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## Causes of corruption: history, geography and government

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Rajeev K. Goel and Michael A. Nelson

Causes of corruption: History, geography  
and government



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# Contents

Abstract 5

Tiivistelmä .....	6
1 Introduction .....	7
2 Data and the model .....	9
3 Results .....	15
4 Conclusions .....	21
References .....	24

All opinions expressed are those of the authors and do not necessarily reflect the views of the Bank of Finland.

Rajeev K. Goel\* and Michael A. Nelson\*\*

## Causes of corruption: History, geography and government

### Abstract

Corruption, which remains a serious problem in many countries, has prompted considerable research in recent years. This paper adds to the extant literature with insights on factors influencing corrupt activity. Using cross-country data for about 100 nations, the roles of national history, geography, and government are examined to see how they affect conditions for corruption, both qualitatively and quantitatively. The innovative aspects of this research include use of a wide set of historical, geographical, and governmental determinants of corruption, as well as detailed assessment of several previously considered determinants. The main issues addressed are the effects of the size and scope of government on the incidence of corruption across countries, and the significance of historical and geographic factors in corruption. Regarding the first question, the authors find the size and scope of government can significantly affect corruption. On the second, it is shown that historical institutional inertia in older countries and new rent-seeking opportunities in younger nations can encourage corruption, while certain geographic factors can mitigate corruption. The paper ends with discussion aimed at the policymaker.

JEL Classification codes: H0, P0

Keywords: Corruption, bribery, government size, government scope, rent-seeking, history, geography

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Rajeev K. Goel and Michael A. Nelson

## Causes of corruption: History, geography and government

### Tiivistelmä

Korruptio on edelleen vakava ongelma monissa maissa, ja siksi siihen liittyvä tutkimus on lisääntynyt viime vuosina. Tässä tutkimuksessa selvitetään korruptioon vaikuttavia tekijöitä. Noin 100 maata käsittävän aineiston avulla voidaan tarkastella maiden historian, maantieteen ja julkisen sektorin vaikutusta korruptioon sekä kvantitatiivisesti että kvalitatiivisesti. Tutkimus eroaa aiemmista nimenomaan siten, että aiemmin käytettyihin tekijöihin lisätään hyvin monia historiaan, maantieteeseen ja julkiseen sektoriin liittyviä muuttujia selittäessä korruptiota. Tulosten mukaan julkisen sektorin koko ja tehtävien laajuus vaikuttavat korruptioon. Lisäksi historiallisten tekijöiden paino voi lisätä korruptiota vanhemmissa valtioissa, kun taas uusissa valtioissa saattaa syntyä enemmän tilaisuuksia korruptiolle. Jotkin maantieteelliset tekijät näyttävät vähentävän korruptiota. Loppupäätelmissä pohditaan keinoja, joilla korruptiota voisi vähentää.

Asiasanat: korruptio, lahjonta, julkisen sektorin koko, julkisen sektorin tehtävät, rent seeking, historia, maantiede

# 1 Introduction

Corruption continues to be a serious problem for many countries. The World Bank estimates that globally about \$1 trillion in bribes are paid out each year – a fairly substantial figure, given that e.g. the total size of the world economy in 2001-2002 was \$30 trillion. In recent years, international organizations such as the United Nations, the World Bank and the OECD have made corruption control a significant focus of their agendas. The United Nations Convention Against Corruption, adopted in December 2003, today includes 140 signatories to increased cooperation in fighting corruption.<sup>1, 2</sup> The effectiveness of such initiatives in curbing corruption, however, remains unclear.

There has been considerable empirical research in recent years on the causes and effects of corruption across countries. Ades and Di Tella (1997), Bardhan (1997), Jain (2001) and Lambsdorff (2006b) provide extensive literature reviews, and Serra (2006) and Tanzi (1998) give useful analyses. Yet the connections between variables are often ambiguous (e.g. the effect of government size on corruption and the influence of democracy on corruption) and data on corrupt activity are notoriously inadequate. There are two reasons for this. First, it is practically impossible to measure the extent of corrupt activity when it is shrouded in secrecy. Second, it is difficult to quantify the institutional and cultural factors that bear on corruption.

This paper adds to the extant literature by using cross-country data for about 100 nations to examine the role of historical factors, geographic influences, and government on corruption. As evidenced by the corruption literature review of Jain (2001), our focus on historical and geographic factors is apparently novel. Moreover, we consider the role of government intervention in the economy, both in terms of size and scope, in greater detail than in the existing literature. Important innovations of this research include consideration of a wide set of historical, geographical, and government determinants of corruption, as well as examination of several previously considered determinants in more detail. Our results also carry implications for public policy, which can potentially be altered to reduce the incidence of corrupt activity.

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<sup>1</sup> [http://www.unodc.org/unodc/newsletter\\_2003-12-01\\_1\\_page003.html](http://www.unodc.org/unodc/newsletter_2003-12-01_1_page003.html)

<sup>2</sup> Corruption is generally defined as the use or abuse of public office for private gain. From an economic perspective, undesirable consequences of corruption involve increases in the costs of legal dealings and distributional concerns associated with favoring haves over have-nots. Conversely, corrupt acts might lead in some instances to efficiency gains for the haves.



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Country-specific factors such as the geographic expanse of a country affect both incentives for engaging in corrupt activities and the governance of such acts. Spread-out countries seem to be more susceptible to corrupt activities for two reasons. First, it is relatively harder to monitor government officials in geographically dispersed locations.<sup>3</sup> Consider, for example, the relative challenges of monitoring two potentially corruptible civil servants working for a customs department. One employee is stationed at a remote border crossing, while the other works in the customs central office in the country's capital. Other things being the same, the border official is more likely to take advantage of her discretionary control than her counterpart in the central office. The second, and less obvious, reason is that a "prisoner's dilemma" situation is less likely to arise when the employee is isolated. Shleifer and Vishny (1993) suggest the potential threat of colleagues telling on them can act as a deterrent for clustered corruptible employees. To account for the possible role of these factors, we include five measures of a country's geography: physical land area, degree of urbanization, extent of digital networking, natural resource endowments, and the average land area size of first-order administrative (subnational) governments. We then ask if expansive countries or countries with less geographically concentrated populations, *ceteris paribus*, are inherently more corrupt.

History shapes the cultural norms that dictate corrupt acts. Bribe-giving and bribe-taking may be socially acceptable in one country, while frowned upon elsewhere. Bribe-givers and bribe-takers also develop "efficient" mechanisms over time for engaging in corrupt practices. We use the number of years of national independence to identify the effect of historical influence.<sup>4</sup> Specifically, we distinguish between newly independent or transition countries and nations that have been independent for substantial periods of time.<sup>5</sup>

Lambsdorff (2006b) notes that the role of government can come into play in ways that can make corruption "hard to find" (see also Rose-Ackerman, 1999). For example, a large government might contribute to corruption by increasing red tape (Goel and Nelson, 1998) or promulgating regulations that induce individuals to seek illegal means to circumvent those rules (Graeff and Mehlkop, 2003). Large governments, of course, may also have

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<sup>3</sup> Progress in monitoring technologies (e.g. video surveillance, electronic real time transaction records) has made monitoring somewhat easier. We try to account for this aspect by including the extent of a nation's digital networking.

<sup>4</sup> We mostly use independence dates given in the CIA *World Factbook*. In those few instances where the nation has been under foreign occupation for a time (e.g. Germany), the year of independence is problematic.

<sup>5</sup> Some studies use years of democracy as an explanatory variable (Treisman, 2000). It seems that historical influence on corruption may be better captured by the years of independence.

the depth of resources to monitor for corrupt government activities via extensive policing and enforcement of good governance standards (La Porta et al., 1999; May et al., 2002). Further, the structure of the government machinery in terms of degree of decentralization may affect corrupt activity. Thus, we model decentralization using several measures and provide a comprehensive look at a broad sample of developing and developed countries via various avenues through which governments can affect the levels and nature of corruption.

Two key questions are addressed in this study:

1. What are the effects of the size and scope of the public sector on the incidence of corruption across countries?
2. How important are historical and geographic influences in affecting institutions that have a large bearing on corruption?

In addressing these questions, we control for factors identified in the literature as corruption determinants such as the stage of national development, strength of democratic institutions, and type of legal system.

It is our hope that these findings not only further the literature in this area but also are helpful to policymakers in national and cross-national contexts. It is conceivable, for example that one might find it useful to know whether blanket corruption reduction policies work effectively across nations, or whether anti-corruption policies need to be individually tailored to meet the unique circumstances of each nation.

## 2 Data and the model

The theoretical underpinnings of our model draw upon the seminal work of Becker (1968), in which individuals weigh the relative costs and benefits of illegal (corrupt) acts to make a “rational” choice. These cost and benefits are influenced by exogenous factors that include the role of the government and the socio-cultural environment. The socio-cultural environment in a country, in turn, has been shaped by its historical and country-specific in-

fluences. We take all these considerations into account to conduct the empirical investigation.

In determining the causes of corruption, a dependent variable, denoting the perceptions about corruption, is the corruption index from the Transparency International (TI). The TI index has been widely used in studies of corruption for about a decade.<sup>6, 7</sup>

The formal estimated equation takes the following form:

$$\begin{aligned} \text{Corrupt}_{it} = f(\text{Prosperity}_{it}, \text{Democracy}_{it}, \text{Legal System}_i, \text{Governmental} \\ \text{Characteristics}_{it}, \text{History}_i, \text{Geography}_i) \end{aligned} \quad (1)$$

$$i = 1, \dots, n; \quad t = 1995-97, 1998-2000, 2001-2003.$$

Subscript  $i$  denotes a country and  $t$  denotes time. Our pooled sample data set includes about 100 countries and three time periods: 1995-1997, 1998-2000, and 2001-2003. Details about the definitions of all the variables used in the analysis, the sources of data, and summary statistics are provided in Table 1. The countries included in the data set are listed in the Appendix.<sup>8</sup>

All equations based on (1) were estimated using LIMDEP and random effects models. These models have been widely used in data sets such as ours, i.e. cross-sectionally dominated with time-invariant variables included among the regressors (Beck and Katz, 1995, footnote 4).<sup>9</sup> Further, the Lagrange multiplier test signified the superiority of these models over models ignoring country-specific effects in all cases (see Tables 2 and 3).<sup>10</sup>

Our analysis begins with a “baseline” model consisting of three control variables that have been frequently incorporated into earlier empirical models on the determinants of corruption activity (Serra, 2006). In particular, a country’s level of economic prosperity (*Per Capita GDP*) is included in almost every study of the causes of corruption. Greater prosperity lowers the discount rates of both bribes-takers and bribe-givers, making them less eager to jump queues via illegal means. Furthermore, the opportunity costs associated

<sup>6</sup> For details, see [www.icgg.org/corruption.cpi\\_2004\\_faq.html](http://www.icgg.org/corruption.cpi_2004_faq.html).

<sup>7</sup> The World Bank uses a corruption index similar to the TI index. We ran several models with the World Bank index data to check the robustness of our findings. The results with the World Bank corruption measure were largely similar to those with the TI measures, so they are not reported here.

<sup>8</sup> Consistent data were not available for all countries in all three time periods. For most of the models estimated below, there were 53 countries in the data set for the earliest period in our data set, 87 countries for the middle period, and 105 countries in the most recent period.

<sup>9</sup> Greene (2002, p. E8-16) also advises estimating a random effects model in such situations.

<sup>10</sup> The results are quite similar to those obtained via OLS based on robust standard errors.

with punishment are greater for wealthier individuals and this might also act as a deterrent.<sup>11</sup> More prosperous nations are also able to spend more to educate their populations. A relatively well educated population not only likely to be more aware of its rights and duties and less likely to engage in corrupt practices, it is probably in a better position to amenable and understanding of anti-corruption policies and procedures.

Second, the extent of democratic institutions and attitudes in a nation affects corruption in complex ways. Democratic nations (*Democracy*) likely face lower degrees of corruption since corrupt officials, whether elected or appointed, face a threat of losing public office (i.e. their rent-seeking potential). In contrast, corruption offers unique rent-seeking opportunities in less democratic countries. As the disbursements of government contracts in a non-democratic environment are handled by a few appointed officials, the bureaucrats are in a position to allocate contracts out of turn (i.e. there are greater opportunities for rent-generating).<sup>12</sup> Further, special interest groups, including bribe-takers, bribe-givers, and anti-corruption forces, may be in better positions to organize in democratic societies and thus be able to push or defend their interests (Mitchell and Munger, 1991).

Finally, there is a strand of argument that the judicial framework of a country can affect the level of corruption (La Porta et al., 2004; and Treisman, 2000). That is, a consistent, well-defined legal system that clarifies potential costs of illegal acts may act as a deterrent to corruption-prone individuals. Borrowing from this earlier literature, countries with judiciaries following the English common law (*Common Law System*) is included as a control variable in almost all the models presented.<sup>13</sup> We also identify countries using socialist legal systems and countries using the French, German, and Scandinavian commercial codes.

We now turn to the potential determinants of corruption of primary interest.

**Government:** From one perspective, larger governments (*Size of Government*) may contribute to corruption through increased bureaucracy and red tape and via greater opportuni-

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<sup>11</sup> The relative distribution of income in a country might also influence the level of corrupt activity. We do not consider this aspect here.

<sup>12</sup> Kunicová (2006) fleshes out these theoretical arguments nicely.

<sup>13</sup> While governments can vary the degree of intervention in the economy relatively easily, systems of government and bodies of law tend to change infrequently.

ties to engage in corrupt activities (see Goel and Nelson, 1998; La Porta et al., 1999; and Rose-Ackerman, 1999). Some theoretical arguments surrounding the rent-generation by monopolist government officials are nicely developed by Shleifer and Vishny (1993). Alternatively, a relatively large government might reflect greater spending on law enforcement machinery (and greater checks and balances) that may decrease corruption.

Governments can impose significant rules and restrictions that create opportunities for rent-seeking by bureaucrats. To shed light on this, we add two measures of the degree of government intervention (scope of government) in the economy:

- *Government Intervention (1)*: An index based on the overall size and growth of the public sector (including state-owned enterprises), top marginal individual and corporate tax rates, monetary policy (inflation trends), and the degree of regulation on foreign investment, banking and finance, and wage and price controls.
- *Government Intervention (2)*: A narrower index of government intervention based only on monetary policy and the degree of government regulation used in the other measure of government intervention.

Since these measures come from the same source, they are fairly consistent across countries.<sup>14</sup> The basis for inclusion of these regulatory variables in the empirical setup is an assumption that a constrained economy creates opportunities for engaging in corrupt practices.

Finally, the decentralization of government functions could affect corruption in important ways. Greater decentralization may enable better monitoring and lower corrupt activities (local government officials are closer to voters), which would mitigate the principal-agent problem. On the other hand, greater decentralization could imply more red tape and thereby increase opportunities for generating rents. Brueckner (2000), for example, argues that corrupt activity is inherently more likely among subnational governments.

Little empirical work has been done on the link between government structure and the incidence of corruption.<sup>15</sup> We employ two measures of decentralization.<sup>16</sup> These meas-

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<sup>14</sup> Both government intervention measures are constructed from simple averages of selected components of the *Index of Economic Freedom* published by the Heritage Foundation (posted at [http://www.heritage.org/research/features/index/chapters/Chapter\\_5.pdf](http://www.heritage.org/research/features/index/chapters/Chapter_5.pdf)). Certain index components (trade policy restrictions, rule of law and property rights, regulations in the areas of health, safety, environment, and the extent of the informal market) are excluded from both measures as they are based, at least in part, on the level of perceived corruption in the country.

<sup>15</sup> Fisman and Gatti (2002) examine the relationship between fiscal decentralization (subnational government share of total government spending), finding that greater decentralization is associated with a lower incidence

ures, not previously considered in the literature, are each based on the number of first-order administrative divisions within a country as reported in the CIA's *World Factbook* (accessed in July 2006). The total of such administrative units in each country is alternately normalized by population (*Subnational Govt's/pop*) and land area (*Subnational Govt's/area*).<sup>17</sup>

**History:** The relation between history and corruption appears complex and yet to be fully studied in the literature (see Lambsdorff, 2006b, p. 22). Nevertheless, we can posit that historical precedents and customs shape a nation's institutions and contractual norms.<sup>18</sup> Thus, entrenched practices in "old" countries might be difficult to abandon. Outsiders may also view them as corrupt. Corruption in such nations might have become a part of the culture of doing business and thus might be socially acceptable. Over time, potential bribe-givers also become familiar with the mechanisms and rituals of offering bribes, e.g. whether to go through intermediaries or approach the corrupt official directly (see Lambsdorff, 2002; and Lambsdorff and Teksoz, 2004). It is possible, of course, that enforcement mechanisms and oversight processes might also be streamlined in old countries, making corruption less likely. We classify old nations as countries with long histories of independence (*Old Country*).<sup>19</sup>

An absence of a long history in newly independent nations (*New Country*) might present different incentives for engaging in corrupt practices. Relatively new countries could face greater corruption due to underdeveloped monitoring and governance mecha-

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of corruption. We use a somewhat broader measure of decentralization than fiscal decentralization and one that has been widely used in empirical studies of fiscal federalism (Oates, 1999). Further, data on subnational government spending is primarily available for selected developed countries. In contrast, our decentralization measures can be constructed for virtually any country (see Table 1).

<sup>16</sup> Another measure (*Federal System*) pertains to whether the structure of the government is federal or unitary. Here, federalist structure is defined, in contrast to unitary states, as a system whereby subnational governments have autonomy in at least one area of action (Treisman, 2000). The results are not reported as the corresponding coefficient was statistically insignificant in all variations estimated. Fisman and Gatti (2002) also find the corresponding coefficient to be statistically insignificant.

<sup>17</sup> Examples of such administrative units include the number of states in some cases, counties, and boroughs. The variables in this case are converted to natural logs to smooth wide variations across countries.

<sup>18</sup> See Knack and Keefer (1995) for the frame-breaking work on the importance of institutional factors (see also Lambsdorff, 2006b; and Paldam, 2002).

<sup>19</sup> Some researchers focus on a nation's colonial heritage to capture the effect of persistence of institutions (see e.g. Treisman, 2000). Accordingly, we included a dummy variable identifying former British colonies. The resulting variable was statistically insignificant, so the corresponding results are not reported.

nisms.<sup>20</sup> Also, greater degrees of privatization in such nations in the initial phases might also create unique opportunities for bribe-giving and bribe solicitation (see Kaufmann and Siegelbaum, 1996). Conversely, greater public idealism in newly independent countries could act as a self-check against corruption.<sup>21</sup>

The countries in the middle – those neither new nor old – are likely to be unaffected strongly by the historical influences discussed above. They have not been independent long enough for corrupt practices to be widely entrenched, yet they have passed the period of disproportionate rent-generating opportunities associated with initial privatization. Thus, one may view the incidence of corruption in relation to the years of a nation's independence as a U-shaped curve where there are greater corrupt practices in initial years of independence and then these practices somewhat decline, while going up again as corrupt practices become deep-rooted in old nations. Model 3.1 in Table 3 sheds empirical light on this rationale.

**Geography:** Geography of a country can also affect the prevalence of corruption. Large, sprawling countries might be exposed to greater corruption due to their inability to effectively monitor public officials (potential bribe-takers), especially those in remote areas. On the other hand, good information exchange in a nation can enhance monitoring and act as a check against corruption. It has also been argued that a country's natural resource endowments create unique opportunities for rent-generation and rent-seeking (see Lambsdorff, 2006b; and Treisman, 2003). Further, there might be a greater chance of corrupt practices being caught (or exposed by whistle blowers) in areas with dense population concentrations. In addition to (*Subnational Govt's/area*), four measures of geography are used:

<sup>20</sup> Paldam (2002) incorporates the effect of culture more formally by including dummy variables for different culturally-alike nations in the world. However, he concludes that culture may offer an "inferior" explanation of corrupt activity (p. 238).

<sup>21</sup> In determining the year of independence we relied on the dates published in the most recent CIA *World Factbook*. "For most countries, this [is] ... the date that sovereignty was achieved ... For the other countries, the date ... may not represent 'independence' in the strict sense, but rather some significant nationhood event such as the traditional founding date or the date of unification, federation, confederation, establishment, fundamental change in the form of government, or state succession." The former Soviet states, for example, are all assumed to have gained their independence in 1991. For further details, see <http://www.cia.gov/cia/publications/factbook/docs/notesanddefs.html>.

While our cutoff between old and new countries might seem arbitrary (see Table 1), there seems to be no "best" method for classifying nations, especially given the huge variation (and discontinuity) in the years of independence. An alternate way to view our classification is to envision old countries as ones that obtained independence over a century ago and new countries being those that attained independence (roughly) less than 50 years ago.

physical land area (*Land Area*), degree of urbanization (*Urban*), natural resource endowments (*Nat Res*), and Internet users as a share of the population (*Internet*).

The comparison of the historical and geographic influences in how they affect corruption is unique to the literature. Both considerations are largely out of the control of any nation's current government. Thus, if these influences have significant impacts on corruption, governments must find alternative policy measures to counter their effects.

### 3 Results

Before turning to detailed results of our econometric investigation in Tables 2 and 3, we present the baseline model with economic prosperity, democracy, and legal system as determinants of corruption. These control variables have been used in a number of studies (see Jain, 2001; Lambsdorff, 2006b; and Serra, 2006). The estimate of the baseline model yields the following:

$$\begin{aligned} \text{Corrupt}_{it} = & -3.94* - 0.131*[\text{Per Capita GDP}]_{it} - 0.118*[\text{Democracy}]_{it} \\ & (13.9) \quad (13.4) \quad (3.7) \\ & - 0.672*[\text{Common Law System}]_t, \\ & (2.7) \end{aligned}$$

where the absolute values of t-statistics are in parentheses,  $N = 245$ , and a random effects error structure is assumed.<sup>22</sup>

All the variables in the baseline model have the expected sign and are statistically significant at conventional levels. In particular, greater economic prosperity (*Per Capita GDP*) results in a reduction in the incidence of corruption, a finding consistent with nearly all of the existing literature on the determinants of corruption. More democratic countries (*Democracy*) also experience lower levels of corruption. The significance of political freedom in terms of its possible impact on corruption has been recognized by the World Bank. However, the evidence regarding the effect of democracy on corruption has been mixed in the literature. Some studies have produced similar results (Goel and Nelson, 2005), while

<sup>22</sup> OLS results (available on request) of the base model without group effects are quite similar. However, the results of a Lagrange Multiplier test (=167.1, 1 df) indicated the superiority of a random effects model over a model that ignores country-specific effects.



others have failed to find a statistical significant influence (Ades and Di Tella, 1997; Fisman and Gatti, 2002; and Paldam, 2002).

Countries using the English *Common Law System*, other things being equal, tend to have lower corruption. This might be due to a streamlined legal system and a consistent set of checks and balances. Potential bribe-takers and bribe-givers are relatively certain of the costs of corrupt acts when the legal framework is well-defined and consistent. Such regulations are not only beneficial for internal transactions, but also play a crucial role in international trade. The results regarding the influence of *Common Law System* are consistent with the literature (Treisman, 2000).

The above findings that greater economic prosperity in a nation leads to lower corruption, as does greater democracy and adherence to English common law, hold for all the expanded models summarized in Tables 2 and 3 below. We now turn to these expanded models and address our principal questions of interest.

*What are the effects of the size and scope of government on the incidence of corruption across countries?*

The answers to the first question are based on the results reported in Table 2. Recall that the dependent variable, corruption index (the TI corruption measure), is scaled so that higher values imply greater perceived corruption. The results indicate that greater government intervention in a country's economy leads to more corruption (see Models 2.1, 2.2 and 2.4). This conclusion holds across the two measures of intervention (*Government Intervention (1)* and *Government Intervention (2)*). Also recall that higher values of both intervention measures imply *less* intervention in the economy. The result suggests that while greater government intrusions in the economy might be justified to fix certain imperfections, they have the undesirable side-effect of increasing corruption. Thus, a social cost-benefit calculation of government intervention should also include the costs of corruption.

Interestingly, our results also show that when a traditional measure of government intervention (*Size of Government*) is included in the estimating equation, larger government size in fact leads to *lower* corruption. This result supports cross-country findings in the literature (Fisman and Gatti, 2002; Goel and Nelson, 2005). The conclusion holds irrespective of whether the size variable appears separately in the model (Model 2.3) or is in-

cluded with the *Government Intervention (2)* variable (Model 2.4).<sup>23</sup> These results suggest that it is not a large public sector in itself that contributes to corrupt activity; larger governments may well be involved in greater spending on law enforcement and implementing checks and balances to deter such activity. Rather, greater regulatory activity in the public arena seems to foster corruption by increasing opportunities to engage in corrupt behavior.<sup>24</sup>

The effect of government decentralization on corruption is mixed. Countries with greater first-order administrative units per capita (*Subnational Govt's/pop*) are associated with lower corruption activity (Model 2.5). This finding is consistent with the argument that greater fragmentation of local government structure enables the citizenry to better monitor and curtail corrupt activities. Finally, normalizing administrative units by land area (*Subnational Govt's/area*), rather than population, does not reveal a statistically significant effect on corruption perceptions (Model 2.6).

Countries with socialist systems, as well as French and German commercial systems appeared to have higher corruption (Model 2.7). Consistent with the widely held perception, Scandinavian nations were among the least corrupt, albeit the pertinent coefficient is statistically insignificant.

Overall, the answer to the first question is that government does matter in important ways in its impact on corruption. A large public sector – measured by government consumption share of GDP (*Size of Government*) – in and of itself does not contribute to the perceived level of corruption in a country. In fact, our findings indicate precisely the opposite: a larger public sector presence is associated with less corruption, other things equal, perhaps reflecting greater public vigilance against such behavior or stronger institutions that serve to combat such activity. Nevertheless, it is also clear that certain forms of government intervention in the economy, particularly regulatory intervention, promotes corruption by creating greater opportunities for bribe-taking and bribe-giving behavior (see *Government Intervention (1)* and *(2)* in Table 2). Further, capturing the scope of government activity via the number of administrative units in a country lowers corruption when the relevant variable is normalized by population (Model 2.5), but not when normalized by

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<sup>23</sup> A model was not estimated with the *Government Size* and the *Government Intervention (1)* variables since the latter includes government size as a component of that index. See Table 1.

<sup>24</sup> It is well known that the impacts of government regulations on the economy are not always adequately measured by the government expenditures, the standard measure of the government size (Rosen, 1995, p. 15).

land area (Model 2.6). This difference makes sense when one thinks about the fact that greater population (and not larger land area itself) increases potential bribe-giver discount rates by increasing competition for favors.

*How important are historical and geographic influences in affecting institutions that have a key bearing on corruption?*

Table 3 summarizes regression results that focus on historical and geographic influences for the TI corruption measure. The signs of the control variables used in Table 2 also hold in Table 3. Specifically, more prosperous and democratic countries are likely to have lower corruption. Further, countries that adhere to *Common Law System* have lower corruption.

Turning to historical influences, both *Old Country* and *New Country* have adverse effects on corruption (Model 3.1). Newly independent countries may have greater corruption due to relatively underdeveloped or undeveloped institutions and procurement practices. Further, relatively large scale privatization drives in some of these nations might create unique opportunities for rent-seeking. In contrast, older countries tend to have well-developed institutions. While some of these institutions might be effective at fighting corruption, others may work well at guarding or even promoting corruption. Our results indicate that latter influences are more powerful.<sup>25</sup> In any case, the historical influences signify the constraints current governments face in combating corruption as the historical influences can only be countered over time, if at all. Comparing the relative magnitudes of *Old Country* and *New Country*, our results show that both types of nations have similar tendencies to induce corruption, although the magnitude of the coefficient on *Old Country* is somewhat larger.

With regard to geographic factors, our findings indicate that countries with more geographically concentrated populations (*Urban*) are likely to have lower corruption. Corrupt practices may be easier to detect in urban populations and thereby deter corruption (Models 4.1, 4.2, and 4.3). The stigma of corruption itself may also be stronger in urban areas.<sup>26</sup> Other geographic factors that might affect corruption are the physical geographic

<sup>25</sup> Our data do not allow us to qualitatively distinguish between the types of corruption. It might be the case that qualitatively different types of corruption (for example, grand versus petty corruption) might exist between an *Old Country* and a *New Country*.

<sup>26</sup> This finding should be viewed with some caution, however, as this result might partly signify measurement error as corrupt practices in rural areas may be harder to detect and/or record. We thank Johann Lambsdorff for noting this.

expanse of a country (*Land Area*) and the number of local governments (first-order administrative units) normalized by land area (*Subnational Govt's/area*). The results summarized in Table 3 reveal that neither *Land Area* nor *Subnational Govt's/area* are statistically significant determinants of corruption.<sup>27</sup> The results for the government decentralization variable confirm the earlier results presented in Table 2 (Model 2.6). Finally, a country's natural resource endowments (*Nat Res* in Model 4.4) and the number of Internet users (*Internet* in Model 4.3) do not seem to significantly impact the level of corruption.

Among the various measures of geographic influence, it seems that a country's population distribution geographically, rather than its physical expanse, is more significant in terms of the impact on corruption.<sup>28</sup>

In summary, comparing the historical and geographic influences, it is evident that these influences work at cross purposes in their impact on corruption. Only a greater degree of urbanization results in a lower corruption. However, since most historical and geographical influences are largely exogenous, the findings regarding the size and the scope of the public sector provide the most important insights into how government policies might be changed to control corruption.

To compare the relative effects of government, history and geography and to bring the title of this paper into sharper focus, a final set of regression results is presented as Model 5.1 in Table 4. In addition to the "baseline" regressors, the right-hand variables include most of the Government, History, and Geography variables that are statistically significant in Tables 2 and 3.<sup>29</sup> The results confirm the earlier analysis that each of these variables impact corruption in a manner predicted by the earlier analysis.

To gain additional insights into these results, the right-hand column of Table 4 presents estimates of the impact on corruption when a regressor moves from the lowest value in the data set to the highest value. The impact of economic prosperity is potentially the greatest in terms of corruption reduction, while the impacts of greater democracy and adherence to a consistent legal system are similar. Among the government measures, the impact of decentralization is the greatest compared to government intervention and the size of

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<sup>27</sup> We also experimented with a variable that identified island nations to see whether island countries were somehow different in terms of the incidence of corruption. The coefficient on the resulting variable was statistically insignificant.

<sup>28</sup> As a practical matter, the degree of urbanization of a country is more likely to change over time than its physical size.

<sup>29</sup> Recall that *Government Intervention (1)*, while statistically significant in earlier analysis, cannot be used in a regression set up that includes *Government Size* since the two variables are somewhat closely related.

the government. Further, the corruption-enhancing effect of government intervention has the potential to cancel out any reduction in corruption generated by a large government machinery (size). These two historical factors have similar perverse influences on corruption, while the degree of urbanization appears to have a significant impact on corruption reduction.<sup>30</sup>

In closing, we briefly note the results of some additional testing to check the robustness of our results. First, there is a valid criticism that comparing the TI corruption index over time is problematic because the survey sample, methodology, and data sources have not remained constant from year to year.<sup>31</sup> One way to address this concern has been suggested by Björnskov and Paldam (2004) – use country rankings that can be derived from the index rather than the index itself. Year-to-year methodological changes in the construction of the index, they argue, likely have only a minor impact on changes in ordinal rankings over time. To investigate this, we identified 82 countries that we could rank using TI data for 1999 and 2002, the midpoint years for periods 2 and 3 in our earlier analysis.<sup>32</sup> We then re-estimated all the models in Tables 2 and 3 using OLS estimation techniques and a country's ordinal ranking as the dependent variable. The results were qualitatively similar to what is reported above.<sup>33</sup>

Second, to address the issue of possible simultaneity between the government size and the intervention variables and the level of corruption, each of the models presented in Table 2 was re-estimated under the assumption that *Government Intervention (1)*, *Government Intervention (2)* and *Size of Government* are properly modeled as endogenous right-hand-side variables. The estimation was undertaken in two-stage least squares techniques, using literacy rate, countries with a substantial Protestant population, and a binary variable indicating whether a country is a “transition economy” as additional instrumental variables. These results were generally consistent with what is reported in Table 2. These results are likely unsurprising in light of the fact that in many countries government activity is pre-determined each year based on legislation enacted in earlier years. Thus, government spending can be appropriately modeled as exogenous variables. A Hausman test was also performed for each model and indicated that OLS can be appropriately used for estimation.

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<sup>30</sup> Interestingly, a change in urbanization can potentially either negate or reinforce the effects of government policy on corruption. Thankfully, the degree of urbanization in a country tends to change relatively slowly.

<sup>31</sup> Lambsdorff (2006a) provides further discussion on this topic.

<sup>32</sup> Period 1 data were excluded as the number of countries in our data set would have dropped considerably.

<sup>33</sup> These results and other omitted results are available upon request.

As a final test of the robustness of our findings, we ran the same set of regressions using cross-sectional data for the latest time period in our sample (2001-2003). The results were qualitatively similar to those reported here.

## 4 Conclusions

Attention to corruption control across nations has been gaining prominence in recent years as governments and international bodies have stepped up corruption-fighting initiatives. Individual governments have strengthened laws to monitor and punish corrupt officials, and international bodies such as the United Nations and the IMF have advocated greater transparency in government contracts and recommended the elimination of the tax-deductibility of bribes. However, policies to isolate the various avenues of corruption remain elusive, due mainly to a lack of understanding regarding the many factors affecting corruption. The problem is made more difficult by the fact that some institutional and cultural influences on corruption are very subtle or hard to quantify.

This paper contributes to the understanding of the causes of corruption by providing insights on the role of historical factors, geographic size, and the size and scope of government. Although the influence of some aspects of government on corruption has been studied for a smaller numbers of countries, (e.g. Jain, 2001; Lambsdorff, 2006b; and Serra, 2006), our focus here on historical and geographic factors, as well as the effects of the size and scope of government, is unique. We considered a wide set of historical, geographical and government determinants of corruption, as well as some previously identified factors in finer detail. Besides providing a greater understanding of the causes of corrupt activities, our results have useful implications for public policy. For instance, historical and geographic influences may be largely viewed as exogenous for current policymakers, while government policies are endogenous.

The two main questions addressed in this study pertained to the effects of the size and the scope of government on the incidence of corruption across countries, and the importance of historical and geographic influences in affecting institutions that have a key bearing on corruption.

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Overall, the answer to the first question is that both the size and scope of government matters impact corruption. However, a large public sector in and of itself does not seem to contribute to the perceived level of corruption in a country. Indeed, our findings indicate precisely the opposite: a larger public sector presence is associated with less corruption, all other things equal, which perhaps reflects greater public vigilance against such behavior or stronger institutions that act to combat such activity. These cross-country findings are contrary to those for the United States (Goel and Nelson, 1998). The magnitude of the effect of government size seems quite robust across different model specifications. Nevertheless, it is also clear that certain forms of government intervention in the economy, and specifically the regulatory area, promote corruption by creating greater opportunities for bribe-taking and bribe-giving behavior. Further, the corruption-enhancing effect of government intervention has the potential to cancel out any reduction in corruption generated by larger government machinery (size). We find that a greater amount of administrative subnational governments (i.e. greater decentralization) serving a given population may also deter corruption. The level of corruption in a country seems sensitive to the prevailing commercial code as some systems were found to promote corruption while others deterred such practices.

Turning to question two and comparing the historical and geographic influences, only certain geographic factors lead to a reduction in corruption. Among the various aspects of geographic influence considered, our findings indicate that a country's population distribution, rather than its physical expanse or natural resource endowments, is relatively more significant in terms of the impact on corruption. The inertia from past institutions and contractual norms seems to induce corruption to persist, as do new rent-seeking opportunities in transition nations. However, since these influences are largely exogenous, the findings regarding the size and the scope of the government provide the most important insights into how government policies might be changed to control corruption. Some of these government initiatives can be altered in the short run (e.g. government spending), while others take a longer time to be set in place (e.g. changing the number of administrative units in a nation).

Comparing the magnitudes of the impacts of various determinants (Table 4), it seems that economic prosperity, governmental decentralization and urbanization potentially hold promise for corruption reduction. However, the latter two are relatively hard to

change from year to year, suggesting the limited capacity of policies to bring down corruption quickly.

Some of these findings of this research are unique to the literature, while others shed additional light on previous results with a larger sample of countries. The mixed findings with respect to some of the factors affecting corruption call into question the wisdom of issuing blanket corruption control recommendations across nations. For instance, it is not clear from the research that bigger governments would necessarily reduce corruption in every instance. Further, our focus on the geographic and historical influences highlights the difficulty that governments face as they formulate policy to deter corruption. On the other hand, the research has quite consistently demonstrated that as nations become more prosperous, the degree of corrupt activity goes down (Serra, 2006). Adherence to a consistent legal system and greater decentralization of government machinery per capita both lead to lower corrupt activity. Finally, while the effect of greater government intervention is shown to be perverse on corruption, we need greater insight into country-specific channels of intervention to fully understand how various government policies might adversely affect corruption in some cases, and not in others. The answers to some of these questions should emerge over time as there is greater transparency in government actions.



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Table 1 Data sources and variable definitions

Variable	Description	Mean (Std. Dev.)	Source
<i>Corrupt</i>	Transparency International Corruption Index of Perceived Corruption. Index rescaled to -10 (least corrupt) to 0 (most corrupt).	-4.77 (2.40)	[1]
<i>Per Capita GDP</i>	GDP per capita (in thousands of constant 1995 US\$).	10.10 (13.20)	[2]
<i>Democracy</i>	Sum of the Freedom House Political Rights and Civil Liberties Indices used to measure the level of democracy in a country. Rescaled from -14 (least democracy) to -2 (most democracy).	-5.82 (3.48)	[3]
<i>Government Intervention (1)</i>	Index of government intervention in the economy taking into account marginal income tax rates, the level and growth of government expenditures, state-owned enterprises, inflation rate trends, degree of regulation on foreign investment and capital flows, banking and finance regulation, and regulation of wages and prices. Index values range from -5 (most intervention) to -1 (least intervention).	-2.82 (0.55)	[4]
<i>Government Intervention (2)</i>	Index of government intervention in the economy taking into account inflation rate trends, degree of regulation on foreign investment and capital flows, banking and finance regulation, and regulation of wages and prices. Index values range from -5 (most intervention) to -1 (least intervention).	-2.57 (0.70)	[4]
<i>Size of Government</i>	General government final consumption expenditure (% of GDP).	15.96 (5.57)	[2]
<i>Common Law System</i>	Binary variable equals 1 if the country's company law or commercial code is based on English common law; 0 otherwise.	0.28 (0.45)	[5]
<i>Socialist System</i>	Binary variable equals 1 if the country has socialist/communist laws; 0 otherwise.	0.17 (0.38)	[6]
<i>French System</i>	Binary variable equals 1 if the country has French commercial code; 0 otherwise.	0.39 (0.49)	[6]
<i>German System</i>	Binary variable equals 1 if the country has German commercial code; 0 otherwise.	0.07 (0.26)	[6]
<i>Scandinavian System</i>	Binary variable equals 1 if the country has Scandinavian commercial code; 0 otherwise.	0.05 (0.22)	[6]
<i>New Country</i>	Binary variable equals 1 if the country became independent after 1950; 0 otherwise.	0.34 (0.48)	[8]
<i>Old Country</i>	Binary variable equals 1 if the country became independent before 1900; 0 otherwise.	0.36 (0.48)	[8]
<i>Urban</i>	Urban population (% of total).	60.56 (21.15)	[2]
<i>Land Area</i>	Land area (in thousands of square kilometers).	938.35 (2,076.9)	[2]
<i>(Subnational Govt's/pop)</i>	Number of first-order administrative divisions within country per 100,000 population (in natural logs).	-2.13 (1.43)	[7]
<i>(Subnational Govt's/area)</i>	Number of first-order administrative divisions within country per thousand square miles of land area (in natural logs).	-2.58 (1.69)	[8]
<i>Nat Res</i>	Ores, metals, and fuels exports (as percent of GDP).	0.15 (0.09)	[2]
<i>Internet</i>	Internet users per 100,000 population.	101.4 (140.2)	[2]

*Notes:* Unless otherwise noted, each variable is measured as the average of all available data for that variable for the following time periods: 1995-1997, 1998-2000, and 2001-2003.  
Descriptive statistics are based on largest available sample used to estimate the models reported in Table 3.

Sources:

1. Transparency International: <http://www.transparency.org/surveys/index.html#cpi>
2. World Bank, World Development Indicators online database, 2004.
3. Freedom House, Freedom in the World country ratings, <http://www.freedomhouse.org/ratings/index.htm>
4. Heritage Foundation.
5. La Porta, et al. (1997) as reported in Treisman (2000).
6. La Porta, et al. (1999)
7. Treisman (2000)
8. US Central Intelligence Agency, The World Factbook, <http://www.cia.gov/cia/publications/factbook/>

Table 2 Corruption, Size, and Scope of Government (Dependent variable: Corrupt)

	<b>Model 2.1</b>	<b>Model 2.2</b>	<b>Model 2.3</b>	<b>Model 2.4</b>	<b>Model 2.5</b>	<b>Model 2.6</b>	<b>Model 2.7</b>
<i>Per Capita GDP</i>	-0.126 <sup>***</sup> (12.5)	-0.121 <sup>***</sup> (11.9)	-0.124 <sup>***</sup> (12.9)	-0.114 <sup>***</sup> (11.5)	-0.126 <sup>***</sup> (13.2)	-0.124 <sup>***</sup> (12.8)	-0.123 <sup>***</sup> (10.3)
<i>Democracy</i>	-0.104 <sup>***</sup> (3.2)	-0.100 <sup>***</sup> (3.0)	-0.101 <sup>***</sup> (3.1)	-0.080 <sup>**</sup> (2.5)	-0.086 <sup>***</sup> (2.6)	-0.101 <sup>***</sup> (3.1)	-0.106 <sup>***</sup> (3.3)
<i>Common Law System</i>	-0.656 <sup>***</sup> (2.8)	-0.618 <sup>***</sup> (2.6)	-0.624 <sup>***</sup> (2.7)	-0.572 <sup>***</sup> (2.6)	-0.744 <sup>***</sup> (3.2)	-0.623 <sup>***</sup> (2.7)	----
<i>Government Intervention (1)</i>	-0.326 <sup>**</sup> (2.0)	----	----	----	----	----	----
<i>Government Intervention (2)</i>	----	-0.398 <sup>***</sup> (2.9)	----	-0.404 <sup>***</sup> (2.9)	----	----	----
<i>Size of Government</i>	----	----	-0.067 <sup>***</sup> (3.9)	-0.065 <sup>***</sup> (3.9)	-0.061 <sup>***</sup> (3.5)	-0.066 <sup>***</sup> (3.8)	-0.059 <sup>***</sup> (3.4)
<i>(Subnational Govt's/pop)</i>	----	----	----	----	-0.163 <sup>**</sup> (2.1)	----	----
<i>(Subnational Govt's/area)</i>	----	----	----	----	----	0.002 (0.04)	----
<i>Socialist System</i>	----	----	----	----	----	----	0.668 <sup>**</sup> (2.2)
<i>French System</i>	----	----	----	----	----	----	0.626 <sup>**</sup> (2.6)
<i>German System</i>	----	----	----	----	----	----	1.117 <sup>**</sup> (2.1)
<i>Scandinavian System</i>	----	----	----	----	----	----	-0.452 (0.8)
LM test	156.9 <sup>***</sup>	155.1 <sup>***</sup>	171.1 <sup>***</sup>	160.6 <sup>***</sup>	171.2 <sup>***</sup>	170.7 <sup>***</sup>	163.5 <sup>***</sup>
Observations	245	245	241	241	241	241	241

Notes: Details about the variables are provided in Table 1. All models were estimated as random effects models and absolute values of t-statistics are in parentheses. The LM test here signifies the relative superiority of the random effects models over models ignoring country-specific effects. A constant term was included in all models but the corresponding results are not presented to conserve space.  
\*\*\* denotes statistically significant at the 1% level, \*\* at the 5% level, and \* at the 10% level.

Table 3 Corruption, History, and Geography ( <i>Dependent variable: Corrupt</i> )					
	<b>Model 3.1</b>	<b>Model 4.1</b>	<b>Model 4.2</b>	<b>Model 4.3</b>	<b>Model 4.4</b>
<i>Per Capita GDP</i>	-0.129*** (13.0)	-0.105*** (10.5)	-0.105*** (10.5)	-0.107*** (10.4)	-0.105*** (10.4)
<i>Democracy</i>	-0.117*** (3.7)	-0.105*** (3.6)	-0.105*** (3.6)	-0.106*** (3.6)	-0.098*** (3.1)
<i>Common Law System</i>	-0.586** (2.3)	-0.908*** (4.0)	-0.903*** (4.0)	-0.935*** (4.4)	-0.908*** (4.0)
<i>New Country</i>	0.463* (1.7)	----	----	----	----
<i>Old Country</i>	0.549* (1.9)	----	----	----	----
<i>Urban</i>	----	-0.031*** (5.6)	-0.031*** (5.6)	-0.032*** (5.9)	-0.030*** (5.1)
<i>Land Area</i>	----	-0.002 (0.4)	-0.0002 (0.03)	----	----
<i>(Subnational Govt's/area)</i>	----	----	0.038 (0.5)	----	----
<i>Internet</i>	----	----	----	0.0002 (0.4)	----
<i>Nat Res</i>	----	----	----	----	-0.21 (0.2)
LM test	157.9***	156.0***	156.0***	125.7***	138.9***
Observations	245	245	245	245	238
Notes: See Table 2.					

Table 4 Corruption, History, Geography, and Government (Dependent variable: <i>Corrupt</i> )		
	<b>Model 5.1</b>	<b>Change in Corruption Index resulting from change in right-hand column variable from minimum to maximum value in sample</b>
<i>Per Capita GDP</i>	-0.098 <sup>***</sup> (10.2)	5.8 point improvement
<i>Democracy</i>	-0.059 <sup>**</sup> (2.0)	0.7 point improvement
<i>Common Law System</i>	-0.886 <sup>***</sup> (3.9)	0.9 point improvement
<b>Government</b>		
<i>Government Intervention (2)</i>	-0.230 <sup>**</sup> (2.0)	0.8 point improvement
<i>Size of Government</i>	-0.034 <sup>**</sup> (2.2)	1.0 point improvement
<i>(Subnational Govt's/pop)</i>	-0.189 <sup>***</sup> (2.6)	1.6 point improvement
<b>History</b>		
<i>New Country</i>	0.598 <sup>**</sup> (2.4)	0.6 point deterioration
<i>Old Country</i>	0.539 <sup>**</sup> (2.2)	0.5 point deterioration
<b>Geography</b>		
<i>Urban</i>	-0.024 <sup>***</sup> (4.1)	2.1 point improvement
LM test	131.0 <sup>***</sup>	<i>Reference: Sample standard deviation of Corruption Index = 2.40</i>
Observations	241	
Notes: See Table 2.		

APPENDIX

List of Countries in the Data Set

Albania	Cyprus	Iran	Namibia*	Sri Lanka*
Algeria	Czech Rep.	Ireland*	New Zealand*	<b>Sweden</b>
Armenia	<b>Denmark</b>	Israel*	<b>Nicaragua</b>	<b>Switzerland</b>
Australia*	<b>Dominican Rep.</b>	<b>Italy</b>	Nigeria*	Tanzania*
Austria	<b>Ecuador</b>	Jamaica*	Norway	<b>Thailand*</b>
Azerbaijan	Egypt	<b>Japan</b>	<b>Oman</b>	Trinidad and Tobago*
Bahrain	<b>El Salvador</b>	Jordan	Pakistan*	Tunisia
Bangladesh*	Estonia	Kenya*	Panama	Turkey
Belarus	<b>Ethiopia</b>	Korea, Rep.	Papua New Guinea	Uganda*
<b>Belgium</b>	Finland	Kuwait	<b>Paraguay</b>	Ukraine
<b>Bolivia</b>	<b>France</b>	Latvia	<b>Peru</b>	U.A.E.
Botswana*	Georgia	Lebanon	Poland	<b>U.K.*</b>
<b>Brazil</b>	<b>Germany</b>	Lithuania	Portugal	<b>U.S.A.*</b>
<b>Bulgaria</b>	Ghana*	<b>Luxembourg</b>	Romania	<b>Uruguay</b>
Cameroon	<b>Greece</b>	Madagascar	Saudi Arabia*	Vietnam
Canada*	<b>Guatemala</b>	Malawi*	Senegal	Zambia*
<b>Chile</b>	<b>Haiti</b>	Malaysia*	Sierra Leone	Zimbabwe*
China	<b>Honduras</b>	Mali	Singapore*	
<b>Columbia</b>	<b>Hungary</b>	<b>Mexico</b>	Slovak Rep.	
Congo, Rep.	Iceland	Moldova	Slovenia	
<b>Costa Rica</b>	India*	Morocco	South Africa*	
Cote d'Ivoire	Indonesia	Mozambique	<b>Spain</b>	

Notes: \* denotes countries following the English common law; old countries are in bold.  
Details about the classifications are provided in Table 1.



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