

## Corruption and Complex Business Rules

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### **Abstract**

This research contributes to our understanding of the interaction between corruption and economic performance by examining the relationship between corruption and business regulations measured in terms of number of procedures, time, and costs that entrepreneurs incur to satisfy government mandates. After controlling for exogenous variables potentially related to corruption and using two-stage least squares methods to mitigate problems associated with endogeneity, we find a robust positive relationship between corruption and complex rules. The findings suggest policy measures aimed at streamlining business regulations to reduce corruption and enhance growth.

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*JEL Codes:* G18, G33, K2, K4, M13

*Keywords:* Corruption, Complex rules, Cost of doing business

### **I. Introduction**

Corruption, generally defined as the misuse of governmental power for private gain or benefit, is present in every culture, and it is as old as existence norms and legal procedures (Easterly, 2001; Akcay, 2006). The following example clarifies the definition of corruption. If a bureaucrat with discretionary power applies a governmental regulation, this person enjoys a monopoly over the supply of a public good. The public official can deny or approve the application, require additional transactions, order unnecessary inspections, or simply delay the decision on the matter, with the main intention of obtaining personal benefit, generally in the form of commissions or bribes. In effect, the corrupt government employee becomes the owner of a public good that generates rents (Klitgaard, 1988; Shleifer and Vishny, 1993).

Using data from the *Doing Business* report of the World Bank, this research examines the relationship between corruption and the number of procedures, time involved, and costs paid to start and close a business, register property, and enforce contracts. After controlling for legal origin, ethno-linguistic fractionalization, latitude, and endogeneity, (using two-stage-least squares, 2SLS) we uncover a robust directional channel that goes from more complex business regulations to greater levels of corruption. Moreover, some of the specific components of the procedures, time and costs survived all of the controls, providing valuable information for policymakers to streamline regulations to mitigate corruption and enhance growth.

Our findings are consistent with Tanzi (1998), who contends that direct and indirect factors originate corruption. Examples of direct factors include the existence of regulations, licenses or authorizations, taxes, decisions on government expenditure, and supply of goods and services with prices below market clearing levels, among other discretionary decisions. In fact, discretionary power plays a very important role in light of the monopolistic position of the employee described above. On the other hand, indirect factors include quality of bureaucracy, salaries of public employees, penal systems, institutional controls, transparency of rules, laws and processes, and even the example of political leaders.

Our results also support Rose-Ackerman (1996), who posits two reasons for committing bribery: to obtain benefits and to elude costs. The first relates to the government purchase and sale of goods and services, infrastructure supply, and privatizations of companies – activities in which potential benefits justify bribery. For example, consider a process of privatization in which many companies wish to participate. Some of these companies do not fulfill requirements to enter, but bribing public employees grants them the opportunity, not only of participating in the bid, but of winning it, even if the final price is inflated or the products' quality is diminished.

The second reason for bribery, to elude costs, is closely related to what we have called complex business rules, paying bribes to circumvent the process. This source of corruption is bigger when a decision depends largely on a public official's discretion or when the norms that rule private economic activities have no clear definitions (Rose-Ackerman, 1996). An example is the process of liquidating a business, which is usually so long and complex that it is often better to bribe a judge, a real estate appraiser, or others with discretionary

power who are involved in the process to accelerate the decision over the disposition of the company's assets.<sup>1</sup>

Our research is related to those studies that treat regulation and its impact on corruption in the framework of the theories of public interest of Pigou (1938) and of public choice of Tullock (1967) and Shleifer and Vishny (1998). La Porta, López-de-Silanes, Shleifer and Vishny (1999) and Djankov, La Porta, López-de-Silanes and Shleifer (2002) find support for public choice theories and conclude that abundant regulations are associated with less competition and more corruption.

Djankov, La Porta, López-de-Silanes and Shleifer (2002) also study the relationship between corruption and the number of procedures, time, and cost necessary to start a business for a sample of 78 countries using ordinary least squares (OLS). Our research expands the scope of this work by examining the regulations that govern closing a business, obtaining licenses, registering property, and enforcing a contract. In addition, we control for variables commonly accepted as exogenous and potentially correlated with corruption, such as legal origin, latitude, and ethno-linguistic fractionalization. We also mitigate potential problems of endogeneity using 2SLS. Finally, we use data through 2006 from the World Bank's *Doing Business* report.

This paper is organized as follows: The next section describes the data and methodology. Results are presented in Section III, and the last section concludes the paper.

## II. Data and Methodology

This research uses the Corruption Perceptions Index (CPI) published annually by Transparency International (TI) as a measure

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<sup>1</sup> Easterly (2001) makes an illuminating distinction between centralized and decentralized corruption. Under centralized corruption, the highest ranking authority of the country establishes and coordinates a system of bribery determining the shares of each bureaucrat involved. This is possible when a strong, controlling governor manages the country, generally in a dictatorship or a clearly hierarchical system. On the contrary, decentralized corruption occurs when public employees in different levels of the administration, in an unorganized and individual way, establish bribes to obtain private gain. According to Easterly (2001, p.247) "decentralized corruption creates the worst incentives for growth" since it suffers from problems associated with common pool resources, also known as the tragedy of the commons.

of corruption. This index “ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians” (Transparency International, 2006). This indicator allows us to quantify the level of corruption that prevails in each country and also has academic validity (Méon and Sekkat, 2005). It is based on surveys of experts about the levels of corruption that they perceive in the public sector of 163 countries. Factors assessed in the construction of this indicator include corruption in the forms of excessive patronage, job reservations, favor-for-favors, and nepotism.

CPI values range from zero to ten, with a value close to zero representing the perception of a high level of corruption; five is moderate and ten low level. A revealing fact is that for the year 2006, corruption levels averaged 4.091, suggesting that countries on average exhibit a moderate to high level of corruption.

As a robustness check, we also employ The Corruption Control Index (CCI) that the World Bank publishes annually for 202 countries. Originally developed by Kaufmann, Kraay, and Zoido-Lobaton (1999), values are on -2.5 to +2.5 scale, where a value close to -2.5 represents no existence of mechanisms for control of corruption, that is, a high level of corruption. Zero means moderate corruption, and a value close to +2.5 indicates more control of corruption and thus low corruption levels. For the year 2006 this index averages 0.004, suggesting the presence of moderate levels of corruption. Regression results are basically the same using CPI or CCI as dependent variable. The most important difference between these two indices is the years and countries included.<sup>2</sup> Results based on the CCI are available from the authors upon request.

In an attempt to facilitate understanding of our results, we inverted the direction of both indexes of corruption (CPI and CCI), expressing them in a scale of zero to ten, where higher levels imply the perception of a more corrupt country.<sup>3</sup> In our sample of CPI countries, corruption averages 6.6, and the median is 8.29, suggesting that average sample country exhibits moderate to high levels of corruption. Bangladesh reaches the highest level of 10, closely followed by countries such as Sierra Leone and Nigeria with 9.74. At

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<sup>2</sup> The simple correlation between CPI from 2002 and CCI from 2003 is 0.97 (Svensson 2005).

<sup>3</sup> To invert the CPI, we subtracted the given CPI value from 10. Thus, if the original value is zero (highest level of corruption), the value in the new scale is 10 (highest level of corruption).

the other extreme are countries such as Finland and New Zealand with 0, the lowest possible level of corruption.

To quantify Complex Rules, we used the data contained in the World Bank *Doing Business* report from the years 2004 and 2006.<sup>4</sup> *Doing Business* publishes data containing regulations that impact private economic activity in 175 countries. The indicators measure how regulations help or hinder business performance: “The data are based on studies of laws and regulations and surveys of local lawyers, providing a more precise and objective measure of the business environment than other available perception-based measures of institutions,” (Djankov, McLiesh and Ramalho, 2006, p.397). It contains information about ten sectors in which the public and private sectors interact and that impact the cost of businesses. The ten sectors are starting a business, dealing with licenses, hiring and firing workers, registering property, obtaining credit, protecting investors, paying taxes, trading across borders, enforcing contracts in the courts, and closing a business.

We use as instrumental variables observations from the year 2004, and information is only available about the sectors of starting a business, registering property, enforcing contracts, and closing a business in the years 2004 and 2006. For this reason, data availability, we do not analyze business regulatory rules and their impact on corruption in all ten sectors. Thus, for a country to be included in our sample, information on business rules must be available for the years 2004 and 2006; information on corruption levels must be available as well. These requirements were met by 84 countries.

Each sector has several components, which typically are comprised of the number of procedures; time, measured in calendar days; and costs, measured as percentage of income per capita; associated with completing all required regulations. For example, the sector “Starting a Business” offers information for each country in the sample on the number of procedures, number of calendar days, costs, and minimum capital requirements to start a business.

Data were organized in annual balanced series that were standardized by subtracting the mean of the series from each observation and then dividing the result by the standard deviation of the given series. These standardized values were converted to a scale from 0 to 10, where 0 indicates the simplest business rules and 10 the

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<sup>4</sup> The Doing Business database is also available at [www.doingbusiness.org](http://www.doingbusiness.org).

most complex business rules. In this fashion we obtained standardized information on procedures, time, and cost to start a business, register property, enforce a contract, and close a business. We performed regressions based on these standardized data. For example, we use as regressors the standardized number of procedures to start a business, to register property, and to enforce a contract. We followed a similar procedure with the time and cost dimensions of business rules. These regressions allowed us to assess the components capable of inducing corruption, based on the significance or not of the corresponding parameter estimates.

We also averaged the various individual components for the purpose of constructing an index of procedures, time, and costs, allowing us to perform regressions based on aggregate data. Accordingly, these indexes aggregate information on number of procedures, time, and costs across sectors. For example, the index of procedures provides information on the number of procedures to start a business, register property, enforce contracts, and close a business.

To assess the robustness of the results, we controlled for legal origin, ethno-linguistic fractionalization, and latitude. These variables have been used by Mauro (1995), Easterly and Levine (1997 and 2003), and La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999), among others, and are considered a source of exogenous variation. In addition, we also controlled for the level of development, measured by the logarithm of per capita income in the year 2004. However, since this variable is likely endogenous, we chose not to report results that included income level but to mention if its inclusion changes the parameter estimates of interest.

Legal Origin is a dummy variable that takes values 0 or 1 for each of the five commercial legal origins: British, French, Socialist, Scandanavian, and Germanic. British legal origin is the omitted category in our regressions. Data was taken from La Porta, López-de-Silanes, Shleifer and Vishny (1998 and 1999). They find that relative to French, countries with a British legal origin tradition display higher shareholder and creditor protection, and greater law enforcement quality. Moreover, countries with a common law tradition have less corrupt governments that are less intrusive and regulate less than countries with a French or Socialist legal tradition.

The German legal origin is typically associated with the civil-law tradition. The German Commercial Code was written in 1897 after

Bismarck's unification of Germany. Interestingly, the German tradition, unlike the French legal family, is capable of adapting efficiently to changing conditions: "Germany accepted the need for jurisprudence and sought to create a responsive legal doctrine. Therefore, adopters of the German code obtained a legal system designed to evolve with changing conditions" (Beck, Demirgüç-Kunt and Levine, 2003, p.655).

"The Scandinavian family is usually viewed as part of the civil-law tradition, although its law is less derivative of Roman law than the French and German families" (La Porta, Lopez-de-Silanes, Shleifer and Vishny 1998, p.1119). Nordic laws are typically perceived as similar to each other but "distinct" from others. Evidence provided by La Porta et al. (1998) suggests that the quality of law enforcement is highest among Scandinavian and German-civil-law countries. Appendix A contains information on the legal origin of the countries included in our study.

Ethno-linguistic fractionalization is taken from the work of La Porta, López-de-Silanes, Shleifer and Vishny (1999). This variable measures the probability of choosing randomly two people with different ethno-linguistic origins. Huntington (1968) argues that governments in countries with a more fractionalized population tend to implement policies that benefit the winning minority at the expense of groups not represented in government. Mauro (1995) indicates that divided countries are prone to greater political instability and are associated with more corruption, because bureaucrats tend to favor members of their own group and attempt to take as many bribes as possible given the uncertainty about their tenure in office.

Latitude is defined as the angular distance, measured over the meridian, between the equator and the parallel corresponding to each country. For our purposes we took the absolute value of that measure and expressed it in a scale of zero to one, being zero the closest to the equator. The data are provided by La Porta et al. (1999). Presumably, more temperate latitudes are more inclined toward agriculture, settlement and colonization. When Western Europeans settled, they brought with them high quality institutions that protected private property and reduced corruption. However, Western Europeans settled in climates similar to Europe's (Hall and Jones, 1999). Thus, greater distance from the equator measured by latitude is presumably correlated with corruption since countries

more distant from the equator have better institutions and therefore less corruption.

**Table 1: Description of the Variables**

Number of Procedures	Standardized measure of the number of procedures officially required by government to: start a business, register property, and enforce a contract. Measured on a scale from 0 (fewer procedures) to 10 (more procedures). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Procedures Index	Standardized average of the number of procedures officially required by government to start a business, register property, and enforce a contract. Scaled from 0 (fewer procedures) to 10 (more procedures). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Time	Standardized measure of the number of days needed to: start a business, register property, enforce a contract, and close a business. Measured on a scale from 0 (less time) to 10 (more time). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Time Index	Standardized average of the number of days needed to start a business, register property, enforce a contract, and close a business. Scaled from 0 (less time) to 10 (more time). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Costs	Standardized measure of payments legally required to: start a business, register property, enforce contracts, and close a business. Measured on a scale from 0 (lower costs) to 10 (greater costs). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Costs Index	Standardized average of payments legally required to start a business, register property, enforce a contract, and close a business. Scaled from 0 (lower costs) to 10 (greater costs). Source: World Bank <i>Doing Business</i> annual reports. Calculated by the authors.
Legal Origin	Derivation of the country's commercial code or company law (i.e., English Common Law, French Commercial Code, German Commercial Code, Scandinavian Commercial Code, or Socialist/Communist laws). Source: La Porta, López-de-Silanes, Shleifer and Vishny (1999).
Ethno-linguistic Fractionalization	Probability that two randomly selected people from a given country are from different ethno-linguistic groups. Source: La Porta, López-de-Silanes, Shleifer and Vishny (1999).
Latitude	Absolute value of the latitude of the country, scaled to take values between 0 and 1. Source: La Porta, López-de-Silanes, Shleifer and Vishny (1999).
Log of Per Capita Income	Logarithm of per capita income for the year 2004. Source: World Development Indicators published by the World Bank (2006) and Kaufmann, Kraay and Mastruzzi (2006).

A geographic explanation, as opposed to institutional, of the impact of latitude on corruption is provided by Landes (1998, p.5)

who argues that “few manage to work at full when hot and wet.” An even blunter explanation is provided by Machiavelli (1519), who contends: “fertile countries...are apt to making men idle and unable to exercise any virtue.”

Finally, the logarithm of real per capita income in the year 2004 is obtained from the World Development Indicators of the World Bank. La Porta, López-de-Silanes, Shleifer and Vishny (1999) report that government’s quality is positively correlated with per capita income. Thus, it is plausible to hypothesize the existence of a problem of reverse causality. For this reason, our tables contain results without controlling for the level of development. However, if inclusion of income level in the regressions qualitatively alters the results, we mention these changes. These results are available from the authors upon request. Table 1 defines the variables used, and Appendix 1 contains descriptive statistics.

To assess the impact of complex business rules on corruption, we used OLS as a first approach. However, in the presence of endogenous regressors, OLS estimates are biased and inconsistent. To mitigate possible problems of endogeneity, we time lagged our indicators of business rules. Finally, to identify the exogenous component of the variables that measure business rules and consequently attempt to control for endogeneity, we used two-stage least squares. A correctly applied 2SLS strategy uncovers a directional channel that in our case leads from business rules to corruption. We used as instruments those variables that measure rules (procedures, time, and costs) from the year 2004; each control variable served as an instrument for itself.

We only report results based on 2SLS. Results based on OLS and on lagged indicators of business rules are generally consistent with the 2SLS findings. We do not report these findings because they are potentially more afflicted by endogeneity problems, but they are available from the authors upon request.

### **III. Results**

Table 2 presents regression results based on procedures, time, and costs indices using 2SLS. Columns 1, 2 and 3 indicate that parameter estimates associated with the number of procedures index, time index, and cost index are positive and statistically significant at the 1% level after controlling for ethno-linguistic fractionalization, latitude, and legal origin. Controlling for level of development

reduces the magnitude of the regression coefficient associated with the regulatory indices; however, these estimates remain positive and significant at the 10% level or better (not shown). Development level (not shown) enters negatively and significantly in all specifications, suggesting that richer countries exhibit lower levels of corruption. Overall, these results suggest that increasing regulatory burdens to doing business in terms of number of procedures, time, and costs necessary to start a business, register property, enforce a contract, and close a business increase corruption.

**Table 2: Regressions**

Two-stage-least squares regression results. Business rules from the year 2004 are used as instrumental variables for business rules in the year 2006, and each control variable is instrumented by itself.

	Dependent Variable: Corruption Perception Index for 2006		
	(1)	(2)	(3)
Constant	3.67850 <sup>1</sup> [1.25767]	4.68332 <sup>1</sup> [1.40406]	5.39006 <sup>1</sup> [1.07805]
Procedures Index 2006	0.79781 <sup>1</sup> [0.00000]		
Time Index 2006		0.79370 <sup>1</sup> [0.00479]	
Costs Index 2006			0.91937 <sup>1</sup> [0.26458]
Ethnolinguistic Fractionalization	2.45848 <sup>1</sup> [0.81968]	2.75365 <sup>1</sup> [0.81701]	1.06767 [0.96835]
Latitude	-5.39587 <sup>1</sup> [1.56116]	-5.95098 <sup>1</sup> [1.84726]	-6.63562 <sup>1</sup> [1.48587]
French Legal Origin	0.67349 [0.51760]	1.48904 <sup>1</sup> [0.48554]	1.52497 <sup>1</sup> [0.50449]
Socialist Legal Origin	3.19470 <sup>1</sup> [0.57057]	4.03754 <sup>1</sup> [0.60304]	4.18852 <sup>1</sup> [0.70383]
Scandinavian Legal Origin	-0.57699 [0.70260]	-1.04327 [0.68629]	-0.95200 [0.71416]
German Legal Origin	-1.26184 <sup>3</sup> [0.71791]	-0.35690 [1.05271]	-0.52116 [0.94924]
Observations	84	84	84
Adjusted R <sup>2</sup>	0.73041	0.69500	0.69174

Standard robust errors are shown between brackets. <sup>1</sup> Significant at the 1 percent level. <sup>2</sup> Significant at the 5 percent level. <sup>3</sup> Significant at the 10 percent level. British legal origin dummy variable has been omitted.

**Table 3: Regressions**

Two-stage-least squares regression results. Business rules from the year 2004 are used as instrumental variables for business rules in the year 2006, and each control variable is instrumented by itself.

	<b>Dependent Variable:</b>			
	<b>Corruption Perception Index for 2006</b>			
	(1)	(2)	(3)	(4)
Constant	3.32789 <sup>2</sup> [1.39869]	3.13356 <sup>1</sup> [1.08166]	4.01862 <sup>1</sup> [1.19228]	2.91993 <sup>2</sup> [1.17969]
Procedures Index 2006	0.66483 <sup>1</sup> [0.15059]	0.65970 <sup>1</sup> [0.14330]		0.57507 <sup>1</sup> [0.16045]
Time Index 2006	0.32373 [0.31513]		0.60983 <sup>1</sup> [0.21118]	0.22371 [0.25505]
Costs Index 2006		0.69579 <sup>1</sup> [0.24342]	0.74146 <sup>1</sup> [0.20779]	0.65920 <sup>1</sup> [0.22394]
Ethno-linguistic Fractionalization	2.40303 <sup>1</sup> [0.77515]	0.98038 [0.84498]	1.14456 [0.84469]	1.01978 [0.82508]
Latitude	-5.01122 <sup>1</sup> [1.69409]	-4.85538 <sup>1</sup> [1.31168]	-5.36598 <sup>1</sup> [1.49681]	-4.61799 <sup>1</sup> [1.41463]
French Legal Origin	0.70188 [0.49534]	0.58162 [0.49350]	1.26173 <sup>1</sup> [0.44039]	0.60607 [0.48276]
Socialist Legal Origin	3.19303 <sup>1</sup> [0.53093]	3.11088 <sup>1</sup> [0.56787]	3.82056 <sup>1</sup> [0.60087]	3.11414 <sup>1</sup> [0.55277]
Scandinavian Legal Origin	-0.60667 [0.68200]	-0.47238 [0.62692]	-0.85518 [0.64912]	-0.49839 [0.61893]
German Legal Origin	-1.02544 [0.79572]	-1.02242 [0.69640]	-0.28544 [0.96508]	-0.87164 [0.76206]
Observations	84	84	84	84
Adjusted R <sup>2</sup>	0.73939	0.76966	0.73349	0.77242

Standard robust errors are shown between brackets. <sup>1</sup> Significant at the 1 percent level. <sup>2</sup> Significant at the 5 percent level. <sup>3</sup> Significant at the 10 percent level. British legal origin is the omitted category.

The results in Table 3 indicate that the regression coefficient associated with the number of procedures index is positive and statistically significant, at the 1% level, in all three specifications, controlling not only for legal origin, latitude and ethno-linguistic fractionalization, but for the presence of the time and cost indexes. The time index parameter estimate loses its significance in the presence of the procedure and cost indices, but it remains positive. The regression coefficient associated with cost index appears positive and statistically significant at the 1% level in all specifications. These findings suggest that the number of procedures index is robustly associated with corruption since its statistical significance survives all

controls. This is true even after adjusting for development. The cost index, however, loses its significance in the presence of the income per capita variable (not shown).

From a policy reform perspective we interpret these findings as suggesting that at an aggregate level the number of procedures and costs incurred to satisfy regulatory mandates are the most likely dimensions of regulatory burden capable of inducing corruption. Consequently, to limit corruption, simplifying procedures and costs ought to be a priority. In contrast, given the statistical insignificance of time to satisfy regulations, it appears to have the least corruption-induced-effect.

Looking at individual components, the regression results in Table 4 Column 1 indicate that number of procedures is positive and statistically significant at the 1% level in the areas of starting a business and enforcing contracts, and at the 5% level in registering property. Column 2 shows that time to enforce contracts impacts corruption positively and significantly at the 1% level. Time to register property is also positive; however, it is significant only at the 10% level. Time to start a business and time to close a business are positive but not statistically significant. Finally, Column 3 reports that costs associated with registering property impact corruption positively, and the estimate is significant at the 1% level. The regression estimates associated with the costs of starting a business and the costs of closing a business are also positive and statistically significant at the 5% level. We find it remarkable that after the inclusion of many controls, some specific components remain highly statistically significant.<sup>5</sup>

Overall, the findings suggest that complex business rules can induce more corruption. Analyzing the index-based results and their statistical significance, it appears that the complicated regulatory rules most likely to induce corruption are those related to the number of procedures. In terms of specific business rules, those most likely to induce corruption are complex procedures to start a business and enforce a contract; time to enforce a contract, and cost to register property. These findings strongly suggest to policymakers the types

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<sup>5</sup> When controlling for development, number of procedures to enforce a contract becomes insignificant; only time and costs to enforce a contract are significant. These results are available upon request.

of business regulations that should be streamlined to mitigate corruption, facilitate business activity, and encourage growth.

**Table 4: Regressions**

Two-stage-least squares regression results. Business rules components from the year 2004 are used as instrumental variables for business rules components in the year 2006, and each control variable is instrumented by itself.

	Dependent Variable: Corruption Perception Index for 2006		
	Procedures (1)	Time (2)	Cost (3)
Constant	3.72834 <sup>1</sup> [1.34861]	4.92565 <sup>1</sup> [1.50787]	5.46898 <sup>1</sup> [1.23699]
Starting a Business	0.30860 <sup>1</sup> [0.11564]	0.11231 [0.16389]	0.28187 <sup>2</sup> [0.12221]
Registering Properties	0.18654 <sup>3</sup> [0.10788]	0.22852 <sup>3</sup> [0.13375]	0.28765 <sup>1</sup> [0.10150]
Enforcing Contracts	0.27696 <sup>1</sup> [0.08013]	0.29605 <sup>1</sup> [0.10650]	0.07712 [0.08858]
Closing a Business		0.08942 [0.15468]	0.23775 <sup>2</sup> [0.10984]
Ethno-linguistic Fractionalization	2.43727 <sup>1</sup> [0.81990]	2.78452 <sup>1</sup> [0.80475]	0.98059 [1.07945]
Latitude	-5.35054 <sup>1</sup> [1.68161]	-6.63154 <sup>1</sup> [0.00257]	-6.92804 <sup>1</sup> [1.71276]
French Legal Origin	0.62174 [0.54746]	1.57863 <sup>1</sup> [0.50299]	1.39932 <sup>2</sup> [0.58318]
Socialist Legal Origin	3.11321 <sup>1</sup> [0.60490]	4.34940 <sup>1</sup> [0.63420]	4.19351 <sup>1</sup> [0.76175]
Scandinavian Legal Origin	-0.61097 [0.67261]	-0.71557 [0.70923]	-0.87749 [0.77178]
German Legal Origin	-1.35133 <sup>3</sup> [0.74968]	-0.16736 [1.04556]	-0.53741 [0.96890]
Observations	84	84	84
Adjusted R <sup>2</sup>	0.72537	0.68456	0.68080

Standard robust errors are shown between brackets. <sup>1</sup> Significant at the 1 percent level. <sup>2</sup> Significant at the 5 percent level. <sup>3</sup> Significant at the 10 percent level. British legal origin is the omitted category. There are no procedures related with Closing a Business Area.

#### IV. Conclusion

In this research, we address the issue of whether business regulations pertaining to authorizations and licensing that involve some number of procedures, time, and cost have an impact on perceived corruption. To assess the robustness of our results, we

controlled for ethno-linguistic fractionalization, latitude, and legal origin. Finally, to mitigate potential problems associated with the endogeneity of our measures of business rules, we applied 2SLS using as instruments business rules from the year 2004.

Results suggest the existence of a positive and significant association between complex business rules and corruption. Using 2SLS methods we uncover the existence of an exogenous component of business rules that induces corruption. In particular, we find that the index of procedures is robustly related to corruption. This finding should not disregard the significant influence on corruption of the time and cost indices. Individual, specific rules that exact an important toll in terms of corruption include number of procedures to start a business and enforce a contract, time to enforce a contract, and cost to register property.

To the extent that complex rules diminish business activity, this effect reduces growth directly. An indirect impact of complex business rules on growth works through corruption. Mauro (1995), among others, reports a negative impact of corruption on growth. Consequently, our results support the efficiency-reducing hypothesis of corruption since we document that complex rules induce more corruption. These results suggest important avenues for policymaking to create business-friendly regulations to mitigate corruption and enhance growth.

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