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Abstract

Adding to the literature on factors driving corruption and bribery, this paper examines the effect of contestability in business operations on bribe solicitations. Contestability undermines bureaucratic rent-seeking potential and this paper tries to capture this empirically using cross-country survey data. Results show that the relatively greater contestability of business startup procedures compared to startup regulatory times led to fewer bribe demands; however, property registration regulations with lower relative contestability led to more bribe demands, especially for import licenses. Finally, older and larger firms received lower bribe demands, *ceteris paribus*.

JEL-Codes: K420, D730, M210.

Keywords: bribery, corruption, contestability, import licenses, operating licenses, regulation.

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1. Introduction

The field of research on determinants of corruption has been quite active in recent years with the result that new investigations must strive harder to either have novel empirical or theoretical basis. A recent literature survey by Dimant and Tosato (2017) notes several new developments in the study of factors driving corrupt activity. However, given the multidimensional nature of corruption, not all potential influences have yet been formally examined. A better understanding of additional factors driving corruption would better empower policymakers to design more effective corruption control policies.

This paper contributes to the literature both theoretically and empirically. Specifically, we draw on the contestability market theory (see Baumol et al. (1982), Brock (1983), Schwartz (1986)) as the theoretical basis for a bureaucrat's ability to demand rents and then employ unique micro-level cross-country survey data about corruption experience to test the predictions of the theory. Since greater contestability enables firms to exit markets quickly and relatively costlessly, the ability of bureaucrats to solicit bribes is diminished. This is, of course, dictated by the stage of business activity. The influence of contestability is hard to capture empirically, as data on stages of business and related bribe demands are not readily available. Typically, corruption studies draw on aggregate datasets that do not allow for additional, firm-level insights (see Dimant and Tosato (2017) and Lambsdorff (2006)).

Lack of sunk costs, resulting in greater contestability and consequently lower ability to extract rents, can occur at various stages of a firm's evolution and operations. At the same time, existence of entry restrictions (e.g., licenses or permits) can increase rent seeking potential of government officials (Tullock (1967)). Which one of these effects is dominant hinges on the nature of the firm (new or old, large or small), the nature of the industry (manufacturing or service), and whether the stages of operations are sequential or simultaneous (initial entry versus production). For instance, firms in initial stages with low sunk costs can exit quickly and this undermines the ability of bureaucrats to extract rents. Simultaneous operating and licensing stages will again have different contestability implications than if these stages were sequential (rather than simultaneous). We are able to consider these dimensions in our paper.

First, the dependent variable we consider alternately involves bribes demanded for the grant of import licenses and for operating licenses. Depending on the nature of the business, import licenses and operating licenses might be obtained simultaneously or sequentially. If import licenses precede operating licenses, then one could envision situations where there would be less sunk costs and greater contestability associated with import licenses (as firms might source domestically or buy from other importers).

Second, the regulatory procedures dealing with various business stages might impinge upon a firm's ability to exit (and not pay the bribe demanded). In this respect, we consider both startup and property registration stages. Whereas generally one would think that startup stages precede property registrations, these could be simultaneous in industries that require proof of physical location along with startup applications. On the other hand, many IT businesses might have limited or no need for significant business property.

Finally, even within a regulatory stage, the potential for bureaucratic hold up might vary. The number of applications or permits associated with each stage (startup or property registrations) are generally known in advance and thus might induce some potential applicants to exit (and not pay a bribe). On the other hand, the time associated with the processing of each application is less clear. Further, once an application has been filed, sunk costs have been incurred and this reduces contestability.

We are able to empirically test all these dimensions, drawing on a rich cross-country survey dataset.¹ Whereas research on the causes of corruption has been substantial (see Treisman (2000); and Lambsdorff (2006) and Pellegrini and Gerlagh (2008) for surveys), the theoretical and empirical aspects considered in this paper are somewhat unique.

To summarize, these are the main contributions of this work:

- Providing a theoretical basis grounded in contestable market theory that affects the ability of bureaucrats to extract bribes.
- Empirical evidence supporting the hypothesis that greater contestability lowers rent seeking ability.
- Analysis at the firm-level across stages of business operations involving thousands of observations across nations.

Key questions addressed are: (i) Does contestability of business operations affect bribe solicitations? (ii) How do rent-seeking abilities vary across stages of business operations? (iii) Do various government regulations similarly affect corruption prevalence across different stages of business operations?

Results show that relatively greater contestability of business startup procedures compared to startup regulatory times led to fewer bribe demands; however, property registration regulations involved greater sunk costs and both related procedures and times led to more bribe demands, especially for import licenses. Further, older and larger firms faced lower bribe demands, *ceteris paribus*.

2. Theoretical background and model

2.1 Theoretical background

Whereas the corruption literature has largely drawn on Becker (1968) as the theoretical foundation of rational corrupt agents considering the relative costs and benefits of their actions (see also Shleifer and Vishny (1993), Rose-Ackerman (1999)), we are able to provide another plausible theoretical foundation by drawing on the contestable market theory. The unique dataset

¹ Whereas the empirical literature has considered some of these dimensions in terms of their influence on corruption, the tie to contestability has been missing (see Goel (2012), Svensson (2005)).

we assemble, enables us to test some of the predictions of this theory in the context of bribery/corruption.²

As discussed in the introduction we are able to consider the implications of contestability on bribe demands along several dimensions of business operations. These deal with the stage of operation and the stage and type of regulation.

Among the various stages of business operations that vary across industries, the two stages of business operations that we consider are import licenses and operating licenses. One could envision where there might be greater sunk costs (and consequently less contestability) associated with obtaining operating licenses compared to import licenses. Businesses seeking operating licenses likely already have purchased or leased office/factory spaces and even ordered or procured machinery in many instances (of course, all this is likely to vary some across industries), whereas those seeking import licenses might not have any physical presence. In fact, often procurers of import licenses never intend to go into production by themselves and instead intend to make money by selling imports to actual producers. Given this difference, one would expect greater "hold-up" by bureaucrats in issuing import licenses than operating licenses, although this might partly hinge upon how crucial imports are and whether there is competition in the market for the imported product.

Contestability might also be present in relative aspects of regulatory interactions, again, with implications for rent seeking (Aidt (2016)). For instance, the number of applications/permits (regulatory hoops) that a business must submit in securing a license are generally known beforehand. This enables potential applicants to consider alternatives and to not apply without much sunk costs. On the other hand, once required applications have been submitted, some costs have already been incurred. Then the subsequent time that the regulatory process takes empowers the corrupt bureaucrat by dragging his feet and inducing hold up.³ Thus, one would expect greater bribery with regulatory time rather than with the number of applications.

Based on these considerations, our main hypothesis is outlined below.

H0: Greater contestability in firm's business operations undermines rent seeking potential and reduces bribery.

Although the underlying survey was not conducted with this study in mind, we use different proxies for contestability to test the hypothesis. The formal model to test this hypothesis is next.

² We are using the terms corruption and bribery interchangeably.

³ Another relevant issue over time is the role of the internet. Digital technologies along with the internet have enabled the decoupling of certain production processes, often also minimizing the human interactions between potential bribe takers and bribe givers. These developments have implications for contestability, as noted initially by Goel and Hsieh (2002). Unfortunately, the lack of a time series angle in our dataset prevents us from examining this aspect.

2.2 Model

To test the above hypothesis, we employ the following general model (where subscript i denotes country and j denotes a respondent)

$$Bribery_{ijk} = f(Regulation_{im}, Firm\ age_{ij}, Firm\ size_{ij}, X_i) \quad (1)$$

$$i = 1, 2, 3, \dots$$

$$j = 1, 2, 3, \dots$$

$$k = BribeImport, BribeOperate$$

$$m = RegQuality, StartProc, RegisterProc, StartTime, RegisterTime$$

$$X = GDP, DEM, GovtSize, Transition, Colony, Protestant$$

The cross-national literature on corruption determinants has largely used composite indices of corruption perceptions or ratings (from the Transparency International, World Bank or ICRG). These indices are useful, albeit with some limitations in trying to gauge an illegal activity (Treisman (2007), Williams and Siddique (2008)). In contrast, we employ two measures of the dependent variable based on actual corruption experiences of businesses based on survey data. These deal with bribe demands associated with import licenses (*BribeImport*) and operating licenses (*BribeOperate*).⁴ The import and licensing stages might be sequential or simultaneous in a given industry. While we do not have cross-national information at that level of detail, it is nevertheless quite intuitive to presume that the contestability of both import and operating licenses would be generally dissimilar. What are significant drivers of bribery in import licenses versus the drivers of bribery in operating licenses? In our sample the average of *BribeImport* was 0.13, as compared to 0.17 for *BribeOperate* (Table 1), suggesting there were greater bribe demands associated with business operating licenses - not all businesses require imports and even when they do, they do not necessarily have to be importers themselves.

In regard to regulations, we consider several dimensions that enable us to capture different stages of firms' interactions and varying abilities of regulators' rent seeking (see Baksi et al. (2009) for related theoretical arguments). First, an aggregate index of regulatory quality is included to examine the effect of overall regulatory climate on bribe demands (*RegQuality*). Second, two different forms of regulations dealing with business startup and property registrations are considered. As discussed above, while startup formalities would generally be before property registrations, this might not necessarily be the case in all industries. Finally, the qualitatively different regulatory costs are accounted for by the number of applications/procedures in each case and the time taken with each. For instance, the average number of procedures associated with business startups was 10.4, whereas the corresponding number for property registrations

⁴ Both are dichotomous variables with 1 denoting a bribe demand or expectation and zero otherwise. These bribe demands may also be viewed as situations where the bribe taker or the bureaucrat moves first to form a corrupt exchange. Goel (2013) has examined the theoretical implications of the order of moves in corruption relations.

was 6.9. All these have different sunk costs associated with them which influence regulatory hold up and consequently the ability to garner bribes.

We are able to consider a couple of respondent (firm) characteristics that might be relevant in this context. These include firm's age (*FirmAge*) and size (*FirmSize*). Older and/or larger firms might have different licensing requirements (both operating and import licenses) and different dealings with regulators/bureaucrats (e.g., older firms do not need to deal with startup procedures). All these would affect their contestability and influence the ability of bureaucrats to garner rents. For example, the length of time it takes to obtain a license or permit can be expedited through bribes, whereas the number of procedures indicates the number of possible encounters with bribe seekers. In our sample, the two regulatory times (*StartTime* and *RegisterTime*) are negatively correlated, while the two procedures (*StartProc* and *RegisterProc*) are positively correlated. The negative correlation between *StartTime* and *RegisterTime* is suggestive of substitution and some overall bureaucratic efficiency. While procedures seem complementary - bureaucratic red tape in an economy is generally not confined to a single regulatory intervention.

The other controls (denoted by the vector X) borrow from the broader literature surveys that help us identify the key influences on corruption (see Aidt (2003), Lambsdorff (2006), Seldadyo and de Haan (2006), Serra (2006), Svensson (2005), Treisman (2007)). Specifically, GDP captures economic prosperity and wealthier nations, with better institutional controls, have been shown to have lower corruption, as do more democratic nations (see Jetter et al. (2015), Treisman (2000)), and nations with a larger Protestant population (Paldam (2001)).

The role of government, captured by government size (*GovtSize*), is more complex, being associated with bureaucratic red tape on the one hand and better enforcement on the other (Rose-Ackerman (1999)).⁵ Finally, transition nations (*Transition*), with relatively nascent institutions and lumpy investments associated with institution building, and nations with colonial legacies (*Colony*) are generally viewed as being more corrupt.

3. Data and estimation

3.1 Data

Our data encompasses survey data on individual firms, supplemented with annual aggregate data where relevant. The variable names, definitions, sources, and summary statistics are reported in Table 1.

The dependent variable is a measure of bribery. *BribeImport* and *BribeOperate* are micro-level corruption measures based on survey data from The World Bank World Enterprise Survey (WES). The WES is a comprehensive annual survey that captures the actual business

⁵ Given the cross-sectional nature of the analysis, reverse feedbacks from bribe demands to government size do not seem to be a significant concern.

environment in various interesting dimensions.⁶ Our dependent variables exploit information from 2006 onwards from rounds of the WES to ensure that a standardized methodology and instrument sets are used for the survey.⁷ The final dataset is a cross-section of over 11,000 respondents from 131 countries. To capture the influence of long term fundamentals we avoid estimating our empirical model in contemporary terms. Thus, the dependent variables pertain to the 2006 to 2015 rounds of the WES surveys, while the values of the right hand side variables are mainly based on 2006 data. This feature of our empirical model helps circumvent the issues of reverse causality while also addressing problems of missing observations.

BribeImport and *BribeOperate* are binary variables that take the value of 1 if a bribe is demanded and zero otherwise. Specifically, *BribeImport* is based on the following question: “In reference to that application for an import license, was an informal gift or payment expected or requested?” *BribeOperate* answers the following question: “In reference to that application for an operating license, was an informal gift or payment expected or requested?” Both variables were coded such that 1 equals a “yes” response and zero equals a “no” response. The other controls are from reputed international sources that are routinely used in the literature (see Table 1 for details).

Bribe demands for operating and import licenses are highly correlated with a correlation coefficient of 0.65 (further details are available upon request). This points to the pervasive nature of corruption across regulatory departments in a corrupt economy.

3.2 Estimation

Given that the dependent variables *BribeImport* and *BribeOperate* are binary variables, we use a Logit model and estimate the model parameters using Maximum Likelihood estimation. Although the resulting estimates from Logit models are odds ratios we report the marginal effects. In particular, the coefficient reported denotes the effect of a one unit change in the independent variable on the probability of a bribe being demanded. This allows for easy comparison across the two measures of corruption. Additionally, we report standard errors that are robust to various forms of misspecification.

To ascertain model fit, we report the pseudo- R^2 and the Pearson goodness-of-fit test under the null that the model is a good fit. We also report a specification link test to check for model misspecification. The null hypothesis is that the model is correctly specified.

⁶ One can identify World Bank’s Doing Business (DB) Survey as an alternative measure of business conditions. However, the DB survey is not capturing the same information as the WES. According to Hallward-Driemeier and Pritchett (2015), the methodology of the DB Survey is based on expert opinions with an implicit assumption that firms are complying with the rules and regulations of the country of their location. On the contrary, the WES provides information about the *actual, rather than assumed*, state of the business and legal environment firms are operating in.

⁷ To quote from the actual survey, “Uniform universe, uniform methodology of implementation, and a core questionnaire are the basis of the Global methodology under which most Enterprise Surveys have been implemented since 2006” (Enterprise Survey Indicators Description, 2015, p.2. Available at <https://www.enterprisesurveys.org/~media/GIAWB/EnterpriseSurveys/Documents/Misc/Indicator-Descriptions.pdf> access 29 July 2016).

4. Results

4.1 Baseline models

The overall fit of various Logit models in Table 2 is shown by the pseudo- R^2 and the linktest suggests some specifications issues that we try to address in Section 4.3. Table 2 includes the baseline models with *BribeImport* (Models 2.1-2.3) and *BribeOperate* (Models 2.4-2.6) as the dependent variable. As stated above, these measures are based on corruption experience and capture different stages of business operations with potentially different contestability and resulting implications for bribery.

First, we consider the effect of regulation, using an overall index of regulatory quality (*RegQuality*). The coefficient on regulatory quality is negative and significant across all models with relatively sizable effects on bribery. This finding is consistent with the view that improvements in regulatory quality (implying more efficient, responsive regulatory mechanisms), reduce bribery and corruption. In our case, this is true for bribes associated with both import licenses and operating licenses. In Section 4.2 and Tables 3-4, we consider more specific measures of regulations that enable us to consider their varying potential links with contestability and the resulting influences on bribery.

Turning attention to firm characteristics, smaller firms are more likely to be asked for a bribe for an operating license, but not an import license. Small firms might not have large requirements to be independent importers. However, older firms are less likely to be solicited for a bribe for both operating and import licenses. One reason for this might be that older firms are more likely to be on the "radars" of potential bribe seekers. Our survey data enables us to examine these unique insights from firm characteristics.

The effect of GDP on bribes is negative and significant across all models. Greater economic prosperity lowers bribe demand and this result is consistent with findings in the broader corruption literature (Serra (2006)). Democratic nations (*DEM*) show differentiated effects with respect to bribes for operating license and import license.⁸ That is, democracy does not statistically influence bribes requested for operating licenses, but has a positive association with bribes for import licenses. This potentially results from constituents' preferences for restricting trade through raising the costs of obtaining import licenses. The size of government (*GovtSize*) is negatively associated with bribes suggesting that a larger government is not necessarily adding bureaucratic red tape.

The positive and significant coefficient on *Transition* reveals that transition nations tend to be more corrupt, which is consistent with bribes being used to evade underdeveloped institutions. However, nations originally colonized show a positive influence on bribes for operating license and the absence of statistical association with bribes for import licensing. Nations with a larger fraction of Protestants show lower corruption across all models (see Lambsdorff (2006)).

⁸ Some scholars have noted the complex relation between economic prosperity and democracy (see Jetter et al. (2015)).

4.2 Bribe solicitations across different dimensions of market regulation

Tables 3 and 4 replace *RegQuality* with four different/specific dimensions of business regulations: (1) the number of procedures needed to start a business (*StartProc*); (2) the time required to start a business (*StartTime*); (3) the number of procedures for purchasing and transferring a piece of property (*RegisterProc*); and (4) the time required to purchase and transfer a piece of property (*RegisterTime*). As discussed above property registrations and business startups generally deal with different stages of a firm's existence, and the number of procedures and the time associated with each address different qualitative aspects of regulation. All these enable us to consider different implications for contestability and how it might affect bribery at different stages of business operations (captured by the two dependent variables).

4.2.1 Bribery in obtaining operating licenses

Table 3 replicates Models 2.2 and 2.3 with *BribeOperate* as the dependent variable, but with detailed and specialized regulatory variables. The resulting estimates are in Models 3.1-3.8. The coefficient on *StartProc* is negative but the coefficient on *StartTime* is positive suggesting different effects on the likelihood of bribe demands depending on the number of procedures and the time needed to start a business. These results make sense in terms of relative contestability as well. Startup procedures are preannounced, regulatory times are less clear and one finds out about delays when one is in the process (see Bose (2004)). Thus, bribe demands are less likely in the startup permits stage for the fear of exodus of some customers - i.e., potential bribe givers. Indeed, bribes are many times used to speed up the usually slow process of obtaining necessary licenses and permits.

Turning to the other regulatory dimension - property registrations, the coefficient on *RegisterProc* is positive and significant whereas *RegisterTime* is insignificant. Again, when one thinks about related sunk costs, property registrations are sought after property purchase. Thus, there is less chance of firms' exit, which enables the bribery solicitor to demand bribes even with greater number of procedures.⁹

With regard to firm characteristics, firm size did not significantly affect operating license bribe demands, while firm age did matter. In particular, older, established firms were less likely to be asked for operating license bribes. This might signify some learning on the part of bribe givers or some discounting by bribe seekers. The control variables are consistent with the baseline models.

4.2.2 Bribery in obtaining import licenses

Table 4 replicates Models 2.5 and 2.6 with *BribeImport* as the dependent variable by replacing *RegQuality* with the four measures of business regulations. Import licenses might be sought by actual operators, potential operators or speculators who intend to sell imports or even import rights with no intention of production.

The resulting estimates are in Models 4.1-4.8. The magnitude and significance of the four regulation variables match those in Table 3, suggesting that in a majority of instances in the survey, the import and operating stages were likely not sequential (i.e., import licenses desired

⁹ The insignificant sign on *RegisterTime* can be reconciled with the notion that properties are generally bought for the medium to long term, so speedy delivery through grease money might not be a compelling consideration in most cases.

by actual operators). The time required to start a business and the number of procedures needed to purchase and transfer property have a positive effect on the probability of a bribe demand for an import license, and the number of procedures to start a business has a negative effect on the probability of a bribe demand. However, the coefficient on *RegisterTime* is now positive and significant. This would be the case when some crucial material to be imported is holding up the production process or when the imported product has relatively short shelf life. In both instances, timely delivery would be important and thus the willingness to pay and solicit bribes would be greater.

Firm characteristics reveal some noteworthy differences. Whereas the coefficients on *FirmAge* are negative and significant as in Tables 2 and 3, the coefficients on *FirmSize* is now positive and significant in all cases. Smaller firms seeking import licenses are more likely solicited for bribes. This is consistent with smaller firms being less able to negotiate with bribe seekers.¹⁰

The control variables (*GDP*, *GovtSize*, *Transition*, *Colony*, and *Protestant*) also maintain their sign and significance with the exception of the coefficient on *DEM* which is now negative and significant. The negative sign on democracy is consistent with the view of greater democracy leading to greater exposure (see Lambsdorff (2006)).

4.3 Consideration of possible nonlinearities

As a robustness check, we consider nonlinearities in some of the regressors. The linktest reported in Table 2 points to the possibility of some specification issues. Thus, we alternately included squared terms of *GDP*, *DEM* and *GovtSize* in Models 2.1 and 2.4, respectively.

The results, available upon request, showed that GDP^2 had a negative and significant effect on both licensing and operating bribe solicitations. A positive coefficient on *GDP* and negative coefficient on GDP^2 suggests an inverted “U” shaped relationship between economic prosperity and bribery. Further, $GovtSize^2$ was statistically insignificant, while DEM^2 models failed to converge. The other findings were largely similar. These results suggest the presence of nonlinearities in some cases and that the issue merits additional consideration in future research.

5. Concluding remarks

This paper adds to the extant literature on corruption both theoretically and empirically. Using survey data on bribe demands, it examines the effect of contestability in stages of business operations on bribe solicitations. The two stages considered are import license and operating license applications. Contestability reduces bureaucratic rent-seeking potential. The varying effects on firm characteristics, the specific measures of corruption and the tie to varying aspects of contestability are key contributions of this work to the literature (see Dimant and Tosato (2017)).

¹⁰ We also considered a dummy variable identifying service industry firms to see whether they were somehow different from other (e.g., manufacturing) firms. Service firms might have different sunk costs, and thus contestability, than manufacturing firms. The resulting coefficient was insignificant in all cases. Further details are available upon request.

Results support the main hypothesis by showing that the relatively greater contestability of business startup procedures compared to startup regulatory times led to fewer bribe demands; however, property registration regulations involved greater sunk costs and both related procedures and times led to more bribe demands, especially for import licenses. At the firm level, older and larger firms were less likely to be solicited for bribes. Whereas these regulatory aspects have been considered in some studies (Goel (2012), Kasuga (2013), Svensson (2005)), their grounding and interpretation in the contestability market theory is new, as are the dependent variables.

In response to the questions posed in the Introduction, we find that (i) contestability of business operations does affect bribe solicitations; (ii) rent-seeking abilities are affected by the stage of business operations, with more contestable stages being less vulnerable to hold-up by bureaucrats; and (iii) different government do not necessarily similarly affect corruption across stages of business operations. For example, we find that property registration times (*RegisterTime*) significantly impact bribery associated with obtaining import licenses, but not with seeking operating licenses.

Other drivers of rent seeking are similar across the two stages of business operations. In particular, greater economic prosperity, a larger government, greater Protestant population and improvements in regulatory quality lowered bribe demands. Transition nations had more bribe solicitations, while older, established firms were solicited less often. Some of these findings reinforce earlier results in the literature, albeit with data at the firm level (see Dimant and Tosato (2017), Lambsdorff (2006)).

The policy take on this is that corruption control is a complex undertaking - the stage of business operations and the stage and type of regulatory intervention might matter. Thus, firms in different industries, at different stages of their existence and of varying sizes might have different experiences with bribes demanded. The contestable market theory enables us to understand some of these variations in the context of whether or not sunk costs are present. The influence of contestability is changing in the digital economy as more stages of business operations are prone to easier entry and exit by firms (see Goel and Hsieh (2002)).

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Table 1: Variable definitions, summary statistics and data sources

<i>Variable</i>	<i>Description [mean; standard deviation]</i>	<i>Source</i>
<i>BribeImport</i>	In reference to that application for an import license, was an informal gift or payment expected or requested? If the answer to this question is “yes” the variable is coded as 1 and if “no” then the variable is coded as 0. [0.129; 0.335]	World Bank World Enterprise Survey(www.enterprisesurveys.org)
<i>BribeOperate</i>	In reference to that application for an operating license, was an informal gift or payment expected or requested? If the answer to this question is “yes” the variable is coded as 1 and if “no” then the variable is coded as 0. [0.166; 0.373]	World Bank World Enterprise Survey (www.enterprisesurveys.org)
<i>GDP</i>	Natural log of GDP per capita in constant 2000 U.S. dollars. [8.711; 0.916]	World Development Indicators (2012)
<i>DEM</i>	Assessment of the responsiveness of government to its people. The index is from 0 to 6 with higher scores indicating better outcomes. [0.137; 0.344]	International Country Risk Guide (ICRG) prsgroup.com
<i>GovtSize</i>	General government final consumption expenditures (% of GDP). [13.468; 4.726]	World Development Indicators (2014)
<i>Transition</i>	Dummy variable equal to one if the country is a transition country and zero otherwise. Countries classified as transition include: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Romania, Russia, Serbia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. [0.166; 0.372]	www.un.org
<i>Colony</i>	Dummy variable equal to one indicating the country is former British, French, Spanish, or Portuguese colony; zero otherwise. [0.863; 0.344]	Treisman (2000)
<i>Protestant</i>	The percent of the population that is Protestant in 1980. [6.899; 13.031]	La Porta et al. (1999)

<i>RegQuality</i>	Index of regulatory quality ranges from -2.5 to +2.5 with higher values corresponding to better outcomes. [-0.245; 0.645]	Kaufmann et al. (2010)
<i>FirmSize</i>	Dummy variable equal to one if the firm has less than 20 employees and zero otherwise. [0.473; 0.499]	World Bank World Enterprise Survey (www.enterprisesurveys.org)
<i>FirmAge</i>	The number of years since the establishment began operation in the country. [22.491; 16.067]	World Bank World Enterprise Survey (www.enterprisesurveys.org)
<i>StartProc</i>	Indicator of the number of procedures (e.g. obtaining licenses and permits) officially required to start up and formally operate an industrial or commercial business. This variable captures interactions between the business and external parties such as government agencies. [10.415; 2.927]	World Bank Group Doing Business Survey
<i>StartTime</i>	Indicator of the time (in calendar days) involved to start up an industrial or commercial business. [50.301; 41.261]	World Bank Group Doing Business Survey
<i>RegisterProc</i>	Indicator of the number of procedures necessary to complete the process for a business to purchase a property from another business and to transfer the property titles to the buyer's name. [6.915; 2.566]	World Bank Group Doing Business Survey
<i>RegisterTime</i>	Indicator of the time (in calendar days) involved to complete the process for a business to purchase a property from another business and to transfer the property titles to the buyer's name. [93.354; 119.406]	World Bank Group Doing Business Survey

Table 2
Market contestability and bribe solicitations: Baseline models

<i>Dependent variable:</i>	<u><i>BribeImport</i></u>			<u><i>BribeOperate</i></u>		
	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
<i>GDP</i>	-0.053*** (0.004)	-0.052*** (0.004)	-0.047*** (0.004)	-0.044*** (0.003)	-0.044*** (0.003)	-0.040*** (0.003)
<i>DEM</i>	-0.012 (0.015)	-0.012 (0.015)	-0.014 (0.015)	0.035*** (0.008)	0.035*** (0.008)	0.034*** (0.008)
<i>GovtSize</i>	-0.011*** (0.001)	-0.011*** (0.001)	-0.011*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)
<i>Transition</i>	0.050*** (0.012)	0.049*** (0.012)	0.038*** (0.012)	0.044*** (0.009)	0.044*** (0.009)	0.033*** (0.009)
<i>Colony</i>	0.042*** (0.015)	0.042*** (0.015)	0.048*** (0.015)	-0.011 (0.010)	-0.011 (0.010)	-0.004 (0.010)
<i>Protestant</i>	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.001** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
<i>RegQuality</i>	-0.069*** (0.007)	-0.069*** (0.007)	-0.070*** (0.007)	-0.049*** (0.005)	-0.049*** (0.005)	-0.051*** (0.005)
<i>FirmSize</i>		0.012* (0.007)			0.002 (0.005)	
<i>FirmAge</i>			-0.002*** (0.000)			-0.001*** (0.000)
Observations	11,119	11,119	11,018	22,535	22,535	22,338
Pseudo R-squared	0.138	0.138	0.146	0.0766	0.0766	0.0796
Linktest t-statistic	7.416	7.467	7.019	2.898	2.944	2.993
Pearson goodness-of-fit	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

*Notes: See Table 1 for variable details. Constant included but not reported. Logit estimation employed using STATA - marginal effects are reported. Robust standard errors are in parentheses and probability values are in brackets with asterisks denoting significance at the following levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

Table 3
Market contestability and bribe solicitations for operating licenses:
Effects of different dimensions of market regulation

<i>Dependent variable: BribeOperate</i>								
	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)	(3.6)	(3.7)	(3.8)
<i>GDP</i>	-0.061*** (0.003)	-0.058*** (0.003)	-0.059*** (0.003)	-0.060*** (0.003)	-0.058*** (0.003)	-0.055*** (0.003)	-0.056*** (0.003)	-0.056*** (0.003)
<i>DEM</i>	0.017** (0.008)	0.017** (0.008)	0.033*** (0.008)	0.019** (0.008)	0.015** (0.008)	0.015** (0.008)	0.029*** (0.008)	0.018** (0.008)
<i>GovtSize</i>	-0.015*** (0.001)	-0.016*** (0.001)	-0.016*** (0.001)	-0.016*** (0.001)	-0.014*** (0.001)	-0.016*** (0.001)	-0.015*** (0.001)	-0.016*** (0.001)
<i>Transition</i>	0.059*** (0.009)	0.069*** (0.009)	0.067*** (0.009)	0.065*** (0.009)	0.050*** (0.009)	0.060*** (0.009)	0.057*** (0.009)	0.056*** (0.009)
<i>Colony</i>	0.010 (0.011)	-0.010 (0.011)	-0.012 (0.011)	-0.002 (0.011)	0.018 (0.011)	-0.002 (0.011)	-0.004 (0.011)	0.005 (0.011)
<i>Protestant</i>	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
<i>FirmSize</i>	0.002 (0.005)	0.002 (0.005)	-0.001 (0.005)	0.001 (0.005)				
<i>FirmAge</i>					-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
<i>StartProc</i>	-0.004*** (0.001)				-0.004*** (0.001)			
<i>StartTime</i>		0.000*** (0.000)				0.000*** (0.000)		
<i>RegisterProc</i>			0.005*** (0.001)				0.004*** (0.001)	
<i>RegisterTime</i>				-0.000 (0.000)				-0.000 (0.000)
Observations	22,357	22,357	22,357	22,357	22,161	22,161	22,161	22,161
Pseudo R-squared	0.0721	0.0722	0.0724	0.0712	0.0748	0.0748	0.0748	0.0748
Linktest t-statistic	2.930	4.802	4.764	4.709	3.074	4.530	4.440	4.279
Pearson goodness-of-fit	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Notes: See Table 2.

Table 4
Market contestability and bribe solicitations for import licenses:
Effects of different dimensions of market regulation

Dependent variable: <i>BribeImport</i>								
	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)	(4.7)	(4.8)
<i>GDP</i>	-0.071*** (0.003)	-0.073*** (0.003)	-0.074*** (0.003)	-0.069*** (0.003)	-0.067*** (0.003)	-0.069*** (0.004)	-0.069*** (0.004)	-0.064*** (0.003)
<i>DEM</i>	-0.048*** (0.014)	-0.043*** (0.015)	-0.034** (0.015)	-0.033** (0.015)	-0.051*** (0.014)	-0.047*** (0.015)	-0.038*** (0.015)	-0.037** (0.014)
<i>GovtSize</i>	-0.012*** (0.001)	-0.013*** (0.001)	-0.013*** (0.001)	-0.012*** (0.001)	-0.011*** (0.001)	-0.012*** (0.001)	-0.012*** (0.001)	-0.012*** (0.001)
<i>Transition</i>	0.048*** (0.012)	0.055*** (0.012)	0.057*** (0.012)	0.056*** (0.012)	0.037*** (0.012)	0.043*** (0.012)	0.044*** (0.012)	0.044*** (0.012)
<i>Colony</i>	0.077*** (0.016)	0.051*** (0.016)	0.049*** (0.016)	0.048*** (0.016)	0.082*** (0.016)	0.059*** (0.016)	0.057*** (0.016)	0.056*** (0.016)
<i>Protestant</i>	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
<i>FirmSize</i>	0.016** (0.007)	0.015** (0.007)	0.014** (0.007)	0.018** (0.007)				
<i>FirmAge</i>					-0.001*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
<i>StartProc</i>	-0.007*** (0.001)				-0.007*** (0.001)			
<i>StartTime</i>		0.000** (0.000)				0.000** (0.000)		
<i>RegisterProc</i>			0.004*** (0.001)				0.004*** (0.001)	
<i>RegisterTime</i>				0.000*** (0.000)				0.000*** (0.000)
Observations	11,032	11,032	11,032	11,032	10,932	10,932	10,932	10,932
Pseudo R-squared	0.133	0.128	0.128	0.131	0.139	0.135	0.135	0.135
Linktest t-statistic	7.732	8.568	9.954	6.665	7.003	7.598	8.836	6.083
Pearson goodness-of-fit	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Notes: See Table 2.