A study on the relationship between corruption and government size: the role of democracy

Kotera, Go and Okada, Keisuke and Samreth, Sovannroeun

Graduate School of Economics, Kyoto University, Japan, Japan Society for the Promotion of Science (JSPS)

15 September 2010

A study on the relationship between corruption and government size: the role of democracy*

Go Kotera
Graduate School of Economics, Kyoto University, Japan

Keisuke Okada†
Graduate School of Economics, Kyoto University, Japan

Sovannroeun Samreth
Japan Society for the Promotion of Science (JSPS)
Graduate School of Economics, Kyoto University, Japan

September 2010

Abstract

Previous studies on the effect of government size on corruption have produced mixed results. For the purpose of explaining these ambiguous results, our study investigates the effect of government size on corruption by taking into account the role of democracy level in each country. Using annual data from 82 countries from 1995 to 2008, the estimation results indicate that an increase in government size can lead to a decrease in corruption if democracy level is sufficiently high and, in contrast, can lead to an increase in corruption if it is too low. As a robustness check, estimations using a different index of corruption and a different proxy for government size are also conducted. The results show that our main results are robust. Furthermore, to deal with endogeneity problems, we conduct an instrumental variable estimation, the results of which support our main results. These findings provide some important implications for policymakers seeking to conduct government intervention without aggravating corruption.

Keywords: Corruption; Government Size; Democracy; Instrumental Variable Estimation
JEL Classification: D73; H11; H50

*We are indebted to Akihisa Shibata for his insightful comments and encouragements. Samreth wishes to acknowledge the financial support from Japan Society for the Promotion of Science (JSPS). However, any remaining errors are our own. This paper is a revised version of previously circulated manuscript under the title "A panel study on the relationship between corruption and government size".

†Corresponding author. Graduate School of Economics, Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto, 606-8501, Japan. E-mail: keisuke.okada.1125@gmail.com.

1 Introduction

Corruption is a phenomenon widely observed in both developed and developing countries. Since it has various effects on society, corruption is a central topic in both political science and economics. In recent years, there have been a large number of empirical studies on corruption which can be generally classified into two categories. One stream of study focuses on the effects of corruption on economic performance, particularly economic growth, FDI, or the outcome of specific public expenditures (e.g., Mauro, 1995, 1998; Méndez and Sepúlveda, 2006; Rajkumar and Swaroop, 2008). The other looks at the determinants of corruption (e.g., Goel and Nelson, 1998; La Porta et al., 1999; Treisman, 2000; Glaeser and Saks, 2006; Serra, 2006; Del Monte and Papagni, 2007; Billger and Goel, 2009; Saha et al., 2009). Although some consensus is obtained regarding the determinants of corruption (see Serra, 2006), the role of some factors which seem to be related to corruption remains unclear. Our paper focuses on one such factor, government size, and its influence on corruption.

While minimum public services provided by the government, such as security, provision of infrastructure, and consolidation of the legal system, are necessary and important in stabilizing a country, it is well-known that an oversized government causes various inefficiencies. If government size is viewed as the degree of government intervention in remedying market failures, excessive intervention may inhibit market competition, i.e., government failures. For instance, Lal (1985) points out the misallocation of resources by a government, and social scientists such as Mills (1986) argue that government failure is more problematic than market failure. Government size can also be viewed as the number of bureaucrats and/or their expenses, such as wages and salaries. Niskanen (1971) defines government bureaucrats as agents seeking to maximize the size of their budgets, and points out that they have no incentive to be efficient. Acemoglu and Verdier (2000) indicate that government failures such as corruption are the by-products of government intervention, and in order to reduce corruption, higher wages are necessary to prevent bureaucrats from becoming corrupt. In this way, the relationship between the size of the government and its inefficiency, including corruption, has been an important topic in economics.

More precisely, there are two different ideas regarding the relationship between corruption and government size, which are empirically controversial. First, an increase in government size provides more opportunity for political rent-seeking, making the politicians and bureaucrats be more corrupt (e.g., Rose-Ackerman, 1978, 1999). This viewpoint is suggested by the "crime and punishment" model in Becker (1968). In other words, bigger governments increase the expected payoff of illegal activities and, as a result, give an incentive leading to more illegal activities such as corruption. Similar to this viewpoint, Alesina and Angeletos (2005) propose a theoretical model where bigger governments increase the possibility for corruption. They argue that when income inequality and unfairness are generated by corruption, the poor support redistributive policy intending to correct inequality and injustice, and the rich also

support it because they can extract more rent resulting from an increase in government size. As a result, the redistributive effect becomes small, and large corruption remains. Goel and Nelson (1998) empirically show that the size of the state and local governments in the United States has a strong positive influence on corruption.[1]

Second, in contrast to the above point of view, some prominent studies suggest that since a larger government promotes a system of checks and balances and strengthens accountability, an increase in government size must reduce corruption. This viewpoint is inferred from the fact that developed countries generally have bigger governments and are less corrupt than developing countries. Particularly, for Scandinavian countries, government size is larger than that of other developed countries, but they are the least corrupt. La Porta et al. (1999) and Billger and Goel (2009) provide evidence supporting this viewpoint. Specifically, Billger and Goel (2009), using quantile regression, show that an increase in government size leads to a reduction in corruption at almost all degrees of corruption.[2]

As seen above, there are mixed results concerning the relationship between corruption and government size. Focusing on the role of democracy, the aim of this paper is to examine the relationship between corruption and government size using cross-country data from 82 countries for the period from 1995 to 2008. Democracy is taken into account because it may play an important role affecting corruption. Specifically, with the matureness of democracy, various monitoring mechanisms, such as free and fair elections and media freedom in a country, will function well. In such circumstances, the incumbent may lose power if they are involved in major corruption.[3] The development of democracy can be regarded as an enhancement of checks and balances. Then, we can derive a hypothesis about the relationship between the size of the government and corruption as follows. In non-democratic or transitional countries, an increase in government size can aggravate corruption since monitoring on the government is weak. In contrast, when democracy is sufficiently consolidated, larger government size leads to a reduction in corruption because the monitoring mechanisms function well and can restraint corruption conducted by the politicians and bureaucrats.

The remainder of this paper is organized as follows. Section 2 discusses the estimation methodology and data. Section 3 shows the main empirical analysis and section 4 provides the robustness analysis. Section 5 concludes.

[1]Goel and Nelson (1998) also indicate that the effect of non-military federal spending on corruption is negative. They point out the possibility that there are significant nonlinearities in the relationship between corruption and government size.

[2]Regarding the most corrupt countries, however, the coefficient of government size is insignificant and positive. Billger and Goel (2009) argue that this might imply that minimum machinery of the government is necessary for fighting corruption.

[3]Rose-Ackerman (1999) argues that in democratic countries, parties and politicians need to finance political campaigns and, therefore, an election is vulnerable to special interest influence and is not sufficient to monitor the government. Then, to hold the government more accountable, a separation of the powers and a restriction of the powers through the mass media is needed. The index of democracy used for the analysis in this paper is created, considering these factors.

2 Estimation methodology and data

The main focus of our study is to investigate the effects of government size on corruption, taking into account the role of democracy. To achieve this purpose, the estimation equation is specified as:

$$\begin{aligned}\text{Corruption}_i = \beta_0 + \beta_1 \text{Government size}_i + \beta_2 \text{GDP per capita} \\ + \beta_3 \text{Democracy}_i + \beta_4 \text{Government size}_i \times \text{Democracy}_i + \beta_5 X_i + u_i,\end{aligned} \tag{1}$$

where u is a standard error term. X is a set of variables that may influence corruption, containing economic freedom and British legal origin. A more detailed explanation of the data and descriptive statistics are reported in Tables A2 and A3 of the Appendix. All variables except for the dummy variable for British legal origin are in natural logarithmic form. The rationale underlying our specification is as follows. GDP per capita is shown to have a significant influence on corruption in most previous studies. The inclusion of economic freedom as a component of the control variable vector, X, in the estimation equation is motivated by the fact that economic freedom influences corruption level as indicated by previous studies such as Saha et al. (2009). These two factors are considered to be the economic determinants of corruption. Generally, the corruption level in a country is expected to decrease when per capita income and/or economic freedom levels increase. Besides these economic factors, we also consider political and cultural factors as the determinants of corruption since corruption levels in each country depend on these factors as well, as indicated by previous studies. The inclusion of the political factor, democracy, in the estimation equation is motivated by La Porta et al. (1999) and Adserà et al. (2003), who point out that a high democracy level reduces corruption.[4] The inclusion of the cultural factor, British legal origin, as a component of the control variable vector, X, is based on La Porta et al. (1999). This factor is also found to be a significant determinant of corruption in other previous studies such as Treisman (2000). Countries adopting a British legal origin tend to be less corrupt.

Furthermore, to capture the role of democracy in the effects of government size on corruption, we add the interaction term between government size and democracy. This approach enables us to examine how democracy level influences the effect of government size on corruption, which is the main purpose of our study.

The annual data from 82 countries over the period from 1995 through 2008 is employed for the estimation. The list of countries in our sample is provided in Table A1 of the Appendix. We use a 5-year average (1995 to 1999, 2000 to 2004, and 2005 to 2008) for each variable in order to mitigate short-term economic fluctuations. We use two corruption indices released by the Transparency International (TI) and the Worldwide Governance Indicators (WGI) for

[4] Saha et al. (2009) provide empirical evidence that democracy increases corruption when the degree of economic freedom is too low.

our estimation. In addition, we consider two proxies for government size, which are the share of general government final consumption expenditures in GDP, and the share of population in the public sector to total population. The index of democracy is obtained by taking the average of political rights and civil liberties provided by the Freedom House.

As a benchmark, we report the OLS estimation results. For the fact that the OLS estimator may be biased due to endogeneity problems resulting from reverse causality, omitted variables, or measurement error, we conduct the instrumental variable (IV) estimation to deal with these problems, using the presidential system and the share of population who are under age 15 in the total population as the instruments for government size. The selection of these variables as the instruments is based on several prominent works. Specifically, Persson and Tabellini (1999, 2003) show that presidential regimes are associated with government size, and Shelton (2007) considers the share of population who are under age 15 as a determinant of government size.

3 Main empirical results

Table 1 presents the estimation results when the corruption perception index released by the TI is used as the corruption variable, and the share of general government final consumption expenditures in GDP is used as the proxy for government size. In column (1), in which we control for per capita income and democracy, the effect of government size on corruption is significantly negative. Column (2) shows the results when economic freedom and British legal origin are added. The results suggest that government size still has a significant negative impact on corruption. This finding is in line with that of Billger and Goel (2009) who use quantile regression and indicate that larger government size results in less corruption at almost all degrees of corruption.

[Table 1 here]

However, in the above analysis, the effect of government size may not be sufficiently captured. The reason is that, as described in section 1, an increase in government size may give politicians and bureaucrats more opportunity for larger political rent-seeking and, as a result, corruption may worsen. Furthermore, although bigger government size may increase corruption in some countries, as a whole the negative relationship between government size and corruption may conceal this positive effect if the interaction term is not included in the estimation. Then, the level of democracy penetration in a country can be considered to be a main factor in decreasing corruption in a country, as shown by Serra (2006). Given these, to address the effect of government size on corruption more precisely, we take into account the interaction effect between government size and democracy. This interaction term allows us to evaluate how the democracy level in a country influences the effect of government size on corruption. Columns (3) and (4) provide the results when the interaction term between

government size and democracy is added. The results indicate that the interaction term has a significant negative impact, implying that the partial effect of government size on corruption is decreasing with the level of democracy.

Furthermore, as mentioned above, endogeneity problems must be addressed because their existence can bias the OLS estimators. In dealing with these problems, we conduct the IV estimation, using the presidential system and the share of population under age 15 in the total population as the instruments for government size. While these two variables are important determinants of government size, as indicated by Persson and Tabellini (1999, 2003) and Shelton (2007), they may not have a direct effect on corruption. Columns (5) and (6) present the IV estimation results. The validity of the instruments is also confirmed from the econometric tests. Stock and Yogo (2005) indicate a problem of weak instruments and develop the critical value in F-statistics in the first stage regression. The values of the F-statistics in our analysis are well above those in Stock and Yogo (2005) in both columns (5) and (6).[5] In addition, the Sargan test of overidentification cannot reject the orthogonality conditions at 5 percent significance level. In columns (5) and (6), the coefficients of government size and its interaction term with democracy are significant. Given the results of the positive coefficient of government size and the negative coefficient of its interaction term with democracy, the partial effect of government size on corruption decreases with the level of democracy. In the case of column (6), the level of democracy such that this partial effect is zero is 1.49, which is approximately on the 20th percentile from the least democratic countries in our sample.[6] In other words, the partial effect of government size on corruption is positive if the level of democracy is above the threshold of 1.49, and it is negative if the level of democracy is below the threshold (see Fig. 1).[7] For example, evaluated at the average value from 2005 to 2008, the partial effect of government size on corruption is around zero in Zambia. In Malaysia where the democracy level is lower than the threshold, this effect is negative, implying that further government intervention causes corruption to increase. Alternatively, in Greece, where the democracy level is above the threshold level, corruption is reduced by increasing government size.

[Fig. 1 here]

These findings provide an explanation for the mixed results of the effect of government size on corruption. In the countries where democracy penetrates sufficiently, increasing government size causes a reduction in corruption because the government is monitored by free and fair elections or independent mass media in these countries. In contrast, in the coun-

[5]They are also satisfied with the earlier rule of thumb developed by Staiger and Stock (1997), who suggest that the F-statistic in the first stage should exceed 10.

[6]The value of the level of democracy is in natural logarithmic form.

[7]Evaluated at the average value from 2005 to 2008, there are 15 countries for which the democracy level is below the threshold value. In the order from less democratic to more democratic countries, these countries are Belarus, Russia, Pakistan, Nepal, Fiji, Uganda, Thailand, Gambia, Singapore, Bangladesh, Venezuela, Malaysia, Malawi, Sri Lanka, and Guatemala.

tries where democracy level is too low, the monitoring mechanisms do not function well, and as a result, larger government size results in worse corruption. Since corruption hinders investment and economic growth, as pointed out by many studies such as Mauro (1995), it is indispensable, especially for developing countries, to reduce corruption in order to stimulate investment and promote economic growth. Government intervention in economic activity is frequently needed in developing countries due to the presence of market failures. This intervention sometimes causes an increase in government size. The results from our study indicate that an increase in government size can lead to an increase in corruption levels if democracy level is too low. Therefore, through promoting democracy, if the mechanisms of checks and balances in a country, such as free and fair elections and a free and independent mass media, are well established, government intervention, which is necessary in resource reallocation and income redistribution to remedy market failures, does not necessarily increase corruption.

4 Robustness analysis

In this section, we check the robustness of our main empirical results in two manners. First, the estimations with a different corruption index obtained from the WGI are conducted. Second, another proxy of government size, which is the share of population in the public sector to total population, is considered.

Table 2 presents the estimation results when the WGI's corruption index is used as the dependent variable.[8] The specifications and the instruments are the same as those in Table 1. In columns (1) through (5), the sign and significance of the estimated coefficients are similar to those in Table 1. In column (6), where we conduct the IV estimation by considering the interaction term between government size and democracy, the coefficients of government size and its interaction term are significantly positive and negative respectively, which are also the same as those in Table 1. The threshold of the level of democracy is 1.55, which is similar to that in Table 1's column (6). Therefore, our empirical results in the previous section are robust for corruption indices.

[Table 2 here]

Next, we conduct the estimations using another proxy for government size—the share of population in the public sector to total population.[9] The estimation results are reported in Table 3, in which the specifications are the same as those in Tables 1 and 2.[10] Although

[8] The TI and the WGI create their corruption indices based on different original sources. The TI's corruption perception index captures perceptions of overall corruption among public officials and politicians. The WGI's corruption index captures the perceptions of the extent to which the public workers or officials in a country abuse their public power for their private interests, including both grand and petty corruption. Grand corruption involves senior officials, ministers, and heads of state and petty corruption entails immigration officials, customs clerks, policemen, and so on.

[9] Acemoglu and Verdier (2000) consider the share of population in the public sector to total population as the proxy for government size in their theoretical examination on market failure and government intervention.

[10] Due to the fact that data on the share of population in the public sector is few, our sample in this analysis

the coefficient of government size is not significant in column (1), it is significant when we take into account economic freedom and British legal origin in column (2). In column (3), where the interaction term is added, the coefficients of government size and its interaction term are significantly positive and negative respectively. While in column (4), the coefficient of government size is not significant, its interaction term is significantly negative and the null hypothesis that the coefficients of government size and its interaction term are simultaneously zero can be rejected in the F-test at 5 percent significance level. In columns (5) and (6), we also conduct the IV estimation using the same instruments for government size. As in the case of column (4), in column (6), although the coefficient of government size is not significant, the coefficient of interaction terms between government size and democracy is significantly negative and, in addition, we can reject the null hypothesis that the coefficients of government size and its interaction term with democracy are jointly zero in the F-test at 5 percent significance level. The threshold level of democracy separating the partial effect of government size on corruption into positive and negative is 1.43, which is similar to that in column (6) of Tables 1 and 2.

[Table 3 here]

It is clear that the main empirical results are robust, even if a different corruption index and a different proxy for government size are used. Our findings suggest that, while an increase in government size worsens corruption in the countries where democracy level is too low, bigger government size reduces corruption in the countries in which democracy penetrates sufficiently.

5 Conclusion

Previous studies have provided mixed results for the relationship between corruption and government size. As an attempt to explain these ambiguous results, we investigate the effect of government size on corruption, taking into account the role of democracy. Our estimation results indicate that an increase in government size decreases corruption if democracy sufficiently penetrates, and, in contrast, increases corruption if the democracy level is too low. These results are robust even if we use a different index of corruption and a different proxy for government size. Furthermore, in dealing with endogeneity problems, we conduct the instrumental variable estimation, the results of which support our main results.

Our findings have important implications for policymakers in dealing with policies to reduce corruption. Although government intervention can remedy market failures and play an important role in economic development, it can lead to an increase in government size. If democracy does not work well in a country, larger government size may lead to a worsening of corruption. In order to utilize the government's intervention role without increasing

includes only 50 countries.

corruption, the promotion of democracy is indispensable, because with the progress of democracy, checks and balances will function well, making an increase in government size cause a reduction in corruption.

Appendix

A1 List of countries in the sample

Our sample contains 82, 81, and 50 countries in the estimation in Tables 1, 2, and 3, respectively, as described in Table A1. The number in parentheses indicates the number of the table in which the country is included for the estimation. Due to data availability, the sample size is different in each regression.

[Table A1 here]

A2 Data definitions and sources

[Table A2 here]

[Table A3 here]

References

[1] Acemoglu, D., & Verdier, T. (2000). The choice between market failures and corruption. *American Economic Review*, 90, 194-211.

[2] Adserà A., Boix, C., & Payne, M. (2003). Are you being served? political accountability and quality of government. *Journal of Law, Economics, and Organization*, 19, 445-490.

[3] Alesina, A., & Angeletos, G.-M. (2005). Corruption, inequality, and fairness. *Journal of Monetary Economics*, 52, 1227-1244.

[4] Becker, G. S. (1968). Crime and punishment: an economic approach. *Journal of Political Economy*, 76, 169-217.

[5] Billger, S. M., & Goel, R. K. (2009). Do existing corruption levels matter in controlling corruption? cross-country quantile regression estimates. *Journal of Development Economics*, 90, 299-305.

[6] Del Monte, A., & Papagni, E. (2007). The determinants of corruption in Italy: regional panel data analysis. *European Journal of Political Economy*, 23, 379-396.

[7] Glaeser, E. L., & Saks, R. E. (2006). Corruption in America. *Journal of Public Economics*, 90, 1053-1072.

[8] Goel, R. K., & Nelson, M. A. (1998). Corruption and government size: a disaggregated analysis. *Public Choice*, 97, 107-120.

[9] Lal, D. (1985). *The poverty of 'development economics'*. Cambridge: Harvard University Press.

[10] La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The quality of government. *Journal of Law, Economics, and Organization*, 15, 222-279.

[11] Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics*, 110, 681-712.

[12] Mauro, P. (1998). Corruption and the composition of government expenditure. *Journal of Public Economics*, 69, 263-279.

[13] Méndez, F., & Sepúlveda, F. (2006). Corruption, growth and political regimes: cross country evidence. *European Journal of Political Economy*, 22, 82-98.

[14] Mills, E. S. (1986). *The burden of government*. Stanford: Hoover Institution Press.

[15] Niskanen, W. A. (1971). *Bureaucracy and representative government*. Chicago: Aldine/Atherton.

[16] Persson, T., & Tabellini, G. (1999). The size and scope of government: comparative politics with rational politicians. *European Economic Review*, 43, 699-735.

[17] Persson, T., & Tabellini, G. (2003). *The economic effects of constitutions*. Cambridge: MIT Press.

[18] Rajkumar, A. S., & Swaroop, V. (2008). Public spending and outcomes: does governance matter? *Journal of Development Economics*, 86, 96-111.

[19] Rose-Ackerman, S. (1978). *Corruption: a study in political economy*. New York: Academic Press.

[20] Rose-Ackerman, S. (1999). *Corruption and government: causes, consequences, and reform*. Cambridge: Cambridge University Press.

[21] Saha, S., Gounder, R., & Su, J.-J. (2009). The interaction effect of economic freedom and democracy on corruption: a panel cross-country analysis. *Economics Letters*, 105, 173-176.

[22] Serra, D. (2006). Empirical determinants of corruption: a sensitivity analysis. *Public Choice*, 126, 225-256.

[23] Shelton, C. A. (2007). The size and composition of government expenditure. *Journal of Public Economics*, 91, 2230-2260.

[24] Staiger, D., & Stock, J. H. (1997). Instrumental variables regression with weak instruments. *Econometrica*, 65, 557-586.

[25] Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. In D. W. K. Andrews, & J. H. Stock (Eds.), *Identification and inference for econometric models: essays in honor of Thomas Rothenberg* (pp. 80-108). Cambridge: Cambridge University Press.

[26] Treisman, D. (2000). The causes of corruption: a cross-national study. *Journal of Public Economics*, 76, 399-457.

Table A1: List of countries

Argentina	(1, 2, 3)	France	(1, 2)	Netherlands	(1, 2)	Uganda	(1, 2, 3)
Australia	(1, 2, 3)	Gambia	(1, 2)	New Zealand	(1, 2)	Ukraine	(1, 2, 3)
Austria	(1, 2)	Germany	(1, 2, 3)	Nicaragua	(1, 2)	United Kingdom	(1, 2, 3)
Bangladesh	(1, 2)	Ghana	(1, 2)	Norway	(1, 2, 3)	United States	(1, 2, 3)
Barbados	(1, 2)	Greece	(1, 2, 3)	Pakistan	(1, 2)	Uruguay	(1, 2, 3)
Belarus	(1, 2, 3)	Guatemala	(1, 2, 3)	Papua New Guinea	(1, 2)	Venezuela	(1, 2, 3)
Belgium	(1, 2, 3)	Honduras	(1, 2)	Paraguay	(1, 2)	Zambia	(1, 2)
Belize	(1, 2)	Hungary	(1, 2, 3)	Peru	(1, 2, 3)		
Bolivia	(1, 2, 3)	Iceland	(1, 2)	Philippines	(1, 2, 3)		
Botswana	(1, 2, 3)	India	(1, 2, 3)	Poland	(1, 2)		
Brazil	(1, 2, 3)	Ireland	(1, 2, 3)	Portugal	(1, 2)		
Bulgaria	(1, 2)	Israel	(1, 2, 3)	Romania	(1, 2, 3)		
Canada	(1, 2, 3)	Italy	(1, 2)	Russia	(1, 2, 3)		
Chile	(1, 2, 3)	Jamaica	(1, 2)	Senegal	(1, 2)		
Colombia	(1, 2, 3)	Japan	(1, 2, 3)	Singapore	(1, 2)		
Costa Rica	(1, 2, 3)	Korea (South)	(1, 2)	Slovakia	(1, 2, 3)		
Cyprus	(2, 3)	Latvia	(1, 2, 3)	South Africa	(1, 2, 3)		
Czech	(1, 2, 3)	Luxembourg	(1, 2, 3)	Spain	(1, 2, 3)		
Denmark	(1, 2, 3)	Malawi	(1, 2)	Sri Lanka	(1, 2, 3)		
Dominican Republic	(1, 2)	Malaysia	(1, 2, 3)	St. Vincent and and the Grenadines	(1, 2)		
Ecuador	(1, 2)	Malta	(1, 2, 3)	Sweden	(1, 2, 3)		
El Salvador	(1, 2)	Mauritius	(1, 2, 3)	Switzerland	(1, 2, 3)		
Estonia	(1, 2, 3)	Mexico	(1, 2, 3)	Thailand	(1, 2, 3)		
Fiji	(1, 2)	Namibia	(1, 2)	Trinidad and Tobago	(1, 2, 3)		
Finland	(1, 2, 3)	Nepal	(1, 2)	Turkey	(1, 2, 3)		

Table A2: Data definitions and sources

Variable	Description	Source
Corruption (TI)	Corruption perception index. The variable is rescaled so that a larger value indicates more corruption.	Transparency International
Corruption (WGI)	Control of corruption. The variable is rescaled so that a larger value indicates more corruption. Note that the WGI provides the data in 1996, 1998, 2000, and each year from 2002 to 2008.	World Development Indicators 2009
Government size (final consumption)	General government final consumption expenditures as a share of GDP.	World Development Indicators 2009
Government size (people in public sector)	The share of population in the public sector to total population.	World Development Indicators 2009 and the LABORSTA, the International Labour Organization (ILO) database.
GDP per capita	GDP per capita is the real GDP per capita at purchasing power parity in 2005 international dollars.	World Development Indicators 2009
Democracy	The Freedom House provides two indices of political rights and civil liberties. Democracy is defined as the average of these two variables. This variable is rescaled so that larger value indicates a greater level of democracy.	Freedom House
Economic freedom	We define economic freedom as the average value of eight indices: business freedom, trade freedom, fiscal freedom, monetary freedom, investment freedom, financial freedom, property rights, and labor freedom from 2005 to 2008, and the average values of first seven indices from 1995 to 2004 because the labor freedom index provided by the Heritage Foundation is only available from 2005.	Heritage Foundation
Legal origin (UK)	Dummy variables for legal systems whose origin is Anglo-Saxon Common Law (UK). Other than UK legal origin, La Porta et al. (1999) categorize legal origin into French Civil Law (FR), German Civil Law (GE), Socialist Law (SO), or Scandinavian Law (SC).	La Porta et al. (1999)
Presidential system	Dummy variable for the form of the government. It equals to one for countries adopting the presidential regimes, and zero otherwise. The regimes included in presidential regimes are those where it is not necessary to get the confidence of the assembly for the executive (even if an elected president is not chief executive, or if there is no elected president). Most semi-presidential and premier-presidential systems are classified as parliamentary.	Persson and Tabellini (2003)
Share of population under age 15 years	The share of the population aging from 0 to 14 years in the total population.	World Development Indicators 2009

Table A3: Descriptive statistics

Variables	No. of countries	Observations	Mean	Std. Dev.	Min.	Max.
Corruption (TI)	81	228	4.9310	2.3904	0.2000	8.9000
Corruption (WGI)	82	241	2.0950	1.0724	0.0088	3.7873
Government size (final consumption)	82	241	0.1577	0.0504	0.0454	0.3012
Government size (people in public sector)	50	133	0.0821	0.0493	0.0093	0.2545
GDP per capita	82	241	14,967.5898	13,065.8405	647.8680	70,570.3047
Democracy	82	241	5.6989	1.3111	1.5000	7.0000
Economic freedom	81	237	66.1769	9.4076	40.3257	87.0829
Legal origin (UK)	82	241	0.3693	0.4836	0	1
Presidential system	82	241	0.3900	0.4888	0	1
Share of population under 15 years	82	241	0.2712	0.0999	0.1353	0.4944

Notes:

1. The values for each variable are based on the average values of 5-year average for the period 1995-2008.

Table 1: The effect of government size on corruption

Dependent variable: Corruption (TI)

Government size: Share of general government final consumption expenditure in GDP

	OLS	OLS	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Government size	-0.3371***	-0.3308***	3.5565***	2.5681***	5.5065***	2.9084*
	(0.1290)	(0.1199)	(0.7108)	(0.6999)	(1.6411)	(1.7436)
GDP per capita	-0.3976***	-0.3100***	-0.3867***	-0.3081***	-0.3894***	-0.3094***
	(0.0446)	(0.0517)	(0.0419)	(0.0499)	(0.0422)	(0.0495)
Democracy	-0.2474	-0.0074	-4.6592***	-3.3228***	-6.8123***	-3.7031*
	(0.1666)	(0.1678)	(0.8089)	(0.8059)	(1.8227)	(1.9575)
Government size * Democracy			-2.3436***	-1.7482***	-3.4831***	-1.9478*
			(0.4216)	(0.4163)	(0.9618)	(1.0251)
Economic freedom		-1.6451***		-1.4456***		-1.4210***
		(0.3709)		(0.3607)		(0.3738)
Legal origin (UK)		-0.2324***		-0.1683**		-0.1616*
		(0.0821)		(0.0806)		(0.0855)
Constant	4.8080***	10.5701***	12.1178***	15.2548***	15.8665***	15.8164***
	(0.5430)	(1.2563)	(1.4104)	(1.6468)	(3.1744)	(3.1007)
R^2	0.50	0.58	0.56	0.61	0.55	0.61
First stage F statistic					26.0	20.2
Sargan test					p =0.080	p =0.65
Number of countries	81	80	81	80	81	80
Observations	228	226	228	226	228	226

Notes:

1. The asterisks ***, ** and * indicate the rejection of the null hypothesis at 1%, 5% and 10% of significance levels, respectively.
2. The numbers in parentheses are standard errors.
3. All variables are in natural logarithmic form except for British legal origin and the presidential system.

Table 2: Robustness analysis on the effect government size on corruption

Dependent variable: Corruption (WGI)

Government size: Share of general government final consumption expenditure in GDP

	OLS	OLS	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Government size	-0.3790**	-0.3798***	4.5454***	3.6146***	6.7595***	4.8762**
	(0.1463)	(0.1406)	(0.8239)	(0.8259)	(2.1085)	(2.2725)
GDP per capita	-0.4614***	-0.3560***	-0.4487***	-0.3553***	-0.4516***	-0.3605***
	(0.0511)	(0.0620)	(0.0476)	(0.0591)	(0.0479)	(0.0592)
Democracy	-0.2413	-0.0069	-5.8343***	-4.5967***	-8.2878***	-6.0129**
	(0.1878)	(0.1922)	(0.9393)	(0.9542)	(2.3470)	(2.5608)
Government size * Democracy			-2.9598***	-2.4082***	-4.2540***	-3.1488**
			(0.4884)	(0.4913)	(1.2352)	(1.3363)
Economic freedom		-1.8277***		-1.5259***		-1.4268***
		(0.4399)		(0.4240)		(0.4516)
Legal origin (UK)		-0.2146**		-0.1385		-0.1175
		(0.0962)		(0.0930)		(0.0987)
Constant	4.3792***	10.7329***	13.6719***	17.1342***	17.9409***	19.1986***
	(0.6106)	(1.4931)	(1.6356)	(1.9321)	(4.0842)	(3.9620)
R^2	0.48	0.55	0.55	0.59	0.54	0.59
First stage F statistic					21.4	17.0
Sargan test					p =0.40	p =0.78
Number of countries	82	81	82	81	82	81
Observations	241	237	241	237	241	237

Notes:

1. The asterisks ***, ** and * indicate the rejection of the null hypothesis at 1%, 5% and 10% of significance levels, respectively.
2. The numbers in parentheses are standard errors.
3. All variables are in natural logarithmic form except for British legal origin and the presidential system.

Table 3: Robustness analysis on the effect government size on corruption

Dependent variable: Corruption (TI)

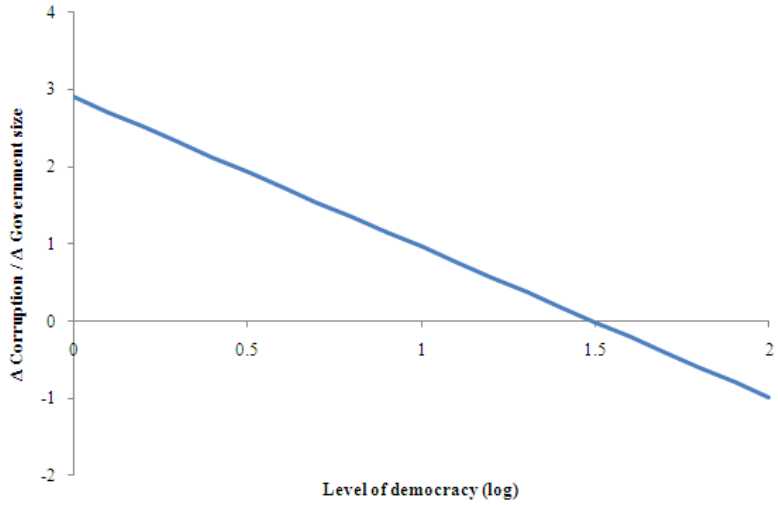
Government size: Share of population in public sector in total population

	OLS	OLS	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Government size	-0.1134	-0.2027**	0.7810**	0.5584	1.9999**	1.4016
	(0.0919)	(0.0986)	(0.3902)	(0.4073)	(1.0066)	(0.9355)
GDP per capita	-0.5158***	-0.3918***	-0.5257***	-0.4253***	-0.5726***	-0.4924***
	(0.0815)	(0.0996)	(0.0802)	(0.1001)	(0.0891)	(0.1197)
Democracy	-0.5548***	-0.3063	-1.7755***	-1.3763**	-3.3087**	-2.4899**
	(0.2117)	(0.2453)	(0.5583)	(0.6066)	(1.2949)	(1.2663)
Government size * Democracy			-0.5776**	-0.4809*	-1.3224**	-0.9830*
			(0.2451)	(0.2498)	(0.6179)	(0.5602)
Economic freedom		-1.1489**		-0.9047		-0.5482
		(0.5788)		(0.5867)		(0.6816)
Legal origin (UK)		-0.0729		-0.0740		-0.0716
		(0.1075)		(0.1064)		(0.1053)
Constant	6.8510***	9.8552***	8.7784***	10.8102***	11.6903***	11.8075***
	(0.8039)	(1.7481)	(1.1373)	(1.7995)	(2.4947)	(2.0418)
R^2	0.53	0.55	0.55	0.56	0.52	0.55
First stage F statistic					11.7	14.3
Sargan test					p =0.15	p =0.16
Number of countries	50	50	50	50	50	50
Observations	133	133	133	133	133	133

Notes:

1. The asterisks ***, ** and * indicate the rejection of the null hypothesis at 1%, 5% and 10% of significance levels, respectively.
2. The numbers in parentheses are standard errors.
3. All variables are in natural logarithmic form except for British legal origin and the presidential system.

Fig. 1: The partial effect of government size on corruption



Notes:

1. This figure is illustrated based on the result of column (6) in Table 1.