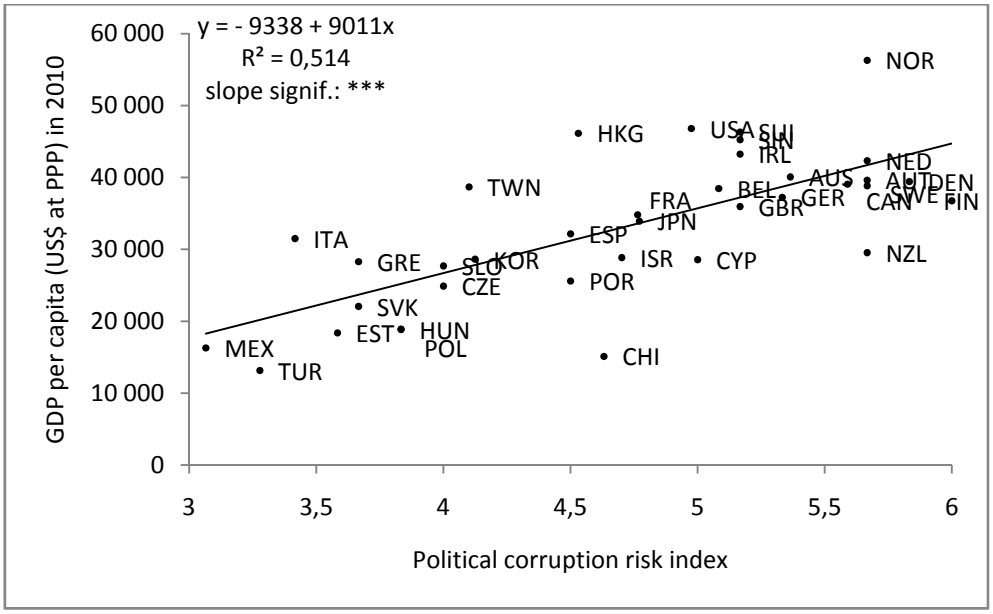
In the following empirical analysis of data we will use as a proxy of the country corruption level a political corruption risk indicator derived from the ICRG's data in the previous chapter. Similarly to the literature review in Chapter 3 also our empirical analysis focuses on macroeconomic variables which we consider in the current turbulent times crucial for developed countries at least in terms of general research on corruption. Thus, empirical analysis focuses on economic indicators of particular interest in developed, rather than developing countries.[10]

5.3.1 Corruption, GDP, and economic growth

The literature review on corruption and GDP in the sub-section 3.3.2 has revealed generally positive relationship between reducing corruption and increasing GDP per capita. The scatterplot for a derived proxy of political corruption risk and 2010 GDP per capita data is shown in Figure 5.4. The resulting scatterplot is consistent with the findings in literature. A one-point increase in the value of political corruption risk index is associated with an increase of per capita GDP by USD 9 thousand. Given estimation is statistically significant at the 1% level. However, the direction of causality is not explained by this plot. A number of studies provided ample evidence that countries with higher levels of GDP per capita will be found at the upper end of the scale, as is the case for the Nordic European countries.

[10] The analysis for developing countries would focus, for example, also on inflow of foreign aid.

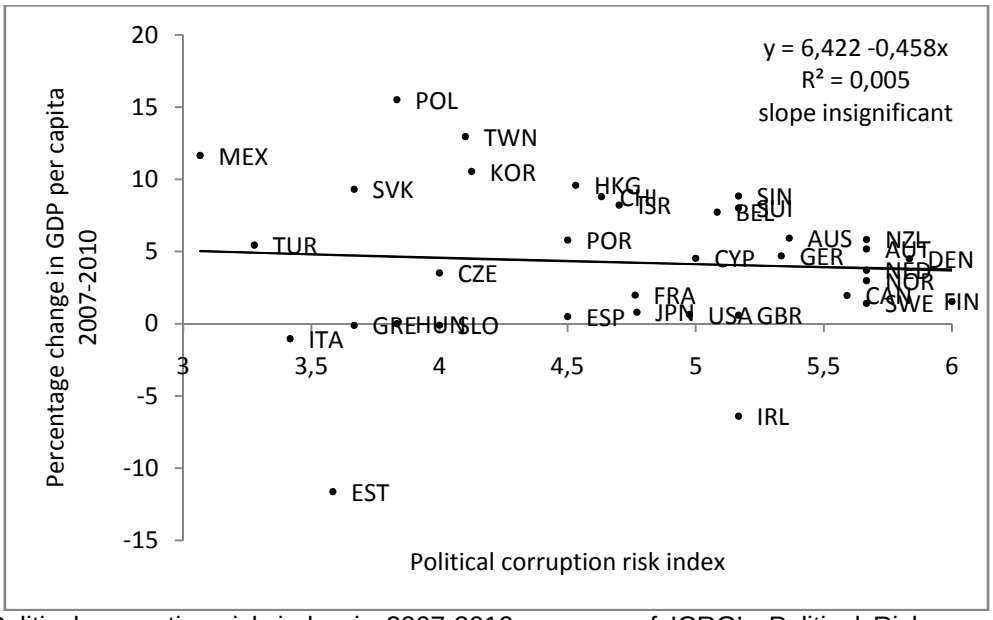
Fig. 5.4: Political corruption risk vs. GDP per capita (US$), 2010



Note: Political corruption risk index is 2007-2010 average of ICRG's Political Risk components corruption, law and order, and bureaucratic quality; the sample of 36 countries. Source: Own calculations in Excel and EViews 5.

Figure 5.5 illustrates a relationship between the political corruption index and the percentage change in the 2007-2010 per capita GDP. A negative slope indicates that the countries with higher political corruption risk were more hampered during the financial crisis, even though the relationship is by no means robust.

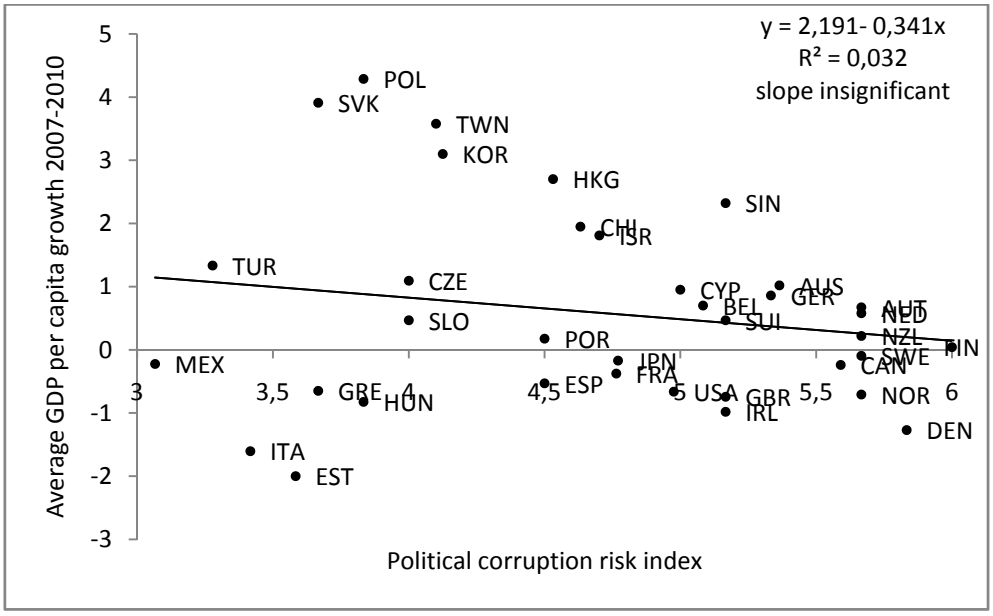
Fig. 5.5: Political corruption risk vs. change in GDP per capita (in %), 2007-2010

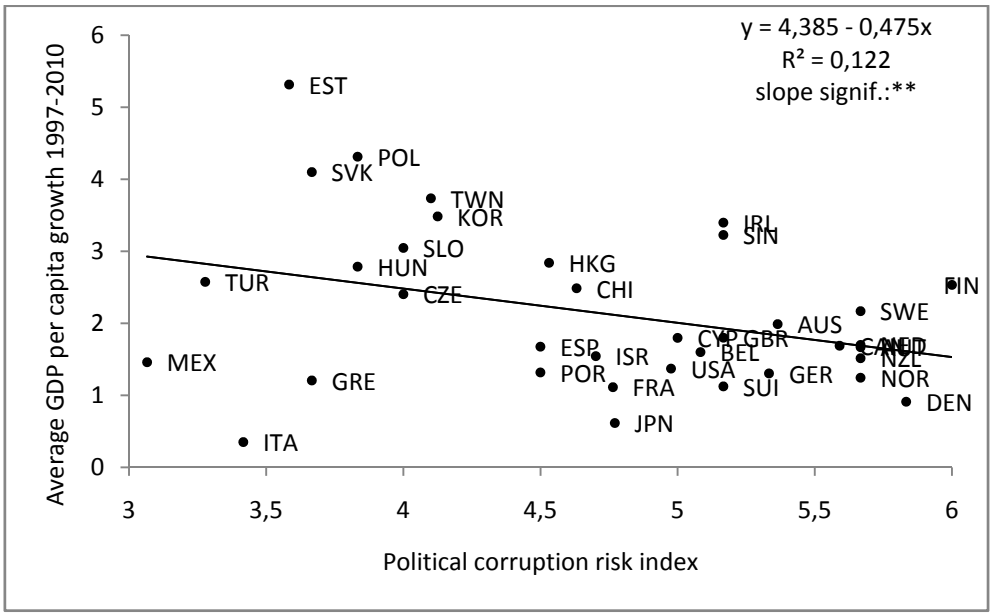


Note: Political corruption risk index is 2007-2010 average of ICRG's Political Risk components corruption, law and order, and bureaucratic quality; the sample of 36 countries. Source: Own calculations in Excel and EViews 5.

Finally, Figure 5.6 shows the relationship between the political corruption risk and per capita GDP growth as average of 2007-2010 and 1997-2010 data respectively. Consistently to the discussion in the sub-section 3.3.2, corruption has a negative impact on growth also in our set of 39 developed countries. These findings, however, are not significant for 2007-2010 average of GDP per capita growth and are statistically significant at the 5% level for 1997-2010 average of GDP per capita growth.

Fig. 5.6 Political corruption risk vs. per capita GDP growth (in %)



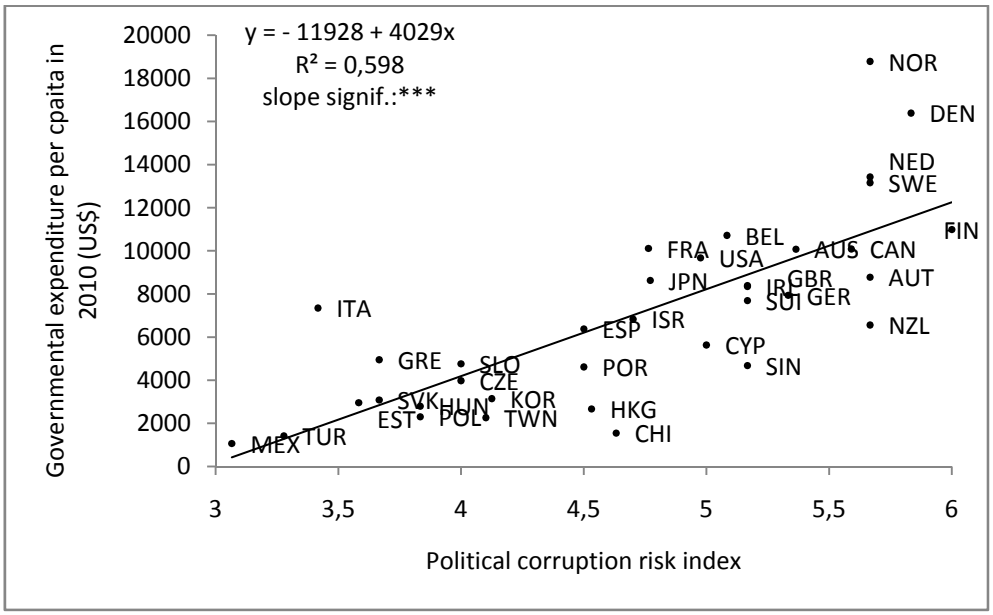


Note: Political corruption risk index is 2007-2010 average of ICRG's Political Risk components corruption, law and order, and bureaucratic quality; the sample of 36 countries. Average GDP per capita growth 2007-2010 and 1997-2010 from EIU respectively. Source: Own calculations in Excel and EViews 5.

5.3.2 Corruption and public expenditure

Recently, corruption is often discussed in connection to the high levels of public expenditure in developed countries. Figure 5.7 plots this relationship for a derived proxy of political corruption risk. The low corruption levels are at the significance level of 1% associated with the high government expenditure, contradicting a Gary Backer's idea of the corruption levels proportional to the scale of public sector. The same results are obtained even if the Nordic countries are omitted from the analysis.

Fig. 5.7: Political corruption risk vs. government expenditure per capita (US$), 2010

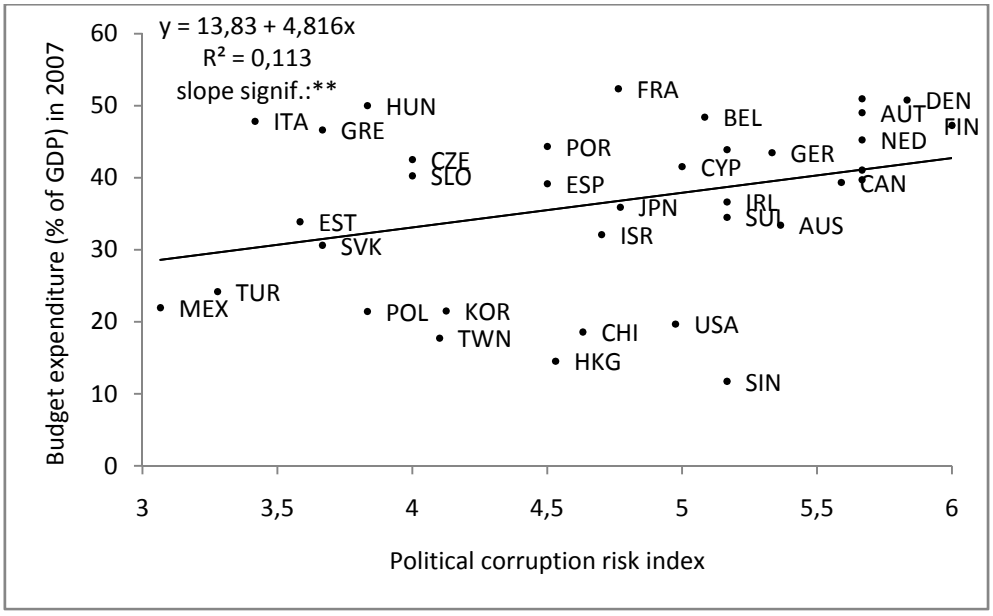


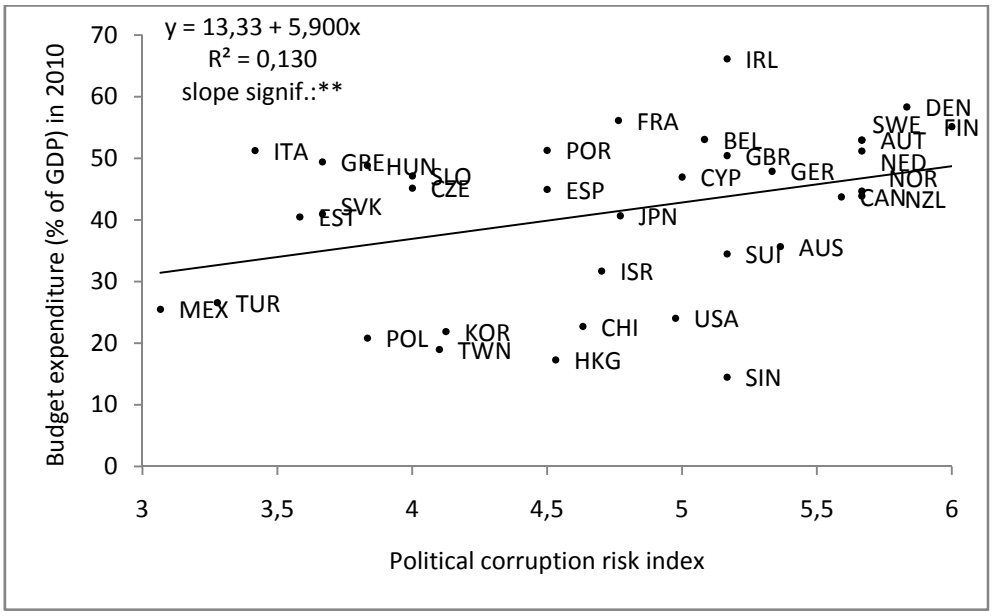
Note: Political corruption risk index is 2007-2010 average of ICRG's Political Risk components corruption, law and order, and bureaucratic quality; the sample of 36 countries. Source: Own calculations in Excel and Eviews 5.

Two indicators measure a government size: *total spending* and *total revenue as a proportion of GDP*.[11] Let's focus on the issue whether a larger size of the public sector negatively results in spread of corruption. According to the analysis in Figure 5.8, the incidence of corruption is not influenced by the larger size of the state apparatus. In both 2007 and 2008, the lower political corruption risk levels are associated with the larger size of the state apparatus at the 5% significance level. However, when the Nordic countries – Norway, Sweden, Finland, and Denmark – are omitted from analysis the relationship becomes insignificant.

[11]Alternatively, the volatility of each indicator could be used as an explanatory variable. The volatility is measured as the variation from the cyclical average (standard deviation) – i.e. the difference between current spending and the average spending over a business cycle.

Fig. 5.8: Political corruption risk vs. budget expenditure (% of GDP)





Note: Political corruption risk index is 2007-2010 average of ICRG's Political Risk components corruption, law and order, and bureaucratic quality; the sample of 36 countries. Source: Own calculations in Excel and Eviews 5.

Chapter 6
Conclusion

The thesis provides, to our knowledge, the most exhaustive discussion and analysis of different corruption measures for a set of 39 developed countries. A total number of 28 different assessments are divided into three generations of corruption indices. Only the first two generation of corruption indices can be applied in the analysis of corruption for a cross section of developed countries, even though we believe that the future of corruption measuring lies in the sub-national approaches to governance presented in the third generation of corruption measures.

Based on availability of analyzed set of countries in individual corruption assessments, the correlations between individual indices are provided for twelve different corruption measures from the first and the second generation of corruption measures. The first and the second generation of corruption indices correlate well for a set of developed countries. This indicates that the sector specific indices and indices taking an alternative approach to corruption are in analyzed countries closely related to the overall political corruption levels. Beyond our expectations, the strictly public opinion poll-based corruption indices can be negatively correlated with other estimates of the country corruption level from both generations, but are positively correlated between together.

A thorough analysis and discussion of the available corruption measures enables us to derive a proxy for the level of political corruption in developed countries. We derive a proxy of the countries' political corruption level from three individual indicators of International Country Risk Guide: corruption, law and order, and bureaucratic quality. A similar proxy was derived from different commercial business information provider in the earlier work of Mauro (1995). The derived indicator correlates with other corruption indices better than individual ICRG's index of corruption. This proxy is applied in further analysis and is found to be statically significant for explaining countries' GDP and governmental expenditure.

Since the available corruption measures showed to be unanimous in the assessment of the corruption levels across developed countries, an agglomerative hierarchical cluster analysis helps to find similarities between particular rankings. Applied cluster analysis assigns an analyzed set of countries into two main clusters – dividing countries into more and less corrupted. Further clustering groups countries into ten homogeneous clusters, but fails to rebut the criticism that there is no clear order of countries that are considered the least corrupt.

A number of issues remain unresolved. The indices themselves can not answer the question, why corruption is in some countries a bigger problem than in others. This issue can be resolved only through the study of individual countries. Particularly interesting would be the case study of country which has successfully dealt with corruption (e.g. Hong Kong) compared to a country with the long history of anti-corruption (e.g. New Zealand). The country clusters identified in this thesis could also lead to the analysis of competing models of capitalism. Overall, it would be also interesting to use derived proxy of political corruption in time series analysis of economic data and to employ in analysis also the emerging third generation of corruption indices.

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Appendix

Appendix A: Indices measuring corruption

	Name of assessment (organization)	Total number of countries*	Number of advanced economies*	Produced	Type of information source	Note
i.	**Composite indices****					
i.a	*Corruption Perceptions Index (CPI) - Transparency International (TI) (www.transparency.org)*	178	39	1995-2010 (annually)	Based on composite indicator from: *Asian Development Bank, African Development Bank, Bertelsmann Transformation Index, World Bank (IDA and IBRD), Economist Intelligence Unit, Freedom House (Nations in Transit), Global Insight, IMD World Competitiveness Yearbook, Political & Economic Risk Consultancy (Asian Intelligence Newsletter), World Economic Forum (Global Competitiveness Report).*	Requires a minimum of 3 sources for a country to be included.
i.b	*Worldwide Governance Indicators (WGI) - World Bank (www.govindicators.com)*	213	39	1996, 1998, 2000, 2002-2010 (annually)	Based on composite indicator from: *Global Insight Global Risk Service (expert-CBIP) Global Insight Business Conditions and Risk Indicators (expert-CBIP), Economist Intelligence Unit Risk-wire & Democracy Index (expert-CBIP), WEF Global Competitiveness Report (survey), Gallup World Poll (survey), Institutional Profiles Database (expert-GOV), PRS ICRG (expert-CBIP).*	Control of corruption measured as one of the six dimensions of governance.
i.c	*Opacity Index – Kurtzman Group and Milken Institute (www.kurtzmangroup.com)*	48	30	2001-2009 (annually)	Composite; based on a composite indicator from: *WEF - Global Competitiveness Report, PRS - International Country Risk Guide, and TI - CPI.*	Initial release in 2001, known as the *PricewaterhouseCoopers Opacity Index,* was based on surveys of chief financial managers, equity analysts, bankers, and the PWC's consultants in each country. An estimate of adverse effects of opacity on the cost and availability of capital. A composite opacity-factor (O-Factor) based on the

						measure of the lack of transparency in five areas that affect capital markets: corruption, legal system, government economic policy, accounting standards and regulations. Complete update of all country data is conducted every 5 y. (light update each year).
ii.	**Unique indices based on opinion polls and surveys**					
ii.a	*Global Competitiveness Report (GCR) - World Economic Forum (WEF) (www.weforum.org)*	139	39	1979-2011 (annually)	Forum's executive opinion survey; the survey gathers the views of domestic and foreign-owned firms on a range of issues related to the business environment.	Relevant for measuring of corruption is the first pillar – Institutions (Ethics and corruption, Undue influence, Governance inefficiency). Questions about how commonly do firms make extra payments connected with trade permits, public utilities, tax payments, loan applications, awarding of public contracts, influencing laws, and getting favorable judicial decisions.
ii.b	*World Competitiveness Yearbook (WCY) - Institute for Management Development (IMD) (www.imd.ch)*	58	37	1989-2011 (annually)	Annual executive opinion survey of business people working in countries being assessed (ca 4 000 respondents).	Presence of bribing and corruption is a subcategory within government efficiency category.
ii.c	*Gallup World Poll (GWP) – The Gallup Organization (www.gallupworldpoll.com)*	146	39	2006-2010 (annually)	Annual survey of households.	Question: Is corruption in government widespread?
ii.d	*Global Corruption Barometer (GCB) - Transparency International (www.transparency.org)*	86	32	2003-2010 (annually)	Annual survey of households; carried out on behalf of TI by Gallup International Association.	Questions about frequency of corruption among public institutions (political parties, parliament/legislature, media, military, education system, judiciary, medical services, policy, registry and permit services, utilities, tax revenue, customs and public officials) and about frequency of household bribery.
ii.e	*Bribe Payers Index (BPI) - Transparency International (www.transparency.org)*	28	18	2011, 2008, 2006, 2002, 1999	Survey carried out on behalf of TI by Gallup International Association.	Ranks the likelihood of firms from leading exporting countries to bribe abroad. Question: In the business sectors with which you are most familiar, indicate how likely companies from the following countries are to pay or offer bribes to win or retain business (in respondent's country of residence)?
ii.f	*Business Environment and Enterprise Performance Survey (BEEPS) – EBRD World Bank (www.worldbank.org)*	31	8	1999, 2002, 2005, 2008 (every 3 y.)	Derived from firm or establishment responses to surveys of WB and EBRD in ECA (Europe and Central Asia).	Assesses administrative corruption, state capture and influence peddling in transition countries. Questions such as: How common is for firms to have to pay irregular additional payments to get things done? Percentage of total annual sales do firms pay in unofficial payments to public officials? How often do firms make extra payments in connection with taxes, customs, and judiciary? How problematic is corruption for the growth of your business?
iii.	**Unique expert assessments**					
iii.a	*International Country Risk Guide (ICRG)*	140	39	1984-2011	Expert assessments by CBIP in Syracuse, USA;	Allows for a time series analysis; corporate customer

	- Political Risk Services (PRS) (www.prsgroup.com)			(monthly)	subject to peer review at the topic and regional levels.	base; corruption measured as a component of political risk subcategory. Assesses political and grand corruption.
iii.b	*Country Viewswire Service - Economist Intelligence Unit (EIU) (www.eiu.com)*	179	39	1997-2010 (monthly)	Expert assessment by CBIP in London; network of over 500 correspondents, reviewed for consistency by panels of regional experts.	Before know as *Business International (BI)* and later taken over by EIU. Assesses corruption among public officials.
iii.c	*Global Insight Business Risk and Condition (WMO) (www.globalinsight.com)*	202	39	1998, 2000, 2002-2010	Expert Assessment by CBIP in Boston, USA; subject to regional reviews.	An assessment of the intrusiveness of the country's bureaucracy. The amount of red tape likely to be countered is assessed, as is the likelihood of encountering corrupt officials and other groups.
iii.d	*Global Insight Global Risk Service (www.globalinsight.com)*	146	36	1996, 1998, 2000, 2002-2009	Expert Assessment by CBIP in Boston, USA; subject to regional reviews.	Formerly known as the Country Risk Review was introduced by Data Resources, Inc (DRI). Provides assessment of the likelihood of various "risk events" occurring in the next five years. Estimating anticipated losses and costs of corruption. Data for Iceland, Luxembourg and Malta not available.
iii.e	*Institutional Profiles Database (IPD) – French Ministry of Economy (www.cepii.fr)*	123	37	2006, 2009 (every 3 y.)	Expert assessment of responses of each country office staff at two ministries.	Level of petty, large-scale and political corruption. Data for Iceland and Luxembourg not available.
iii.f	*Countries at the Crossroads – Freedom House (www.freedomhouse.org)*	70	3	2004-2007, 2010, 2011	Expert assessment by staff and local consultants; subject to centralized review process.	Anticorruption and transparency issues are one of the four categories assessed in developing countries.
iii.g	*Nations in Transit – Freedom House (www.freedomhouse.org)*	29	6	1995-2011 (annually)	Expert assessment by staff and local consultants; subject to centralized review process.	Ranking reflects the consensus of Freedom House and agreed standards. Covers transition economies in Eastern Europe and the Former Soviet Union.
iv.	**Sector specific assessment**					
iv.a	*Rural Sector Performance Assessments – International Fund for Agricultural Development (IFAD) (www.ifad.org)*	111	2	2004-2010	Expert assessment by IFAD country economists, subject to centralized review.	Accountability, transparency and corruption in rural areas. Available for Mexico and Turkey.
iv.b	*Open Budget Index (www.internationalbudget.org)*	94	18	2010, 2008, 2006	International Budget Partnership	Measures transparency and accountability of national budgets.
iv.c	*Report on Revenue Transparency of Oil and Gas Companies (www.transparency.org)*	n.a.	n.a.	2011, 2008	TI and Revenue Watch Institute; based on publicly available information or documents.	Rates 44 companies (representing 60% of global oil and gas production) on the public availability of information, how they report their financial results in all the countries where they operate.
iv.d	*Revenue Watch Index (www.transparency.org)*	41	4	2010	TI and Revenue Watch Institute	Index assesses information disclosure by governmental bodies in resource-rich countries, as well the legal and regulatory framework in place.
iv.e	*Global Corruption Report (www.transparency.org)*	n.a.	n.a.	2001, 2003-2010	TI	Experts examine the scale, scope and consequences of a wide range of corruption issues addressing a different sector each year (i.e. access to information, political corruption, construction, health, juridical systems, water, private sector and climate change).

iv.f	*Transparency in Reporting on Anti-Corruption (www.transparency.org)*	17	15	2009	TI	Assesses the extent to which 486 leading global companies report on the strategy policies and management systems they have in place for combating bribery and corruption.
v.	**Alternative**					
v.a	*Integrity Indicators - Global Integrity (GI) (www.globalintegrity.org)*	94	14	2004-2010	Expert assessment by local experts and peer reviewers.	Assesses the existence, effectiveness, and citizen access to key anti-corruption mechanisms; measures the gap between actual implementation and what is written in law.
v.b	*Bertelsmann Transformation Index(BTI) - Bertelsmann Foundation (www.bertelsmann-stiftung.de)*	128	12	2006, 2008, 2010, 2012	Expert assessment.	Assessment of anti-corruption policy.
vi.	**Regional and national initiative*** **					
vi.a	*Special Eurobarometer (www.ec.europa.eu/public_opinion)*	27	23	2007, 2009	Unique; subjective – surveys.	Survey in EU countries.
vi.b	*zIndex.cz (www.zindex.cz)*	1	1	2011	Unique; objective; empirical analysis of data.	Accesses the contracting authorities in the government procurement in the CR.
vi.c	*V4 INDEX – Transparency International CR (www.transparency.cz)*	4	4	2004	Unique; objective	Accesses effectiveness of anti-corruption tools in the public administration in capitals of the V4.
vi.d	*Corruption in the Czech Republic (www.gfk.cz)*	1	1	1998-2010	Unique; subjective – opinion polls.	Opinion polls in the Czech Republic by GfK CR.

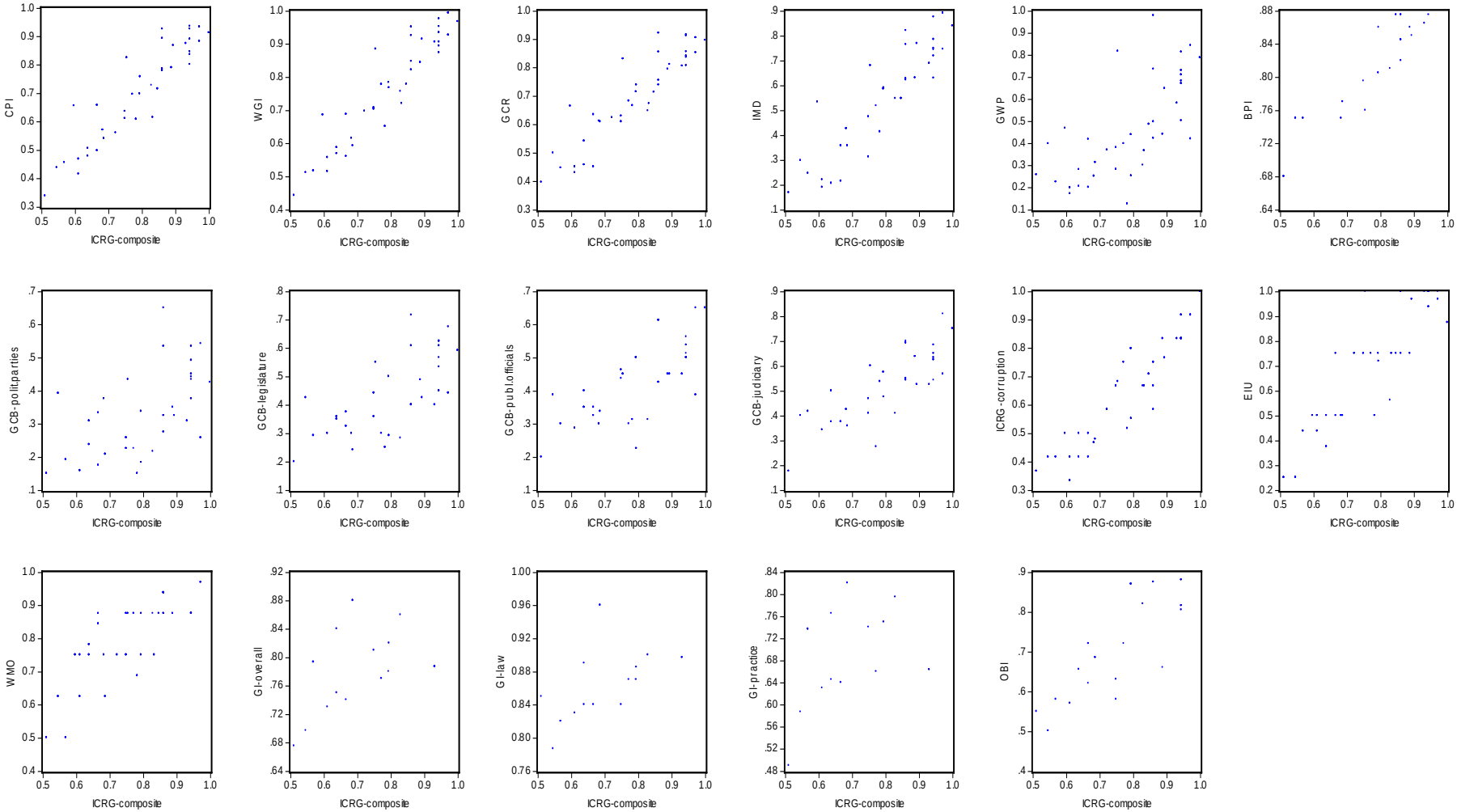
Note: *In the last assessment. ** Composite indices are based on both surveys and expert assessments. *** Relevant for the Czech Republic. CBIP (Commercial Business Information Provider), GOV (Public Sector Data Provider), NGO (Non-Governmental Organization Data Provider). Source: Own research.

Appendix B: Correlation matrix for Political Risk components (whole sample)

	Gov. stability	Socioec. conditions	Invest. profile	Internal conflict	External conflict	Corruption	Military in politics	Religion in politics	Law and order	Ethnic tensions	Democrat. accounta-bility	Bureauc. quality
Government stability	1											
Socioeconomic conditions	0,14	1										
Investment profile	0,15	0,73	1									
Internal conflict	0,21	0,58	0,54	1								
External conflict	0,21	0,37	0,47	0,58	1							
Corruption	0,10	**0,68**	0,61	0,49	0,33	1						
Military in politics	0,01	0,71	0,70	0,66	0,53	0,59	1					
Religion in politics	0,04	0,27	0,23	0,56	0,23	0,27	0,41	1				
Law and order	0,15	0,73	0,60	0,56	0,24	**0,68**	0,60	0,25	1			
Ethnic tensions	0,19	0,35	0,29	0,48	0,25	0,21	0,37	0,43	0,33	1		
Democratic accountability	-0,42	0,38	0,48	0,29	0,27	0,50	0,56	0,25	0,29	0,01	1	
Bureaucracy quality	-0,13	0,79	0,68	0,47	0,37	**0,72**	0,69	0,24	0,62	0,23	0,56	1

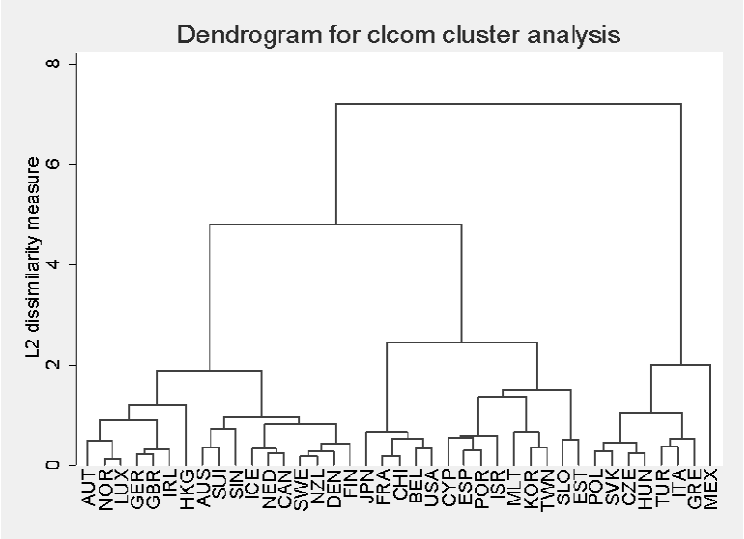
Note: There are 140 observations in the sample. The Political Risk components refer to the average of the 2007-2010 observations. A high value of Political Risk component means the country has good institutions. Source: Own calculations in EViews 5, based on the PRS Group's extract from ICRG Political Risk data (2011).

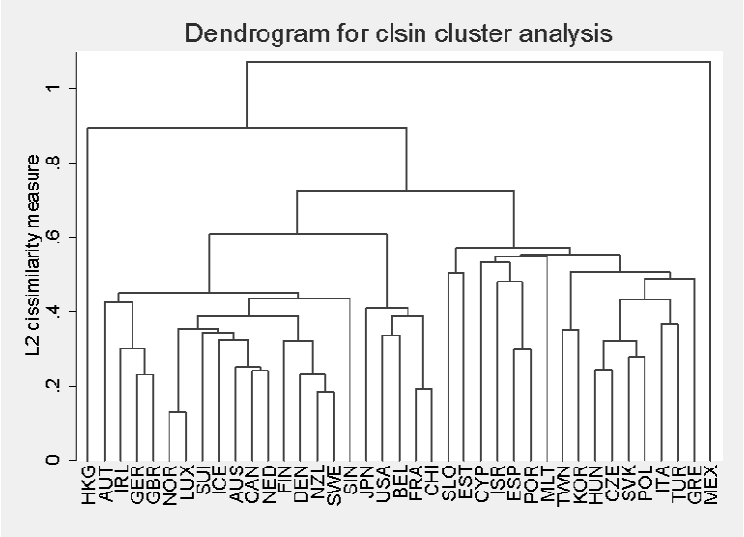
Appendix C: Multiple Scatter plots for Political Corruption Risk index and other corruption indices

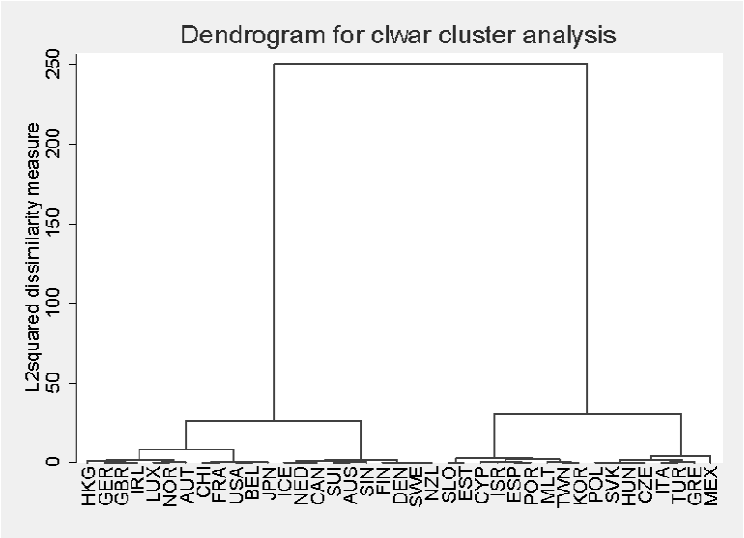


Note: The composite index of Political corruption risk is computed as the 2007-2010 average of three ICRG Political Risk indices: corruption, law and order and bureaucratic quality and the same weight is assigned to all components. Source: Own calculation in EViews 5, based on the PRS Group's extract from ICRG Political Risk data (2011) and publicly available corruption indices country rankings.

Appendix D: Hierarchical cluster analysis of developed countries; dendrogram for complete, single and Ward's linkage clustering, respectively







Note: There are 39 observations in the sample. Variables are 2007-2010 averages of corruption indices covering all 39 countries (CPI, WGI, GCR, GWP, EIU, WMO and ICRG). Source: Own calculations in Stata 9, based on the PRS Group's extract from ICRG Political Risk data (2011) and publicly available corruption indices country rankings.

Appendix E: A review of rating scale changes in the analyzed corruption indices

	Original scale		Normalized scale		Transformation applied	Source
	MIN	MAX	MIN	MAX		
1. CPI	0	10	0	1	x/10	http://cpi.transparency.org/cpi2011/
2. WGI	-2,5	2,5	0	1	(x-min)/(max-min)	www.govindicators.org
3. GCR - Corruption	n/a	n/a	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
4. IMD - Corruption	n/a	n/a	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
5. GWP - Corruption	n/a	n/a	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
6. BPI	0	10	0	1	x/10	http://bpi.transparency.org/
7. GCB	5	1	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
8. ICRG - Corruption	0	6	0	1	x/6	Researcher Dataset purchased at http://www.prsgroup.com/AcademicTitles.aspx
9. EIU - Corruption	n/a	n/a	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
10. WMO - Corruption	n/a	n/a	0	1	(x-min)/(max-min)	http://info.worldbank.org/governance/wgi/sources.htm
11. GI	0	100	0	1	x/100	http://www.globalintegrity.org/
12. OBI	0	100	0	1	x/100	http://internationalbudget.org/what-we-do/open-budget-survey/

Note: On normalized scale higher value always corresponds to lower corruption. Data are analyzed on a common 0-1 scale when applicable.