

# Economic Reforms and Corruption in Transition Countries

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## Abstract

Whereas the literature on the causes of corruption has ballooned in the last two decades, studies on transition nations are still in their infancy. Attention to transition countries is important because if some factors unique to these nations can be identified, then blanket recommendations for corruption reduction in all countries can be modified to suit transition economies. This paper uses annual data over 1998-2002 for 25 transition economies to study factors that cause corruption. Two different measures of corruption are employed to test the validity of our findings. Among the factors that significantly lower corruption, the degree of economic prosperity, economic freedom and progress toward transition seem most important.

**Keywords:** corruption, transition reforms  
JEL Classification: P3, H1

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*We would like to thank Prof. Vojmir Franičević for insightful comments on an earlier version of the paper presented at the 65<sup>th</sup> Anniversary Conference of the Institute of Economics, Zagreb. Remaining errors are our own.*

# 1 Introduction

Corruption in economies reduces economic efficiency and has negative implications for growth. Therefore, nations remain interested in reducing, if not eliminating, corrupt practices. Researchers have examined various factors that affect corruption. These factors include whether the prevalence of corruption in a country is affected by government size, judicial system, the degree of economic freedom, relative wages of government employees, the degree of red tape, religion, education, prosperity etc. (see Bardhan (1997), Jain (2001) and Rose-Ackerman (1999) for surveys of the pertinent literature). These studies have used country-specific as well as cross-country data. The effects of many of these variables on corruption generally remain inconclusive (see, for example, Graeff and Mehlkop (2003)). Micro-level studies, while very insightful and desirable, are especially problematic in the case of corruption as the true measure of corruption is unobservable, even more so at the individual level. Corrupt officials who are never caught have no incentive to reveal their true behavior. Furthermore, bribe-givers are not always forthcoming because, more often than not, they are benefiting either illegally or disproportionately from corrupt practices.

In this paper we examine the determinants of corruption in transition countries. More than two dozen independent nations were formed in the early nineties with the breakup of the Soviet Union and the general decline of communism. Attention to transition economies is important as many institutions in these new market economies are in their infancy. Reducing corruption is also an important assessment in the evaluation of political criteria in accessing the European Union (EU). Therefore, it is instructive to see what factors lead to corruption in the formative years and whether these factors are different from those that are known to lead to corrupt activities in other countries. On the one hand, there might be greater arbitrariness (leading to opportunities for corruption) in transition economies as institutions are not fully developed and there are fewer checks and balances. On the other hand, greater idealism among the public to build a better nation might act as a check against corruption. Transition nations might also be able to avoid some problems by learning from the experiences of other (mature) countries.

We use annual data 1998 to 2002 for 25 Eastern European transition economies to examine the determinants of corruption. Two different measures of corruption perceptions are used to test the robustness of our findings. The results are quite similar for both measures. In particular, we find that greater economic prosperity and greater economic freedom lead to lower corruption, as does greater progress in transition (i.e.,

greater maturity). However, different elements of transition progress have varying influences on corruption. Lower levels of corruption is observed in the countries that have more success in the process of accession to the EU. Any institutional factors unique to the 15 former Soviet republics do not seem to have a significant impact. Implications of these findings are discussed.

## 2 Model, Data and Estimation

The theoretical underpinnings of studies of corruption may be traced back to the seminal work of Becker (1968), where he argued that individuals balance the costs and benefits from engaging in illegal activities.<sup>1</sup> These incentives are influenced by external factors such as government policies. Researchers studying corruption have used various measures of costs and benefits of corruption to see which factors are significant. There is a lack of a consensus on the determinants of corruption in the literature as the significant influences on corruption vary depending on the measure of corruption used, the data set employed and the general inability to adequately measure corruption and quantify institutional details (Knack and Keefer (1995)).

The general form of the estimated equation is the following:

$$(1) \quad \text{CORRUPTION}_{it} = f(\text{INCOME}_{it}, \text{EDUCATION}_{it}, \text{GOVT SIZE}_{it}, \text{ECONOMIC FREEDOM}_{it}, \\ \text{TRANSITION PROGRESS}_{it}, \text{SOVIET INFLUENCE}) \\ i = 1, \dots, 25; t = 1, \dots, 5$$

Annual observations are used for 25 transition countries over the years 1998 to 2002. Two different measures of the dependent variable are used. One is the widely used corruption perceptions index from the Transparency International. This index varies from 0 to 10, with higher values signifying less corruption. Given the problems with adequately measuring the existence of corruption in a country, another corruption perceptions index available from The World Bank is used. This index has a smaller range from -2.5 to +2.5. However, higher values again represent more “clean” economies.<sup>2</sup>

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<sup>1</sup> See also Shleifer and Vishny (1993) and Tanzi (1998).

<sup>2</sup> Note that both indices are technically indices of perceptions of corruption. The Transparency International's index is an average of surveys about corruption perceptions. The World Bank index defines corruption as “the exercise of public power for private gain”.

The level of prosperity is given by the per-capita GDP to show that perhaps individuals in wealthier nations have lower discount rates and thus would be less eager to offer bribes to “jump the queue”. Government officials in wealthy nations are also relatively well paid and are thus less willing to accept/solicit bribes. Furthermore, wealthier nations generally have better institutional mechanisms to prevent corrupt practices. Greater literacy might reduce corruption when the population is better aware of its rights and duties and people are likely to be less corrupt themselves. They are also more likely to report illegal acts of others.<sup>3</sup> It might be easier to publicize the deeds of corrupt officials to an educated population and this might act as a deterrent. We use another, broader and consistent, measure of prosperity and education in the form of the Human Development Index. This index is based on three factors: literacy, GDP and life expectancy. Higher values of this index signify more literacy, greater prosperity and a longer life expectancy in a country.

Government size might also affect the level of corruption in a country. The size of government can be a deterrent or an inducement to corruption. On the one hand, if a larger government spending entails greater deterrence (policing) and enforcement measures, it might lead to lower corruption. This might be especially true in transition economies because they are in the nation building stages. On the other hand, a larger government might signify greater red tape and this is likely to result in greater corruption (Goel and Nelson (1998)).

Greater economic freedom generally signifies less governmental controls and more influence of market forces. Fewer governmental controls in turn reduce the discretionary power that government officials exercise and thus likely to reduce corrupt practices. Some factors unique to transition economies are captured in the transition index. This transition index encompasses many aspects including price liberalization, foreign exchange liberalization, degree of privatization, banking and enterprise reform and infrastructure reform. As these economies mature (i.e., greater transition progress), there is likely to be less corruption when institutions are fully developed and checks and balances minimize the discretionary powers of government officials. It would be interesting to see whether different elements of the transition phase have different influences on corruption. To that effect, we use progress toward privatization (disaggregated into large-scale and small-scale privatization) and indices of banking and

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<sup>3</sup> *Conversely, one could argue that an educated population might be more adept at devising ways to circumvent existing rules.*

nonbanking reforms.<sup>4</sup> These indices, in general, signify more play of market forces. For instance, privatization reduces bribe-seeking opportunities for government officials when their discretionary powers are reduced.<sup>5</sup> The level of general competitiveness in an economy is also used as an explanatory variable. The competitiveness index is also a component of the transition index.

Finally, some institutional factors might be unique to the former Soviet Union and we include a dummy variable to capture the influence of these factors.<sup>6</sup> For instance, to the extent there were some unique government procurement practices in the former Soviet Union, the resulting independent nations are likely to reform differently from other transition economies (due to the inertia of inherited institutions). This might have a significant influence on corruption. On the other hand, the issues facing the transition nations might have more to do with their socialist past and any linkages to the former Soviet Union might not exert any noticeable influence on corruption. The complete list of countries in our data set is in the Appendix and Table 1 provides the details about variable definitions and data sources.

### 3 Results and Discussion

We start with comparative analysis of the level of corruption in transition countries and the institutional assessments of these nations in approaching the European Union (EU). Tables 3, 4 and 5 report our estimation results on determinants of corruption. All equations were estimated using Ordinary Least Squares (OLS) and heteroscedasticity-consistent standard errors are reported. The number of observations across the two measures of corruption varies due to missing observations. The general fit of all regressions is quite decent as the adjusted-R2 is better than 0.5 in most cases and the F-value is statistically significant at least at the 5% level.

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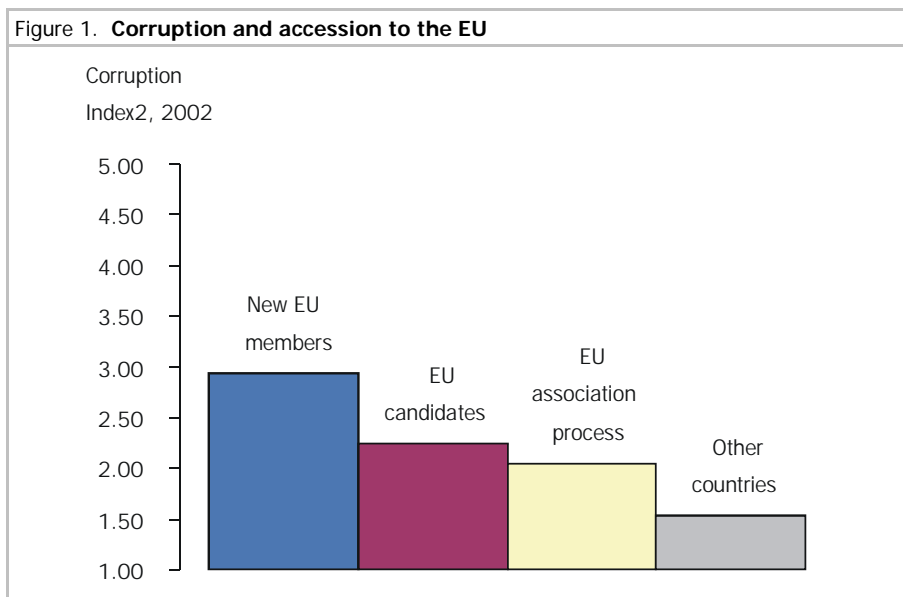
<sup>4</sup> *Recognizing some potential simultaneity issues, a one year lag on these indices is employed to make them somewhat pre-determined.*

<sup>5</sup> *However, in some transition countries the privatization processes themselves may be connected with corrupt practices. See Kaufmann and Siegelbaum (1996).*

<sup>6</sup> *However, we recognize that this framework is unable to capture all the factors potentially contributing to heterogeneities across countries.*

### 3.1 Corruption and Institutional Development

A general level of corruption prevalence in transition countries is given in Table 2. We used the corruption perception index to compare the assessments of transition countries in the accession process to the EU. In the process of accession to the EU, countries are evaluated on institutional development and in reducing corruption to satisfy political criteria for EU membership. The European Commission (March 2003) reported corruption in Albania and Croatia as a (major) problem in the stabilization and association process.<sup>7</sup> When ranked by the Corruption Index WB (2002), the top seven countries with the lowest corruption recently became new EU members, while on the bottom of the list is a group of other countries not included in the EU accession process (Table 2). Four groups of countries were formed according to their status to the EU. The associated average (perceptions) corruption index for each group clearly distinguished countries with reduced corruption and more success in accessing the EU and vice versa (Figure 1).



Source: *Governance Matters III: Governance indicators for 1996-2002*. Kaufmann et al., *The World Bank*, 2003.

Note: Corruption Index2 is an aggregate indicator that measures perceptions of corruption defined as the exercise of public power for private gain. Higher values correspond to lower corruption on a scale from 1 to 5.

<sup>7</sup> The stabilization and association process is a contractual relation between a country in the pre-accession process and the EU. The EU monitors the progress in reforms leading to satisfaction of the criteria of political and economic compliance to the EU requirements.

### 3.2 Education and Prosperity

Economic prosperity and education are the basic control factors that are included in nearly every empirical study of corruption. We find that a higher GDP per-capita leads to lower corruption, while the effect of literacy is not statistically significant.<sup>8</sup> However, since GDP might be capturing some literacy effects, we also employ a Human Development Index (HDI) that encompasses education, economic prosperity and health conditions. An improvement in the HDI results in lower corruption. This signifies that as these nations achieve greater prosperity, the level of corruption will go down and corruption is likely to be more prevalent in poorer transition nations. These results are consistent across the two measures of corruption (Tables 2 and 3). In an earlier study of the shadow economy in transition countries over 1990-97, Eilat and Zinnes (2002) find that greater economic prosperity resulted in a smaller shadow economy.

### 3.3 Government Size and Economic Competitiveness Educating Corruption

Table 4 examines the influence of government size and competitiveness on corruption. GovGDP (or general government expenditure as a percentage of GDP) captures the effect of government size on corruption. A larger government might involve better monitoring of discretionary powers of government officials or it might involve more bureaucratic red tape. It has been found that a bigger government size resulted in greater corruption in the case of the United States (Goel and Nelson (1998)). However, greater government size for transition countries leads to lower corruption and this effect is statistically significant when the Transparency International (TI) corruption perceptions index is used as the dependent variable. This suggests that perhaps greater government size in transition economies resulted from more expenditure on police (e.g., a larger police force and better training) and the judicial system - institutions that are likely to reduce corruption.<sup>9</sup> Therefore, good governance assessments such as government efficiency, rule of law and greater transparency in government policies and procedures may explain the corrupt practices better than government size itself. However, May et al. (2002) examined the effects of various governance measures on the level of unofficial

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<sup>8</sup> *The low variability in the literacy measure in our sample of high literacy transition countries might have some role in the statistical insignificance of the related coefficient.*

<sup>9</sup> *Although, in certain cases police and judiciary might themselves be corrupt.*

economy in transition countries, and found most of these measures to be statistically insignificant.

The effect of greater competitiveness is generally positive (i.e., greater competitiveness lowers corruption) and significant under one measure of corruption. The findings with respect to the effect of economic freedom are mixed in the literature. On the one hand, Goel and Nelson (2004) find that greater economic freedom reduced corruption in a large sample of developed and developing nations. On the other hand, Graeff and Mehlkop (2003) find that the effectiveness of economic freedom on corruption is sensitive to a country's development level. We also used a broad measure of competitiveness, called the transition index to examine its effect. This index is broader than the competition index because it includes many factors (e.g, privatization, competitiveness, infrastructure and banking reforms, etc.) beyond merely those enhancing competitiveness. An improvement in the transition index results in lower corruption and this finding is robust across the two measures of corruption. Given the composition of the transition index, this implies that comprehensive reforms involving price liberalization, privatization, foreign exchange liberalization, banking and infrastructure reforms are likely to result in lower incidence of corruption.<sup>10</sup>

Finally, to account for the different institutional aspects of former Soviet republics, a zero-one dummy variable (SDUM) is included that takes the value of one for the fifteen former republics and zero otherwise (see the Appendix). The resulting coefficient was not statistically significant in any case, suggesting that institutions unique to the former Soviet Union were not having a perceptible impact on the corrupt activities in transition countries.<sup>11</sup>

### 3.4 Transition Reforms and Corruption

Since the main contribution of this work is to understand the factors unique to transition economies in influencing the prevalence of corrupt activities in these countries, we

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<sup>10</sup> We also included as explanatory variables key macroeconomic variables such as inflation rate and the unemployment rate. The respective coefficients were not statistically significant suggesting that these variables did not affect corruption in an appreciable manner in transition economies. Details are available from the authors upon request.

<sup>11</sup> However, one should bear in mind the possibility that these institutions might still be prominent and that our dichotomous treatment is unable to capture the related complexities. Furthermore, our relatively small sample size prevents us from including country-specific dummy variables.



revisit the effect of transition progress in Table 5. Transition progress is disaggregated into large scale and small scale privatization and into banking and nonbanking reforms. These factors might affect the level of economic freedom to different degrees and can thus have varying influences on corruption. The decomposition of the scale of reforms is also important for policy purposes. While all the components of transition progress have the right sign (i.e., greater progress results in lower corrupt activity), the statistical significance of the coefficients varies. Nonbanking reforms seem to significantly lower corruption across both measures, while the effect of banking reforms is also positive and significant in one case. Greater privatization, however, does not seem to have a statistically significant effect. An important policy implication is that if corruption reduction is an important goal for policymakers, then attention to nonmarket reforms should take precedence over some other initiatives, such as privatization initiatives. Again, the broad measure of transition progress (TranIdx) significantly reduces corruption in both cases. The effects of the other variables, HDI and SDUM, are consistent with our earlier findings in Table 4.

## 4 Concluding Remarks

Whereas the literature on the causes of corruption has ballooned in the last two decades, studies on transition nations are still in their infancy. Attention to transition nations is important because if some factors unique to these nations can be identified, then blanket recommendations for corruption reduction in all countries can be modified to suit transition nations. This paper uses annual data over 1998 - 2002 for 25 transition economies to study factors that cause corruption. The underlying theoretical model draws on the seminal work of Becker (1968). Two different measures of corruption perceptions are employed to test the validity of our findings. Among the various factors that significantly lower corruption, the degree of economic prosperity, economic freedom and progress toward transition seem most important. Any lingering legacy from Soviet-era institutions does not seem to be having a perceptible effect on corruption.

The results show that the level of corrupt activity declines with economic prosperity. While the findings for transition countries are generally consistent with those found for broader samples of countries, our results suggest that a bigger government might not necessarily be contributing to greater corruption in transition nations. In fact, the effect of a larger government size in transition countries seems in fact to *decrease* corruption. Whether this effect persists as these economies mature remains to be seen. Furthermore,

the coefficient on the transition index is statistically significant in all cases. However, when the aggregate transition index is decomposed, the coefficients on the different components of the transition index not significant everywhere. This suggests that comprehensive efforts toward reform are more effective in reducing corruption, rather than piecemeal moves toward reforming some sectors of the economy. In particular, banking and nonbanking reforms seem to be relatively more effective at checking corruption than efforts toward greater privatization.

It is hoped that as better data become available further light can shed on the causes and effects of corruption in these countries. Possible extensions to this line of research include incorporating additional institutional details and to examine potential simultaneity issues between corruption and some of its determinants.

Table 1. Variable definitions and sources		
Variable	Definition (average [min; max])	Source
Corruption Index (TI)	Corruption perceptions (scale: 0 to 10); higher value, less corruption (3.47 [1.5; 6])	www.transparency.org
Corruption Index2 (WB)	Corruption perceptions (scale: -2.5 to +2.5); higher value, less corruption (-0.37 [-1.21; 1.08])	World Bank
GDPpc	Per-capita GDP (PPP US \$); (6616.4 [988; 18404])	IMF
Literacy Rate	Percent of literate population age 15 and above (97.93 [83.5; 100])	www.undp.org
Human Dev Idx (HDIIdx)	Human Development Index (simple average of life expectancy index, education index and GDP index); higher values better (0.773 [0.66; 0.88])	www.undp.org
LSprv-1	Index of large-scale privatization (lagged 1 year); higher value, more privatization (2.92 [1.0; 4.0])	EBRD
SSprv-1	Index of small-scale privatization (lagged 1 year); higher value, more privatization (3.70 [2.0; 4.3])	EBRD
BNKref-1	Index of banking reforms (lagged 1 year); higher value, more reforms (2.46 [1.0; 4.0])	EBRD
NBNKref-1	Index of nonbanking reforms (lagged 1 year); higher value, more reforms (2.12 [1.0; 3.7])	EBRD
GovGDP	General government expenditure (% of GDP) (35.0 [13.9; 56.6])	EBRD
Comp	Index of competition policy; higher value, more competition (2.2 [1.0; 3.0])	EBRD
TranIdx	Transition index; (scale: 1 to 4) Higher value, more progress (2.8 [1.3; 3.8])	EBRD
SDUM	Dummy variable for former Soviet republics (0.6 [0, 1])	

Table 2. Corruption rankings in transition countries, 2002 (Less corrupt to more corrupt)		
Country	EU status	Corruption Index2 (WB)
Slovenia	MC	3.39
Estonia	MC	3.16
Hungary	MC	3.10
Poland	MC	2.89
Czech Rep.	MC	2.88
Slovakia	MC	2.78
Lithuania	MC	2.75
Croatia	SAP*	2.73
Latvia	MC	2.59
Bulgaria	CC	2.33
Romania	CC	2.16
Armenia	none	1.78
Macedonia	SAP	1.77
Belarus	none	1.72
Kyrgyzstan	none	1.66
Albania	SAP	1.65
Moldova	none	1.61
Russian Federation	none	1.60
Ukraine	none	1.54
Georgia	none	1.47
Uzbekistan	none	1.47
Kazakhstan	none	1.45
Azerbaijan	none	1.43
Tajikistan	none	1.43
Turkmenistan	none	1.29

Source: Governance Matters III: Governance indicators for 1996-2002. World Bank, June 2003.

Note: Corruption Index2 is an aggregate indicator that measures perceptions of corruption defined as the exercise of public power for private gain. It reflects frequency of paying bribes to get things done, effects on the business environment, grand corruption in political arena and state capture by elite. Higher values correspond to better outcomes (lower corruption) on a scale from 1 to 5. (Original scale was -2.5 to +2.5).

MC-member countries: new EU members from May 2004. CC- candidate countries. SAP-countries in stabilization and association process to EU. None-countries not in the process of accession to the EU (former Soviet republics except Baltic states).

\* Croatia is ahead of other countries in SAP, and it is expected that Croatia will become an EU candidate country in 2004.

	Dependent variable: Corruption Index (TI)		Dependent variable: Corruption Index2 (WB)	
	GDPpc	0.0002** (0.00003)		0.0001** (0.00001)
Literacy rate	0.005 (0.16)		0.01 (0.007)	
HDIidx		16.05** (3.05)		10.47** (0.84)
N	50	50	38	38
adj. R2	0.54	0.39	0.72	0.75
F-value	29.3**	31.8**	49.1**	114.0**

Notes: All equations included a constant term. The results for the coefficient on the constant term are not reported but are available upon request. The number of observations varies between the two measures of corruption due to missing data. Heteroscedasticity-consistent standard errors are in parentheses below the parameter estimates. \*\* denotes significance at the 5% level.

	Dependent variable: Corruption Index (TI)							
	GDPpc							0.0001** (0.00004)
Literacy Rate							-0.04 (0.16)	0.05 (0.14)
HDIidx	10.57** (3.51)	10.66** (3.51)	9.80** (3.23)	13.01** (3.52)	9.26** (2.69)	10.72** (3.22)		
GovGDP			0.03* (0.01)	0.05** (0.02)	0.03 (0.02)			
Comp	1.31** (0.38)	1.34** (0.43)	1.06** (0.38)				0.69 (0.41)	
TranIdx					0.94** (0.37)	1.07** (0.43)		0.75* (0.39)
SDUM		0.04 (0.28)		0.009 (0.30)				
N	50	50	50	50	50	50	50	50
adj. R2	0.52	0.51	0.53	0.45	0.59	0.55	0.55	0.60
F-value	27.2**	17.7**	19.8**	14.6**	24.4**	31.7**	21.2**	25.3**

Notes: All equations included a constant term. The results for the coefficient on the constant term are not reported but are available upon request. SDUM is a dummy variable that takes the value of one for the fifteen former Soviet republics and zero for all other countries in our sample. Heteroscedasticity-consistent standard errors are in parentheses below the parameter estimates. \*\* denotes significance at the 5% level; \* denotes significance at the 10% level.

	Dependent variable: Corruption Index2 (WB)							
GDPpc							0.0001** (0.00002)	0.0001** (0.00001)
Literacy Rate							0.005 (0.009)	0.01 (0.008)
HDIdx	9.11** (1.46)	9.19** (1.54)	8.17** (1.87)	9.59** (1.40)	6.82** (1.50)	8.05** (1.30)		
GovGDP			0.007 (0.006)	0.007 (0.01)	0.009 (0.006)			
Comp	0.24 (0.20)	0.25 (0.20)	0.24 (0.20)				0.31 (0.21)	
TranIdx					0.37** (0.13)	0.35** (0.14)		0.41** (0.15)
SDUM		0.03 (0.11)		0.003 (0.12)				
N	38	38	38	38	38	38	38	38
adj. R2	0.76	0.75	0.75	0.74	0.80	0.80	0.73	0.80
F-value	58.4**	37.9**	38.9**	36.9**	52.1**	76.1**	34.5**	49.7**

Notes: All equations included a constant term. The results for the coefficient on the constant term are not reported but are available upon request. SDUM is a dummy variable that takes the value of one for the fifteen former Soviet republics and zero for all other countries in our sample. Heteroscedasticity-consistent standard errors are in parentheses below the parameter estimates.  
\*\* denotes significance at the 5% level

	Dependent variable: Corruption Index (TI)				Dependent variable: Corruption Index2 (WB)			
HDIdx	13.13** (3.61)	12.87** (3.79)	9.18** (2.04)	10.98** (3.29)	9.72** (1.06)	9.97** (1.03)	6.65** (1.40)	8.32** (1.39)
LSprv-1	0.37 (0.25)				0.10 (0.07)			
SSprv-1		0.37 (0.27)				0.06 (0.07)		
BNKref-1			0.47 (0.30)				0.21** (0.10)	
NBNKref-1			0.89** (0.25)				0.21** (0.11)	
TranIdx				1.12** (0.47)				0.37** (0.14)
SDUM	-0.24 (0.31)	-0.30 (0.30)	0.21 (0.18)	0.11 (0.25)	-0.01 (0.12)	-0.01 (0.12)	0.04 (0.08)	0.07 (0.09)
N	50	50	50	50	38	38	38	38
adj. R2	0.43	0.41	0.72	0.55	0.75	0.74	0.83	0.80
F-value	13.1**	12.5**	32.3**	20.8**	38.2**	36.3**	45.2**	49.9**

Notes: All equations included a constant term. The results for the coefficient on the constant term are not reported but are available upon request. The number of observations varies between the two measures of corruption due to missing data. SDUM is a dummy variable that takes the value of one for the fifteen former Soviet republics and zero for all other countries in our sample. Heteroscedasticity-consistent standard errors are in parentheses below the parameter estimates.  
\*\* denotes significance at the 5% level

## Appendix

### List of Transition Economies

Albania, Armenia\*, Azerbaijan\*, Belarus\*, Bulgaria, Croatia, Czech Republic, Estonia\*, Georgia\*, Hungary, Kazakhstan\*, Kyrgyzstan\*, Latvia\*, Lithuania\*, Macedonia, Moldova\*, Poland, Romania, Russian Federation\*, Slovakia, Slovenia, Tajikistan\*, Turkmenistan\*, Ukraine\*, Uzbekistan\*

*Note: \* denotes former Soviet republic.  
Data for Bosnia and Herzegovina and for Serbia and Montenegro are not available.*

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