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The Incidence of Graft on Developing-Country Firms

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Abstract

This paper measures the extent to which firms in developing countries are the target of bribes. Using new firm-level survey data from 33 African and Latin American countries, we first show that perceptions adjust slowly to firms' experience with corrupt officials and hence are an imperfect proxy for the true incidence of graft. We then construct an experience-based index that reflects the probability that a firm will be asked for a bribe in order to complete a specified set of business transactions. On average, African firms are three times as likely to be asked for bribes as are firms in Latin America, although there is substantial variation within each region. Last, we show that graft appears to be more prevalent in countries with excessive regulation and where democracy is weak. In particular, our results suggest that the incidence of graft in Africa would fall by approximately 85 percent if countries in the region had levels of democracy and regulation similar to those that exist in Latin America.

The Incidence of Graft on Developing-Country Firms

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1   Introduction

Corruption is a serious burden for firms in the developing world. In 2006, two out of every five firms in Africa and Latin America reported that unofficial payments were required "to get things done," and one in six said they were expected to present informal gifts when meeting with tax inspectors. On average, informal gifts or payments "to get things done" were equivalent to 2.1 percent of firm sales, which, taken at face value, would not appear to be excessive, especially in comparison with applicable tax rates around the world. Nevertheless, the uncertainty and illegal nature associated with corruption makes it more burdensome on firms than official taxation (Shleifer and Vishny 1993; Fisman and Svensson 2007). More worrisome is that the incidence of bribes is higher precisely in the poorest countries, where development needs are most pressing. For example, whereas 9 percent of firms in Chile believe informal gifts are required to "get things done," 87 percent of firms in Burkina Faso are of that view. Similarly, two out of every three firms in Cameroon and the Democratic Republic of Congo state that they must pay bribes when meeting with tax officials. Finally, firms in Africa report having to pay higher bribes, as a percent of sales, than their counterparts in relatively-affluent Latin America, 2.7 vs. 1.4 percent, respectively.[2]

Since growth is unlikely without a vibrant private sector, measuring and understanding how corruption affects firms is an important research area. However, efforts in that direction are thwarted by the lack of reliable information about the incidence of corruption. By its very nature, it is difficult to come by objective data on the pervasiveness of graft. Work on the subject often relies on perceptions on the extent of corruption, but there is evidence that perceptions are a poor reflection of the prevalence of corrupt practices (Olken 2007; Weber 2007).[3] In addition, existing cross-country measures of corruption are often based on surveys of a limited number of experts, a non-representative sample of firms (e.g., multinational corporations), or households, and hence may not necessarily reflect the experience of the average enterprise.

In this paper we exploit a novel dataset of nearly 10,000 firms in 33 countries in Latin America and Africa to compute objective measures of the incidence of corruption.[4] The data come from the

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[2] All figures come from the World Bank's *Enterprise Surveys* and are available at http://www.enterprisesurveys.org .

[3] Even the figures in the opening paragraph can be criticized for reflecting firms' views on how widespread corruption and not necessarily their own experience.

[4] Our sample consists of firms in 18 African and 15 Latin American countries. In Africa they include: Angola, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Democratic Republic of Congo, Gambia, Guinea, Guinea-Bissau, Malawi, Mauritania, Namibia, Niger, Rwanda, Swaziland, Tanzania, and Uganda. In Latin America they are: Argentina, Bolivia, Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

Enterprise Surveys collected by the World Bank that cover business conditions in most major economies across the globe. These surveys capture firm perceptions about the quality of the business environment, as well as objective information on firm characteristics and the problems firms must deal with when transacting with the public or private sector. These problems include delays or difficulties in gaining access to electricity or credit, the extent of obligations from complex taxes, and frequent inspections, among others. The *Enterprise Surveys* also contain information on firms' perceptions about the problems that corruption poses for their performance, as well as records on whether firms were asked to make "an informal gift or payment" when requesting access to basic infrastructure services or government permits.[5] The latter form the basis of the analysis in this paper.

We first matched data on perceptions and on instances of bribery and show that firms that solicit services or licenses and are not asked for bribes hold a more optimistic view about the effect of corruption on firm performance, relative to both firms that are victims of extortion and those that did not request services and hence are beyond the reach of corrupt officials. We take this as evidence suggesting that perception-based measures of corruption are an imperfect proxy for the true incidence of graft.

We then use the *Enterprise Survey* data to construct a *Graft Index of Firm Transactions* (GIFT). The index reflects the probability that a firm will be asked for an informal gift or bribe when requesting access to infrastructure services or permits. The proposed index has several advantages over alternative measures of corruption. Most notably, the index relies on "hard" data — firms' encounters with corrupt practices — and not on managers' or experts' perceptions about the extent of corruption in a country. Another advantage is that our primary data come from nationally representative surveys and hence capture the experience of the typical firm's dealing with dishonest government officials. The fact that we focus on a common set of transactions guarantees that our results are comparable across countries. Admittedly, the index is based on a narrow definition of graft that focuses on petty bribes and we do not directly account for several other forms of corruption (e.g., in the procurement of government contracts) that could potentially have a bigger effect on firm performance.

The index strongly indicates that firms in Africa are particularly vulnerable to graft. Entrepreneurs in the region had on average a 19 percent chance of being asked for bribes; among the comparatively wealthier Latin American countries, the figure was only a third as high (7 percent). Within each of the two regions, and even among neighboring countries, there is substantial variation in the incidence of bribery, suggesting that corruption is not necessarily explained by cultural or historical factors. The index also shows that bribery is more common when requesting licenses and permits than when soliciting infrastructure services.

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[5] Specifically, access to electricity, water, telephone services, construction permits, operating licenses, and import licenses.

Finally, we use the index to shed light on some of the factors that lie behind the incidence of graft. In particular, we study whether excessive regulation is associated with corruption. For that we use data from the World Bank's *Doing Business* project. The latter ranks countries according to the extent and nature of the regulatory and legal obligations that firms have to meet to be able to operate in an economy; more obligations translate into a lower rank.[6] We also consider whether democratic governments, more accountable to their citizenry, do a better job in containing petty bribery. We find that both excessive regulation and weak democracies increase the likelihood that firms will be the target of bribes. Our quantitative results imply that differences in the incidence of graft in Africa and Latin America would disappear if the former had levels of democracy and regulation similar to those that exist in the Western Hemisphere.

The rest of the paper is organized as follows. In Section 2, we address the relationship between experience with corruption and the perception of corruption. We show that perceptions adjust only gradually to changes in the true extent of graft. In Section 3, we explain how we calculate the *Graft Index of Firm Transactions*, apply the methodology to our sample of countries, and present our estimates. In Section 4, we look at some of the correlates of the index at the country level. Although the data do not allow us to identify the causes behind graft, findings here regarding the link between regulation, democracy, and corruption are in line with those suggested in the literature and explored by other authors. Section 5 concludes.

2   Do perceptions of corruption match incidences of graft?

In this section, we discuss the relationship between perceptions and incidences of corruption. We begin by discussing the difficulty with measuring the extent of corruption using perceptions data —which are at present almost exclusively what is used to measure corruption. By comparing firm-level data on the incidences of bribes with firm-level data on perceptions of corruption, we show that perceptions and incidences are imperfectly matched but likely to be updated depending on recent experience. With respect to updating of corruption perceptions, the data show that when firms have a positive experience with honest, uncorrupt officials, these same firms are prone to have more positive perceptions about the extent of corruption than firms that had no record of transactions with officials or those that had transactions and were asked for bribes to complete them.

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[6] See www.doingbusiness.org.

2.1 Why is corruption hard to measure and compare across countries?

In order to assess the nature and extent of corruption, economists prefer transaction data —who businesses bribe, how much they bribe, how often they bribe, and what is gotten in return for those bribes. Given the illegal nature of these activities, such data are difficult to get. In their absence, many studies have had to settle for perceptions and opinions about corruption to determine its prevalence and nature (Lambsdorff 2006; Kaufmann et al 2007).

While perceptions data are easier to get than direct reports of corrupt deals, using perceptions is problematic. First, it is difficult to pin down how perceptions are formed because corruption refers to activities that are the hidden and largely unobservable. Therefore, perceptions about corruption are likely formed by what people believe to be generally taking place and less so on what is personally experienced. In any one city or country, what people believe to be taking place may start to converge since people read the same newspapers, are exposed to the same political rhetoric and may hear others' opinions about corruption (Čábelková and Hanousek 2004; Moyal et al. 2004). In the end, people may end up repeating those personally unverified opinions until they become well-ingrained folklore (Andvig 2004).

Second, it is not clear what type of corruption one is measuring when constructing a corruption index (Knack 2002, Weber 2007). Some indexes are based on experts' assessments of overall corruption in a country. Most often, these experts are either managers of multinational firms operating in these countries or financial analysts who study the investment risk of several countries across the globe. Managers and financial analysts are unlikely to have specific personal experience with having to give petty bribes to get things done. It is also more likely that a CEO has personal experience with a different type of corruption, political corruption, for example, and may refer to that when asked about corruption. In sum, experts in one country may refer to political corruption and experts in another county may refer to the practice of doling out protection money to the local thugs to keep shipments safe and on time.

Third, there is a contextual problem with perceptions as each respondent has his or her own point of reference and it is unlikely to be shared by many (Bertrand et al. 2001). It is possible that individuals do not share the same point of reference even when experiencing the same incident. For example, it is not clear that if a manager considers a country to be "very corrupt" another manager that works in other countries will share the same relative measure of what is "very corrupt." Among many things, the personality or state of mind of the respondent may affect responses, some seeing the glass half empty and others half full.

Most of these criticisms point out why there is likely to be a gap between perceptions of corruption and direct experience with it. Convincing as these arguments are, there is little direct evidence about the nature or size of this difference between perceptions and experience. Exploiting the perceptions

and the direct experience data contained in the *Enterprise Surveys*, we have the ability to explore the existence and nature of the gap between the two.

2.2   Are perceptions correlated with the incidence of bribes?

In likely response to the criticisms and limitations of perceptions data on corruption, there is a nascent empirical literature developing on the relationship between experience with corruption and perceptions of corruption.[7] Olken (2006) takes a detailed, micro approach and examines corruption perceptions and incidences of skimming off the top from road construction in Indonesia. He finds that perceptions on the extent of corruption and objective levels are a good reflection of each other when the extent of corruption can be easily and objectively confirmed. However, when corruption is carried out in ways that are easily hidden and unverifiable, perceptions and the extent of corruption begin to diverge. Two country studies, one in Ukraine (Čábelková and Hanousek 2004) and one in Uruguay (Moyal et al. 2004), show that media sources are influential in forming perceptions of corruption and, most importantly, these studies show how negative perceptions of corruption may reinforce people's willingness to offer bribes. However, these two studies do not have data that tally direct experiences with bribing or other forms of corruption.

While these micro studies show that it is difficult to disentangle the relationship between perception and experience, Tirole (1996) provides a theoretical model as to the dynamic nature of perceptions and experience and under what conditions perceptions and experience of corruption diverge. With respect to the dynamics, collective reputations are difficult to change. With respect to their divergence, Tirole points out that the corrupt acts of others stick to all officials, even when there may be only a handful of corrupt officials. Furthermore, this collective reputation provides few incentives for even honest civil servants to maintain their integrity and remain incorruptible. In sum, both the nature of the dynamics and of the collective reputation of corruption requires many repeated acts of honesty from public officials to wipe out the perception that corruption is prevalent.

Informed from what we know of the empirical and theoretical literature, we fill the gap of research on the nature and (possibly) its dynamics on the relationship between perception and experience with corruption. We do so by matching perceptions data on corruption to the transaction data to determine if perceptions differ when a firm is or is not a victim of graft and for the first time, to the best of our knowledge, determine the relationship between the two.

For perceptions, we use data from cases where firms are asked to rank the top three obstacles, out of a list of sixteen, that affect the operations of the establishment. Answers from all entrepreneurs asked

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[7] For a cross country examination of the relationship between perception of and experience with corruption, see Weber (2007).

this question is the left-hand side, dependent, variable. For the experience variable, the *Enterprise Surveys* contain information on whether businesses had to provide a bribe to complete any one of six different transactions: requests for an electrical connection, a water connection, telephone service, an import license, a construction-related permit, or an operating license.

With this perceptions dependent variable and direct experience independent variable, we specify an econometric equation of the form:

(1)
$$Y_{ijk} = \begin{cases} 0 \\ 1 \end{cases} = \beta_G^{nb} G_{ijk}^{nb} + \beta_G^{b} G_{ijk}^{b} + \mathbf{X}_{ijk}\Gamma + \varepsilon_{ijk}$$

The dependent variable, Y_{ijk}, is a binary variable that equals one if the firm ranked corruption as one of the top three obstacles and zero if it did not. The are two dummy variables, G_{ijk}^{b} and G_{ijk}^{nb}, that represent firms that solicited a service or license and reported bribing or no bribing, respectively. These dummy variables of graft are the objective or experiential measure of corruption that is of interest here. The G_{ijk}^{nb} variable takes on a value of one when a firm solicited any of the services but no bribe was solicited or expected and zero otherwise. The G_{ijk}^{b} variable takes on a value of one when a service was solicited and a bribe was asked for or expected and zero otherwise. The omitted category is firms that did not solicit services or licenses. In estimating Equation 1, we include a matrix $\mathbf{X}_{ijk}$ of control variables. It includes country and industry fixed effects to account for the unobserved parameters at the country and industry levels. It also includes firm size and age, and a binary variable indicating whether the firm has experienced arson, robbery or theft in the last year, as another control variable. We include the latter variable since corruption and crime are often symptoms of governance systems that are not functioning well. We expect that crime and corruption go hand in hand and our econometric specification would suffer from omitted variable bias had we not included some control for some measure of the quality of governance systems in the business environment. The term (ε) is an error term that is potentially heteroskedastic and that may be correlated across all firms within each country. Therefore, we calculate robust standard errors and allow for clustering by country.

Of interest are the signs of coefficients β_G^{nb} and β_G^{b}. If the true extent of corruption were common knowledge to all firm, then we could reasonably expect to see no difference in the way in which firms perceive corruption (when $\beta_G^{nb} = 0$ or $\beta_G^{b} = 0$), after controlling for observables, irrespective of whether they were bribed or not. In this situation, we would expect to see a very close relationship between corruption perceptions and its incidence. On the other hand, if the extent of corruption is

imperfectly observed, firms will update their views on the problems posed by corruption based on their experience in dealing with corrupt officials. In particular, a firm that solicits a service or license and is not asked for a bribe will be more sanguine about the problems posed by corruption than firms that do not solicit any service or license ($\beta_G^{nb} < 0$). Similarly, a firm that requests a service or license and is asked for a bribe will become more cynical than firms that do not make any requests ($\beta_G^b > 0$). A corollary of this is that firms that do not request any licenses services will adjust their views on corruption more gradually than firms that do engage public officials and face the possibility of being asked for bribes.

Table 1 presents Probit regression estimates of Equation 1. The results show that firms that undertake some transaction and are not victims of bribes are less likely to rank corruption as a top-three obstacle to enterprise performance ($\beta_G^{nb} < 0$). These results hold among firms in both regions as well as for the pooled data and are independent of the size or age of the firm.

One hypothesis consistent with this empirical finding is that there is updating taking place. Firms begin the transaction with a similar perception as to the severity of corruption that most other firms share. However, once firms complete a transaction in which they did not have to resort to bribing, they do not have their initial perceptions verified and, as a result, become more optimistic about the extent of corruption than their peers. This positive updating of perceptions on corruption is independent of the initial average level of corruption. In other words, even in countries, in this sample, that are relatively bribe-free, firm's perceptions of corruption are on average improved when they are not asked for a bribe to complete their transaction.

Regarding firms that are asked for bribes, we see that the relevant coefficient, β_G^b, has a positive sign but is not statistically different from zero. That is, updating does not seem to take place when a firm reports being asked for a bribe. For firms that were asked for a bribe to complete a transaction, their perception of the severity of corruption is statistically indistinguishable from the perception of firms that did not solicit any services. This indicates that there is inertia in perceptions about corruption. This inertia is consistent with what Tirole pointed out in his theoretical model on the collective reputations of corrupt officials.

Taken together, the result that updating only takes place when firms complete transactions without having to bribe, coupled with the result that firms that had to resort to bribing are statistically indistinguishable from firms that did not deal with officials at all, tell us that perceptions are likely to lag objective measures on corruption in cases where the extent of corruption is in flux. For the aims of the present paper, the evidence herein supports the argument that perceptions-based measures of corruption are an imperfect proxy for the true incidence of graft.

3   Measuring the incidence of graft

We have presented evidence showing that using perceptions about the severity of corruption is an inaccurate gauge of the true extent of corruption. Since it is safe to say that corrupt practices have serious economic consequences and, hence, that the study of corruption based on reliable data merits careful attention, in this section we propose a measure of graft that is based on actual firm encounters with dishonest officials. To that end, we take advantage of detailed survey data on approximately 10,000 firms in 33 African and Latin American countries to calculate what we call a *Graft Index of Firm Transactions* (GIFT). The data come from the World Bank Group's *Enterprise Surveys*, which collect information on whether businesses had to provide a bribe to complete a series of six different transactions: requests for an electrical connection, a water connection, telephone service, an import license, a construction-related permit, or an operating license.

3.1   How is the *Graft Index of Firm Transactions* calculated?

Formally, the index is defined as the sample probability that a firm in country k will be asked to provide a bribe, conditional on the firm undertaking one of the six aforementioned transactions. Mathematically,

(1)
$$GIFT_k = \frac{\sum_{j=1}^{6}\sum_{i=1}^{n_{jk}} x_{ijk}}{\sum_{j=1}^{6} n_{jk}},$$

is the GIFT for country k, where the sub-indices i and j represent firm i and transaction type j, respectively. The binary variable x_{ijk} is equal to 1 if firm i was requested to make an informal payment when undertaking transaction type j in country k and 0 otherwise. The denominator is the sum of all transactions of type j in country k that occurred between the time the survey took place and up to two years prior.

In words, the *Graft Index of Firm Transactions* is the proportion of instances in which firms were either expected or requested to pay a gift or informal payment over the number of total solicitations for public services, licenses or permits for that country. We emphasize that the index is based on the respondent's direct experience with corruption. As such, this index does not have the disadvantages that are present in perceptions indexes. In addition, the index can be compared across countries. All firms

across the globe must undertake the transactions listed above at one point or another in the life and operation of the business.

This index can be criticized for being based on the self-reporting of illegal activities. Interviewees' may fear the consequences of answering honestly, especially if they have themselves been directly involved in corrupt transactions. However, the questions asked puts the interviewee in the role of victim and not promoter of corruption. It would be very different to worry about receiving an honest answer when asking about how much and who a firm had to bribe to be granted a lucrative government contract than it is when asking the same firm to tell the interviewer if the firm was compelled to provide a bribe to get a service or license.

The index can also be criticized for its narrow focus on the bribery of officials delivering infrastructure services and licenses. The index does not measure corruption that may take place in large-scale business transactions such as favorable deals on government contracts, the granting of government licenses or rights of use of public goods to insiders, rigged participation in public tenders, or lax enforcement of regulations or terms of government contracts because of a payoff. The index also does not measure corruption in situations where an economic transaction is not concerned, such as in the legal system where a court is asked to look the other way or to rule in favor of a party that paid a bribe. Lastly, the index also does not deal with political corruption; that is corruption associated with manipulated and non-transparent elections, the buying of legislative votes, or political nepotism. These kinds of corruption may involve both greater amounts of money and represent larger economic distortions than the common, petty corruption that our index measures.

3.2   GIFT estimates

We estimate the GIFT for all six transactions taken together (Table 2). We also grouped transactions into two separate subsets, *infrastructure* (electricity, water, telephone --- Table 3) and *licensing* (import licenses, construction permits, operating licenses --- Table 4), and estimate the GIFT for each subset. Finally, we estimate the GIFT for each transaction separately in each country, but we warn that in many instances our confidence intervals become large (Tables A.1 to A.6). In all cases, we estimated the standard error of our estimate and its 95-percent confidence interval. In countries with few transactions, the confidence intervals can be substantial, making it hard to definitively rank several countries.

We first note that, pooling data from all 33 countries, a total of 9519 requests for licenses or infrastructure services were registered in the *Enterprise Surveys*. Firms reported being asked for bribes in 933 instances. Thus, on average, firms in these countries are the target of bribery one out of 10 times they perform any of the six transactions included in the survey. Nevertheless, the difference in the incidence of

graft among African and Latin American firms is substantial. The former are subjected to bribery more than 19 percent of the time, compared to less than 7 percent among their Latin American peers. In other words, African firms are three times as likely to be the victims of corruption relative to firms in Latin America.[8]

Table 2 reports GIFT estimates for each country taking all transactions together; Figure 1 depicts countries ordered from less to more corrupt, according to the point estimate of the graft index. Namibia stands out as the least corrupt country in our sample. Out of 166 transactions recorded, no instances of requests for bribes were recorded. The 95-percent confidence interval suggests that only as many as 2.7 percent of all firms would be targeted by corrupt officials in that country. The next four least graft-prone countries in our sample are all in Latin America (Uruguay, Chile, Colombia, and El Salvador). The probability that a firm is the target of bribes in those countries lies between one and 4.4 percent. At the opposite end, the five most corrupt countries in the sample are all in Africa. In the Democratic Republic of Congo, the most corrupt country in our sample, a firm will be asked for bribes 53 to 72 percent of the time with a 95 percent probability, whereas in Guinea, Cameroon, and Mauritania, more than half of all firms will be asked for bribes.

It is important to keep in mind that our index measures graft imprecisely and, therefore, that one cannot simply take the point estimates behind Figure 1 to make statements about whether graft is more pronounced in one country than in another. In order to say something about the relative incidence of graft between two countries, we calculated whether their corresponding GIFT estimates are statistically different. Results appear in Table 5. For example, although Namibia has the lowest estimated incidence of corruption, it is statistically as uncorrupt as Uruguay and less corrupt than all other countries. Uruguay, in turn, displays the same level of graft as Namibia, but one could not reject the hypothesis that graft in that country is the same as in Chile, Colombia, El Salvador, Rwanda, Botswana, Argentina, and Panama. Rwanda's GIFT estimate is particularly noisy, given that the number of observed transactions and instances of corruption are very low (see Table 2); hence, despite its low GIFT of 0.031, only eight countries appear to have unambiguously lower or higher levels of corruption than Rwanda. Some differences among neighboring countries are interesting on their own. El Salvador, for instance, is significantly less corrupt than Mexico and other countries in Central America — Guatemala, Nicaragua and Honduras; the latter, in contrast, is significantly more corrupt than the other four countries. Likewise,

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[8] The 95 percent confidence interval of the odds ratio of the GIFT of the two regions goes from 2.52 to 3.21.

in the Andean region, Colombia stands out as less corrupt than the rest, while Paraguay and Ecuador are distinctly more corrupt.[9]

Among the most graft-prone countries in the sample, Guinea, Cameroon, Mauritania and DR Congo are statistically more corrupt than the 29 countries in our sample with lower graft indices. It should be noted that Paraguay and Ecuador, the two most corrupt countries in Latin America, appear to be less corrupt only when compared to the latter four extreme cases (Guinea, Cameroon, Mauritania, and DR Congo), and are equally corrupt, or even more so, than the rest of the African countries in our sample. That the index may vary so widely among countries in the same region suggests that corruption is unlikely to be explained by historical or cultural traits, but rather by the institutional environment that exists in each country. We explore that possibility in the next section.

We turn now to the incidence of graft by type of transaction; see Tables 3 and 4. Looking at our sample as a whole, bribery is more prevalent when soliciting licenses or permits than when requesting infrastructure services. The data show that 11.3 percent of firms are asked for bribes in the former case, three percentage points more than when requesting electricity, water, or telephone connections; the gap is statistically significant at the 95 percent level. Nevertheless, the difference is driven primarily by Latin American firms. Whereas in Africa we do not find any statistically significant difference in the incidence of graft between licensing or infrastructure transactions, in Latin America obtaining licenses puts firms at a higher risk of being asked for bribes, 8.3 percent vs. 5.3 percent relative to requests for infrastructure services. On a country by country basis, the probability of being asked for bribes in licensing vis-à-vis infrastructure is statistically higher in Argentina, Bolivia, El Salvador, Peru, and DR Congo; the converse is only true in Malawi and Niger.

Three hypotheses come to mind in trying to explain differences in graft incidence across licensing and infrastructure. First, a number of countries in the world have privatized the provision of infrastructure services, primarily in telecommunications, but also in water and electricity provision. Private providers of such services would have greater incentives to setup mechanisms that prevent their employees from requesting informal payments from their customers, while perhaps increasing formal fees that would accrue to profits. Second, at least in the case of telephony, competition, especially from mobile telephones, would appear to be stiffer, which would reduce the ability to extract rents from firms. Third, government regulation and red-tape is more common in obtaining licenses and permits and, as we show in the following section, excessive regulation creates opportunities for corrupt officials to extract bribes from firms.

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[9] The Andean region is comprised of Bolivia, Colombia, Ecuador, Paraguay, Peru, and Venezuela.

4   What lies behind the incidence of corruption?

Having estimated measures of the incidence of corruption, in this section we explore some of its correlates. We do this by running regressions of the Graft Index of Firm Transactions on a number of different regressors, motivated by the existing literature. Specifically, we consider whether firms are more likely to fall prey to corrupt officials in overly-regulated economies and in less democratic countries. Admittedly, cross-country data make it difficult to identify the causal links between graft and potential explanatory variables. With this caveat in mind, our aim is to shed light on some of the factors that are believed to be drivers of corruption.

The existence of burdensome business regulations stands out as a potential driver of graft.[10] While some degree of regulation could be justified under the argument that it is required to safeguard the public interest, a competing explanation, the *tollbooth* view (Shleifer and Vishny 1993), is that regulations are put in place in order to extract rents in favor of specific business interests or government officials. Djankov et al. (2002) explore such alternative explanations and conclude that, rather than protecting the public interest, regulation —in their study, business entry rules— is associated with greater levels of corruption. In the same vein, Svensson (2005) presents econometric evidence showing a positive link between greater regulation and more corruption. More recently, Olken and Barron (2007) look at bribe payments by truck drivers at checkpoints along Indonesian roads and find support for Shleifer and Vishny's (1993) tollbooth hypothesis. Both the study by Djankov et al. (2002) and that of Svensson (2005) rely mainly on corruption perception measures which, as we have argued, are only an imperfect approximation to actual corrupt practices. Thus, it is worth asking whether regulation might be behind corruption when we use our index of the actual incidence of graft.

Figure 2 shows that there is a clear positive correlation between the incidence of graft and the extent and nature of the regulatory and legal obligations that firms face. The latter is obtained from the "Ease of Doing Business" indicator in the *Doing Business* dataset, with a higher measure indicating a less benign business environment. The GIFT allows us to delve into the subject. For example, in Figure 3 we show that the probability of being the victim of graft when requesting an operating license or a construction permit are positively correlated, respectively, with *Doing Business* measures of restrictions on starting a business and problems in dealing with licenses in construction projects.

Econometric results in Table 6 confirm what we see graphically: excessive regulation is associated with more graft even after taking into consideration other factors that may explain the level of corruption. The results in column 2 suggest that a one-standard deviation decline in obstacles to doing

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[10] See Bardhan (1997) for a discussion.

business reduces the probability of being the victim of graft by 8 percentage points. Likewise, from column 3, reducing constraints in starting a business by one-standard deviation results in a 7.5 percent-point lower probability that firms will be asked for bribes when requesting an operating license. Last, the likelihood that firms will be hit by graft when requesting construction permits is six percentage points lower following a one-standard deviation reduction in the *Doing Business* "Dealing with licenses" measure (column 4). Therefore, our results confirm previous evidence, based on perceptions data, linking regulation and corruption, with the added benefit that we are able to focus more narrowly on specific regulations and transactions affected by corrupt practices.

Firms are also more susceptible to graft in countries where the institutional environment is weak and, in particular, where the accountability of government officials is limited. In particular, democratically-elected governments are more open to public scrutiny and hence are more likely to adopt anti-corruption efforts (Bardhan 1997; Treisman 2000; Svensson 2005). We use data from the Polity IV Project to study the relationship between democracy and corruption.[11] Our measure of democracy is based on the "polity score," which provides a measure of competitiveness in the process of executive recruitment, constraints on the chief executive, and the competitiveness and regulation of political participation. The polity score takes values from -10 to 10, with increases in the score reflecting a more democratic political regime.

As we report in Table 6, firms in democratic countries are less likely to be asked for bribes. In column 5, the estimated coefficient for the polity score is negative and significant at the 10 percent level. When we include "Ease of doing business" as a measure of regulation (column 6), both the latter and the polity coefficient have the expected sign and are significant at the 10 percent level; the hypothesis that both of them are jointly equal to zero is rejected at the five-percent level. The fact that both coefficients are still statistically significant is of interest. Djankov et al (2002) show that democratic governments are less likely to adopt costly regulations. In Table 5 we observe that the estimated coefficient for regulation falls when we account for the level of democracy, which is consistent with the evidence in Djankov et al (2002). In addition, in our sample, even holding constant the level of democracy, regulation is still associated with more graft. Columns 7 and 8 show that the positive association between bureaucratic constraints in starting a business or obtaining a construction license, on the one hand, and the incidence of graft in obtaining and operating license or construction permits, on the other, remains statistically significant.

In order to put our previous results in perspective, let us consider how much graft in Africa would decline if both the levels of democracy and of regulation moved to those that exist in Latin America.

Countries in the former region are characterized by weaker democracies and more regulation, as well as more pervasive graft. Among countries in our sample, the median polity level is -1 in Africa and 8 in Latin America. Moreover, the "Ease of doing business" percentile rank is .67 in Africa and .49 in Latin America. The estimates in column 6 of Table 6 imply that strengthening democracy and reducing regulation from their respective median levels in Africa to those of Latin America would reduce the probability that firms are victims of graft by 16.2 percentage points from its average level of 19 percent; that is, the incidence of bribery in Africa would fall by 85 percent under this scenario. Thus, our back-of-the-envelope calculation suggests that fostering democracy and reducing excessive regulation would go a long way in improving Africa's business climate by reducing corruption.

5   Conclusions

In this paper we argue that existing measures of corruption around the world are an inaccurate gauge of the true incidence of graft on the typical firm. Such measures are often based on surveys of experts, of specific types of firms, or of households, which do not necessarily match one-to-one with the views held by the typical firm. Moreover, existing indicators are often based on perceptions and not necessarily on hard data. Yet, we present evidence showing that average firm perceptions adjust only gradually to changes in the business environment. We show that firms that request licenses or infrastructure services and are not asked for bribes hold a more sanguine view about the pervasiveness of graft, relative not only to firms that did fall prey to corrupt officials but also to firms that did not request such services and hence would have not been affected by bribery. Then, for example, if a country were to effectively launch an anti-corruption campaign, firms' views on corruption would change, but only gradually, to the improved business climate.

In order to remedy the shortcomings of existing corruption measures, we introduced an experience-based index, the *Graft Index of Firm Transactions*, which measures the probability that a firm will be asked for a bribe in order to complete a specified set of business transactions. We estimated the index using data on approximately 10,000 firms from the World Bank's *Enterprise Surveys* in 33 countries in Africa and Latin America. Our index has several advantages: It is based on firms' direct encounters with corruption and not on perceptions; it is free of ambiguities as it focuses on a common set of business transactions in all countries; and it reflects the incidence of graft on the typical firm of a country since it is based on nationally representative data. On the downside, our index focuses on petty bribery and does not capture other possible forms of corruption.

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[11] See Marshall and Jaggers (2005). Data and documentation available at http://www.cidcm.umd.edu/polity/

The *Graft Index of Firm Transactions* shows that African firms are three times as likely to be victims of bribery than their Latin American counterparts. Within each region, though, there is substantial variation. Namibia, along with Uruguay, stands out as the least corrupt country. Paraguay and Ecuador, the most corrupt Latin American countries in our sample, lag behind several African countries. Corruption is gravest in four African countries — Guinea, Cameroon, Mauritania, and the Democratic Republic of Congo. In those countries, around one in two firms is the victim of bribery. Our index also indicates that bribery is more common when requesting licenses or government permits than when requesting infrastructure services such as telephone, water, or electricity connections.

In order to shed light on the factors that lie behind corruption, we run country-level regressions with our graft index as dependent variable. We find a strong correlation between excessive regulation and corruption, with a one-standard deviation in the ease of doing business reducing graft by approximately one third of a standard deviation. Likewise, democratic governments do a better job in curtailing corruption. As a back-of-the-envelope application of these findings, our results imply that bribery in Africa would fall by 85 percent if it had levels of democracy and regulation similar to those that exist in Latin America, closing the gap in the incidence of graft between the two regions.

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Tables and Figures

Table 1

Perception vs Incidence of Corruption: Probit Regression Results
(Dependent variable: Firm ranked corruption a top three obstacle)

	(1)	(2)	(3)
	Latin America	Africa	Pooled
Employment (log)	-0.013	-0.004	-0.011***
	(0.004)***	(0.007)	(0.004)
Age of establishment	0.000	0.001	0.000
	(0.000)	(0.001)	(0.000)
Omitted category: No service solicited			
Solicited service and was asked for bribe	0.014	0.010	0.014
	(0.024)	(0.026)	(0.019)
Solicited service and was *not* asked for bribe	-0.025	-0.037	-0.028
	(0.012)**	(0.016)**	(0.010)***
Observations	6510	1877	8387

Notes:
 Robust standard errors in parentheses
 * significant at 10%; ** significant at 5%; *** significant at 1%

Table 2

Graft Index of Firm Transactions — All transactions
(Probability that a firm will be asked for bribes when undertaking any of six business transactions)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Namibia	0.000	166	0	0.000	0.000	0.027
Uruguay	0.021	387	8	0.007	0.010	0.041
Chile	0.023	744	17	0.005	0.014	0.037
Colombia	0.023	603	14	0.006	0.014	0.039
El Salvador	0.026	508	13	0.007	0.015	0.044
Rwanda	0.031	32	1	0.031	0.000	0.171
Botswana	0.037	163	6	0.015	0.015	0.080
Argentina	0.042	744	31	0.007	0.029	0.059
Panama	0.045	199	9	0.015	0.023	0.085
Mexico	0.055	490	27	0.010	0.038	0.079
Guatemala	0.064	453	29	0.012	0.045	0.091
Nicaragua	0.071	434	31	0.012	0.050	0.100
Bolivia	0.072	498	36	0.012	0.052	0.099
Peru	0.087	494	43	0.013	0.065	0.115
Venezuela	0.090	156	14	0.023	0.053	0.146
Burundi	0.098	61	6	0.038	0.042	0.202
Uganda	0.103	340	35	0.016	0.075	0.140
Burkina Faso	0.109	46	5	0.046	0.043	0.235
Malawi	0.120	275	33	0.020	0.086	0.164
Honduras	0.121	390	47	0.016	0.092	0.157
Angola	0.127	189	24	0.024	0.086	0.183
Swaziland	0.143	70	10	0.042	0.078	0.245
Paraguay	0.143	370	53	0.018	0.111	0.183
Cape Verde	0.152	33	5	0.062	0.062	0.314
Guinea-Bissau	0.154	78	12	0.041	0.089	0.251
Ecuador	0.159	666	106	0.014	0.133	0.189
Tanzania	0.167	233	39	0.024	0.125	0.221
Gambia	0.183	60	11	0.050	0.104	0.301
Niger	0.201	179	36	0.030	0.149	0.266
Guinea	0.454	108	49	0.048	0.363	0.548
Cameroon	0.466	176	82	0.038	0.394	0.540
Mauritania	0.514	74	38	0.058	0.402	0.624
Congo, Dem. Rep.	0.630	100	63	0.048	0.532	0.718

Notes:

Information about requests for water connections was not collected in Venezuela.

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Table 3

Graft Index of Firm Transactions — Infrastructure services
(Probability that a firm will be asked for bribes when requesting electricity, water or telephone connections)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Namibia	0.000	84	0	0.000	0.000	0.052
El Salvador	0.007	274	2	0.005	0.000	0.028
Bolivia	0.008	243	2	0.006	0.000	0.031
Uruguay	0.015	197	3	0.009	0.003	0.046
Chile	0.017	404	7	0.006	0.008	0.036
Argentina	0.022	461	10	0.007	0.011	0.040
Colombia	0.025	363	9	0.008	0.012	0.047
Panama	0.035	115	4	0.017	0.011	0.089
Peru	0.035	254	9	0.012	0.018	0.067
Botswana	0.036	56	2	0.025	0.003	0.128
Mexico	0.049	366	18	0.011	0.031	0.077
Guatemala	0.060	248	15	0.015	0.036	0.098
Swaziland	0.067	30	2	0.046	0.008	0.224
Burundi	0.067	30	2	0.046	0.008	0.224
Nicaragua	0.077	221	17	0.018	0.048	0.120
Venezuela	0.082	85	7	0.030	0.038	0.163
Uganda	0.101	89	9	0.032	0.052	0.183
Angola	0.122	90	11	0.035	0.068	0.207
Honduras	0.146	144	21	0.029	0.097	0.213
Guinea-Bissau	0.152	33	5	0.062	0.062	0.314
Burkina Faso	0.154	26	4	0.071	0.055	0.341
Cape Verde	0.154	13	2	0.100	0.031	0.435
Paraguay	0.158	171	27	0.028	0.110	0.220
Malawi	0.161	143	23	0.031	0.109	0.230
Tanzania	0.170	100	17	0.038	0.108	0.256
Ecuador	0.192	271	52	0.024	0.149	0.243
Gambia	0.238	21	5	0.093	0.102	0.455
Niger	0.309	68	21	0.056	0.211	0.427
Guinea	0.462	65	30	0.062	0.346	0.581
Cameroon	0.475	40	19	0.079	0.329	0.625
Congo, Dem. Rep.	0.484	31	15	0.090	0.320	0.652
Mauritania	0.569	51	29	0.069	0.433	0.695

Notes:

Information about requests for water connections was not collected in Venezuela.

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Table 4

Graft Index of Firm Transactions — Licensing
(Probability that a firm will be asked for bribes when soliciting import, operating or construction licenses)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval Lower bound	Upper bound
Namibia	0.000	82	0	0.000	0.000	0.054
Colombia	0.021	240	5	0.009	0.008	0.049
Uruguay	0.026	190	5	0.012	0.010	0.062
Chile	0.029	340	10	0.009	0.015	0.054
Rwanda	0.034	29	1	0.034	0.000	0.186
Botswana	0.037	107	4	0.018	0.012	0.095
El Salvador	0.047	234	11	0.014	0.026	0.083
Burkina Faso	0.050	20	1	0.049	0.000	0.254
Panama	0.060	84	5	0.026	0.022	0.135
Nicaragua	0.066	213	14	0.017	0.039	0.108
Guatemala	0.068	205	14	0.018	0.040	0.112
Mexico	0.073	124	9	0.023	0.037	0.134
Argentina	0.074	283	21	0.016	0.049	0.111
Malawi	0.076	132	10	0.023	0.040	0.135
Venezuela	0.099	71	7	0.035	0.046	0.193
Uganda	0.104	251	26	0.019	0.071	0.148
Honduras	0.106	246	26	0.020	0.073	0.151
Burundi	0.129	31	4	0.060	0.045	0.295
Paraguay	0.131	199	26	0.024	0.090	0.185
Angola	0.131	99	13	0.034	0.077	0.213
Bolivia	0.133	255	34	0.021	0.097	0.181
Niger	0.135	111	15	0.032	0.083	0.212
Ecuador	0.137	395	54	0.017	0.106	0.174
Peru	0.142	240	34	0.023	0.103	0.192
Cape Verde	0.150	20	3	0.080	0.044	0.369
Gambia	0.154	39	6	0.058	0.069	0.301
Guinea-Bissau	0.156	45	7	0.054	0.074	0.291
Tanzania	0.165	133	22	0.032	0.111	0.238
Swaziland	0.200	40	8	0.063	0.102	0.350
Mauritania	0.391	23	9	0.102	0.221	0.593
Guinea	0.442	43	19	0.076	0.304	0.589
Cameroon	0.463	136	63	0.043	0.382	0.547
Congo, Dem. Rep.	0.696	69	48	0.055	0.579	0.792

Notes:

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Table 5

Statistical differences in the *Graft Index of Firm Transactions* (GIFT)

Country	Code	GIFT	Countries that are statistically …		
			… less corrupt	… equally corrupt	… more corrupt
Namibia	NAM	0.000	None	URY	All other
Uruguay	URY	0.021	None	NAM, CHL, COL, SLV. RWA, BWA, ARG, PAN	All other
Chile	CHL	0.023	NAM	URY, COL, SLV. RWA, BWA, PAN	All other
Colombia	COL	0.023	NAM	URY, CHL, SLV, RWA, BWA, ARG, PAN	All other
El Salvador	SLV	0.026	NAM	URY, CHL, COL, RWA, BWA, ARG, PAN	All other
Rwanda	RWA	0.031	NAM	All other	ECU, TZA, GMB, NER, GIN, CMR, MRT, ZAR
Botswana	BWA	0.037	NAM	All other	PER, UGA, HND, AGO, SWZ, PRY, CPV, GNB, ECU, TZA, GMB, NER, GIN, CMR, MRT, ZAR
Argentina	ARG	0.042	NAM, CHL	URY, COL, SLV. RWA, BWA, PAN, MEX, GTM	All other
Panama	PAN	0.045	NAM, CHL	URY, COL, SLV. RWA, BWA, ARG, MEX, GTM, NIC, BOL, PER, VEN, BDI, BFA	All other
Mexico	MEX	0.055	NAM, URY, CHL, COL, SLV	RWA, BWA, ARG, PAN, GTM, NIC, BOL, PER, VEN, BDI, BFA	All other
Guatemala	GTM	0.064	NAM, URY, CHL, COL, SLV	RWA, BWA, ARG, PAN, MEX, NIC, BOL, PER, VEN, BDI, BFA, CPV	All other
Nicaragua	NIC	0.071	NAM, URY, CHL, COL, SLV, ARG	RWA, BWA, ARG, PAN, MEX, GTM, BOL, PER, VEN, BDI, UGA, BFA, CPV	All other
Bolivia	BOL	0.072	NAM, URY, CHL, COL, SLV, ARG	RWA, BWA, ARG, PAN, MEX, GTM, NIC, PER, VEN, BDI, UGA, BFA, CPV	All other
Peru	PER	0.087	NAM, URY, CHL, COL, SLV, BWA, ARG	PAN, MEX, GTM, NIC, BOL, PER, VEN, BDI, UGA, BFA, MWI, HND, AGO, SWZ, CPV, GNB	All other
Venezuela	VEN	0.090	NAM, URY, CHL, COL, SLV, ARG	All other	ECU, TZA, NER, GIN, CMR, MRT, ZAR
Burundi	BDI	0.098	NAM, URY, CHL, COL, SLV, ARG	All other	GIN, CMR, MRT, ZAR
Uganda	UGA	0.103	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM	All other	ECU, TZA, NER, GIN, CMR, MRT, ZAR
Burkina Faso	BFA	0.109	NAM, URY, CHL, COL, SLV, ARG	All other	GIN, CMR, MRT, ZAR
Malawi	MWI	0.120	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL	All other	NER, GIN, CMR, MRT, ZAR

Table 5 (continued)

Statistical differences in the *Graft Index of Firm Transactions* (GIFT)

Country	Code	GIFT	... less corrupt	... equally corrupt	... more corrupt
				Countries that are statistically ...	
Honduras	HND	0.121	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL	All other	NER, GIN, CMR, MRT, ZAR
Angola	AGO	0.127	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL	All other	GIN, CMR, MRT, ZAR
Swaziland	SWZ	0.143	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL	All other	GIN, CMR, MRT, ZAR
Paraguay	PRY	0.143	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL, PER	All other	GIN, CMR, MRT, ZAR
Cape Verde	CPV	0.152	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX	All other	GIN, CMR, MRT, ZAR
Guinea-Bissau	GNB	0.154	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL	All other	GIN, CMR, MRT, ZAR
Ecuador	ECU	0.159	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL, PER, VEN, UGA	All other	GIN, CMR, MRT, ZAR
Tanzania	TZA	0.167	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL, PER, VEN, UGA	All other	GIN, CMR, MRT, ZAR
Gambia	GMB	0.183	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, NIC, BOL, PER	All other	GIN, CMR, MRT, ZAR
Niger	NER	0.201	NAM, URY, CHL, COL, SLV, BWA, ARG, PAN, MEX, GTM, MWI, HND	All other	GIN, CMR, MRT, ZAR
Guinea	GIN	0.454	All other	CMR, MRT	ZAR
Cameroon	CMR	0.466	All other	GIN, MRT	ZAR
Mauritania	MRT	0.514	All other	GIN, CMR, ZAR	None
Congo, Dem. Rep.	ZAR	0.630	All other	MRT	None

Notes: Calculations are based on an estimation of the 95% confidence interval of the ratio of the binomial distribution underlying the GIFT.

Table 6

Graft, Regulation, and Democracy

Dependent Variable:	(1) GIFT - All transactions	(2) GIFT - All transactions	(3) GIFT - Operating license	(4) GIFT - Construction permit	(5) GIFT - All transactions	(6) GIFT - All transactions	(7) GIFT - Operating license	(8) GIFT - Construction permit
GNI per capita (logs)	-0.056	0.006	-0.017	-0.088	-0.016	0.007	0.021	-0.030
	(0.021)**	(0.024)	(0.024)	(0.035)**	(0.019)	(0.022)	(0.017)	(0.024)
Africa dummy		0.068	0.007	-0.001	-0.017	-0.000	-0.023	-0.044
		(0.041)	(0.052)	(0.048)	(0.036)	(0.035)	(0.036)	(0.040)
Ease of doing business [+]		0.646						
		(0.252)**						
Starting a business [+]			0.423			0.380		
			(0.137)***			(0.203)*		
Obtaining licenses [+]				0.322			0.322	0.325
				(0.168)*			(0.107)***	(0.156)**
Democracy (polity score)					-0.013	-0.011	-0.010	-0.011
					(0.007)*	(0.006)*	(0.003)***	(0.009)
Constant	0.535	-0.305	-0.008	0.651	0.298	-0.094	-0.179	0.276
	(0.168)***	(0.269)	(0.196)	(0.309)**	(0.138)**	(0.243)	(0.167)	(0.199)
Observations	33	33	33	33	30	30	30	30
R-squared	0.223	0.388	0.356	0.446	0.366	0.425	0.454	0.384

Notes:

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

[+] Variables are expressed in percentile ranks, where an increase denotes more burdensome regulations.

Appendix Table A.1

Graft Index of Firm Transactions — Electrical Connections
(Probability that a firm will be asked for bribes when requesting an electrical connection)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval Lower bound	Upper bound
Namibia	0.000	26	0	0.000	0.000	0.152
Venezuela	0.000	28	0	0.000	0.000	0.143
Botswana	0.000	14	0	0.000	0.000	0.251
Peru	0.011	89	1	0.011	0.000	0.067
Chile	0.014	141	2	0.010	0.001	0.053
El Salvador	0.019	104	2	0.013	0.001	0.072
Bolivia	0.023	86	2	0.016	0.001	0.086
Argentina	0.034	177	6	0.014	0.014	0.074
Colombia	0.035	114	4	0.017	0.011	0.090
Mexico	0.036	137	5	0.016	0.013	0.085
Uruguay	0.040	75	3	0.023	0.009	0.116
Panama	0.044	45	2	0.031	0.004	0.156
Burundi	0.063	16	1	0.061	0.000	0.303
Nicaragua	0.067	89	6	0.027	0.028	0.142
Guatemala	0.076	105	8	0.026	0.037	0.145
Angola	0.104	48	5	0.044	0.041	0.226
Swaziland	0.125	8	1	0.117	0.001	0.492
Burkina Faso	0.125	8	1	0.117	0.001	0.492
Paraguay	0.129	62	8	0.043	0.064	0.237
Guinea-Bissau	0.133	15	2	0.088	0.025	0.391
Uganda	0.140	43	6	0.053	0.062	0.276
Honduras	0.164	55	9	0.050	0.086	0.285
Ecuador	0.165	103	17	0.037	0.105	0.249
Malawi	0.182	44	8	0.058	0.092	0.322
Niger	0.208	24	5	0.083	0.088	0.409
Tanzania	0.243	37	9	0.071	0.132	0.403
Cape Verde	0.250	4	1	0.217	0.034	0.711
Gambia	0.286	7	2	0.171	0.076	0.648
Cameroon	0.417	12	5	0.142	0.193	0.681
Guinea	0.529	34	18	0.086	0.367	0.686
Congo, Dem. Rep.	0.615	13	8	0.135	0.354	0.824
Mauritania	0.667	15	10	0.122	0.415	0.850
Rwanda		0				

Notes:
Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Appendix Table A.2

Graft Index of Firm Transactions — Water Connections
(Probability that a firm will be asked for bribes when requesting a water connection)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Uruguay	0.000	27	0	0.000	0.000	0.148
Bolivia	0.000	25	0	0.000	0.000	0.158
Botswana	0.000	11	0	0.000	0.000	0.300
Swaziland	0.000	5	0	0.000	0.000	0.489
Chile	0.000	26	0	0.000	0.000	0.152
El Salvador	0.000	24	0	0.000	0.000	0.163
Namibia	0.000	16	0	0.000	0.000	0.227
Argentina	0.026	39	1	0.025	0.000	0.144
Nicaragua	0.029	34	1	0.029	0.000	0.162
Colombia	0.043	23	1	0.043	0.000	0.227
Honduras	0.056	18	1	0.054	0.000	0.276
Uganda	0.056	18	1	0.054	0.000	0.276
Paraguay	0.080	25	2	0.054	0.011	0.261
Guinea-Bissau	0.083	12	1	0.080	0.000	0.375
Panama	0.083	12	1	0.080	0.000	0.375
Guatemala	0.130	46	6	0.050	0.057	0.260
Angola	0.130	23	3	0.070	0.037	0.330
Mexico	0.161	31	5	0.066	0.066	0.331
Tanzania	0.167	24	4	0.076	0.061	0.365
Burkina Faso	0.167	6	1	0.152	0.011	0.582
Ecuador	0.171	35	6	0.064	0.077	0.331
Gambia	0.200	5	1	0.179	0.020	0.640
Peru	0.222	27	6	0.080	0.103	0.411
Malawi	0.263	19	5	0.101	0.115	0.491
Niger	0.286	14	4	0.121	0.113	0.550
Congo, Dem. Rep.	0.375	8	3	0.171	0.135	0.696
Guinea	0.391	23	9	0.102	0.221	0.593
Cape Verde	0.500	2	1	0.354	0.095	0.905
Cameroon	0.500	8	4	0.177	0.215	0.785
Mauritania	0.750	12	9	0.125	0.462	0.917
Rwanda		0				
Burundi		0				
Venezuela		n.a.				

Notes:

Information about requests for water connections was not collected in Venezuela.

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Appendix Table A.3

Graft Index of Firm Transactions — Telephone Connections
(Probability that a firm will be asked for bribes when requesting a telephone connection)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval Lower bound	Upper bound
El Salvador	0.000	146	0	0.000	0.000	0.031
Rwanda	0.000	3	0	0.000	0.000	0.617
Cape Verde	0.000	7	0	0.000	0.000	0.404
Bolivia	0.000	132	0	0.000	0.000	0.034
Namibia	0.000	42	0	0.000	0.000	0.100
Uruguay	0.000	95	0	0.000	0.000	0.047
Guatemala	0.010	97	1	0.010	0.000	0.062
Argentina	0.012	245	3	0.007	0.002	0.037
Peru	0.014	138	2	0.010	0.001	0.055
Panama	0.017	58	1	0.017	0.000	0.100
Colombia	0.018	226	4	0.009	0.005	0.046
Chile	0.021	237	5	0.009	0.008	0.050
Mexico	0.040	198	8	0.014	0.019	0.079
Swaziland	0.059	17	1	0.057	0.000	0.289
Botswana	0.065	31	2	0.044	0.008	0.217
Uganda	0.071	28	2	0.049	0.009	0.237
Burundi	0.071	14	1	0.069	0.000	0.335
Nicaragua	0.102	98	10	0.031	0.055	0.179
Tanzania	0.103	39	4	0.049	0.035	0.242
Venezuela	0.123	57	7	0.043	0.058	0.236
Malawi	0.125	80	10	0.037	0.067	0.217
Honduras	0.155	71	11	0.043	0.087	0.258
Angola	0.158	19	3	0.084	0.047	0.384
Burkina Faso	0.167	12	2	0.108	0.035	0.460
Paraguay	0.202	84	17	0.044	0.129	0.301
Ecuador	0.218	133	29	0.036	0.156	0.296
Gambia	0.222	9	2	0.139	0.053	0.557
Guinea-Bissau	0.333	6	2	0.192	0.093	0.704
Guinea	0.375	8	3	0.171	0.135	0.696
Congo, Dem. Rep.	0.400	10	4	0.155	0.167	0.688
Niger	0.400	30	12	0.089	0.246	0.577
Mauritania	0.417	24	10	0.101	0.244	0.612
Cameroon	0.500	20	10	0.112	0.299	0.701

Notes:

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Appendix Table A.4

Graft Index of Firm Transactions — Construction Permits
(Probability that a firm will be asked for bribes when requesting a construction permit)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Namibia	0.000	21	0	0.000	0.000	0.182
Uruguay	0.000	70	0	0.000	0.000	0.062
Swaziland	0.000	5	0	0.000	0.000	0.489
Burkina Faso	0.000	4	0	0.000	0.000	0.546
Colombia	0.000	41	0	0.000	0.000	0.102
Chile	0.037	136	5	0.016	0.014	0.085
Guinea-Bissau	0.071	14	1	0.069	0.000	0.335
Venezuela	0.091	11	1	0.087	0.000	0.399
Botswana	0.100	10	1	0.095	0.000	0.426
El Salvador	0.103	58	6	0.040	0.045	0.211
Argentina	0.106	132	14	0.027	0.063	0.171
Mexico	0.108	37	4	0.051	0.037	0.253
Panama	0.118	34	4	0.055	0.041	0.272
Nicaragua	0.119	42	5	0.050	0.047	0.255
Cape Verde	0.125	8	1	0.117	0.001	0.492
Guatemala	0.136	59	8	0.045	0.068	0.248
Ecuador	0.167	60	10	0.048	0.091	0.282
Honduras	0.175	40	7	0.060	0.084	0.323
Uganda	0.188	16	3	0.098	0.058	0.438
Angola	0.190	21	4	0.086	0.071	0.406
Peru	0.195	87	17	0.043	0.125	0.292
Malawi	0.200	35	7	0.068	0.097	0.362
Paraguay	0.213	75	16	0.047	0.135	0.320
Bolivia	0.222	63	14	0.052	0.136	0.340
Rwanda	0.250	4	1	0.217	0.034	0.711
Gambia	0.286	7	2	0.171	0.076	0.648
Tanzania	0.364	22	8	0.103	0.196	0.571
Niger	0.389	18	7	0.115	0.202	0.615
Cameroon	0.429	7	3	0.187	0.158	0.750
Guinea	0.556	9	5	0.166	0.266	0.812
Congo, Dem. Rep.	0.625	8	5	0.171	0.304	0.865
Mauritania	0.700	10	7	0.145	0.392	0.897
Burundi	1.000	1	1	0.000	0.167	1.000

Notes:

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Appendix Table A.5

Graft Index of Firm Transactions — Import Licenses
(Probability that a firm will be asked for bribes when requesting an import license)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Rwanda	0.000	11	0	0.000	0.000	0.300
Namibia	0.000	22	0	0.000	0.000	0.175
Malawi	0.000	36	0	0.000	0.000	0.115
Guinea-Bissau	0.000	4	0	0.000	0.000	0.546
Botswana	0.000	19	0	0.000	0.000	0.198
Colombia	0.009	117	1	0.009	0.000	0.052
Guatemala	0.009	113	1	0.009	0.000	0.053
Chile	0.013	75	1	0.013	0.000	0.079
Mexico	0.019	52	1	0.019	0.000	0.111
El Salvador	0.021	94	2	0.015	0.001	0.079
Peru	0.031	32	1	0.031	0.000	0.171
Uruguay	0.034	87	3	0.020	0.008	0.101
Argentina	0.041	98	4	0.020	0.013	0.104
Panama	0.042	24	1	0.041	0.000	0.219
Venezuela	0.045	22	1	0.044	0.000	0.235
Burundi	0.050	20	1	0.049	0.000	0.254
Nicaragua	0.051	59	3	0.029	0.012	0.145
Bolivia	0.070	71	5	0.030	0.027	0.158
Niger	0.083	60	5	0.036	0.032	0.185
Burkina Faso	0.091	11	1	0.087	0.000	0.399
Uganda	0.097	31	3	0.053	0.026	0.257
Paraguay	0.098	92	9	0.031	0.050	0.178
Ecuador	0.111	199	22	0.022	0.074	0.162
Mauritania	0.111	9	1	0.105	0.000	0.457
Tanzania	0.125	32	4	0.058	0.044	0.287
Honduras	0.133	45	6	0.051	0.059	0.266
Angola	0.176	17	3	0.092	0.054	0.418
Gambia	0.200	10	2	0.126	0.046	0.521
Swaziland	0.231	13	3	0.117	0.075	0.509
Cape Verde	0.286	7	2	0.171	0.076	0.648
Guinea	0.286	7	2	0.171	0.076	0.648
Cameroon	0.459	37	17	0.082	0.310	0.616
Congo, Dem. Rep.	0.846	13	11	0.100	0.565	0.969

Notes:

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.

Appendix Table A.6

Graft Index of Firm Transactions — Operating Licenses
(Probability that a firm will be asked for bribes when requesting an operating license)

Country	Index	Number of transactions recorded	Number of bribes requested	Standard error	95% Confidence Interval	
					Lower bound	Upper bound
Cape Verde	0.000	5	0	0.000	0.000	0.489
Namibia	0.000	39	0	0.000	0.000	0.107
Panama	0.000	26	0	0.000	0.000	0.152
Burkina Faso	0.000	5	0	0.000	0.000	0.489
Rwanda	0.000	14	0	0.000	0.000	0.251
Chile	0.031	129	4	0.015	0.009	0.080
Paraguay	0.031	32	1	0.031	0.000	0.171
El Salvador	0.037	82	3	0.021	0.008	0.106
Botswana	0.038	78	3	0.022	0.009	0.112
Colombia	0.049	82	4	0.024	0.015	0.123
Malawi	0.049	61	3	0.028	0.011	0.140
Nicaragua	0.054	112	6	0.021	0.022	0.114
Argentina	0.057	53	3	0.032	0.013	0.160
Uruguay	0.061	33	2	0.042	0.007	0.206
Honduras	0.081	161	13	0.021	0.047	0.134
Niger	0.091	33	3	0.050	0.024	0.243
Gambia	0.091	22	2	0.061	0.013	0.290
Uganda	0.098	204	20	0.021	0.064	0.147
Angola	0.098	61	6	0.038	0.042	0.202
Mexico	0.114	35	4	0.054	0.039	0.265
Bolivia	0.124	121	15	0.030	0.075	0.196
Tanzania	0.127	79	10	0.037	0.068	0.219
Venezuela	0.132	38	5	0.055	0.053	0.278
Peru	0.132	121	16	0.031	0.082	0.205
Guatemala	0.152	33	5	0.062	0.062	0.314
Ecuador	0.162	136	22	0.032	0.109	0.233
Burundi	0.200	10	2	0.126	0.046	0.521
Guinea-Bissau	0.222	27	6	0.080	0.103	0.411
Swaziland	0.227	22	5	0.089	0.097	0.439
Mauritania	0.250	4	1	0.217	0.034	0.711
Guinea	0.444	27	12	0.096	0.276	0.627
Cameroon	0.467	92	43	0.052	0.369	0.569
Congo, Dem. Rep.	0.667	48	32	0.068	0.525	0.784

Notes:

Standard errors and confidence intervals were calculated pooling all data togethere and assuming that the request for bribes follows a binomial distribution.
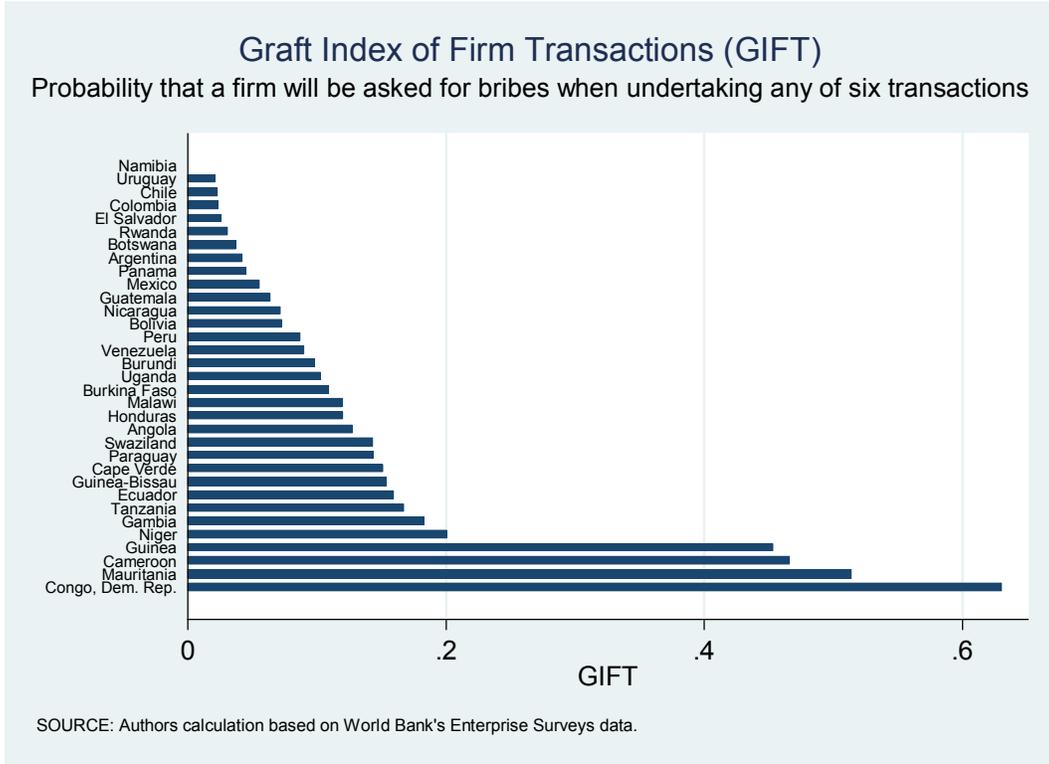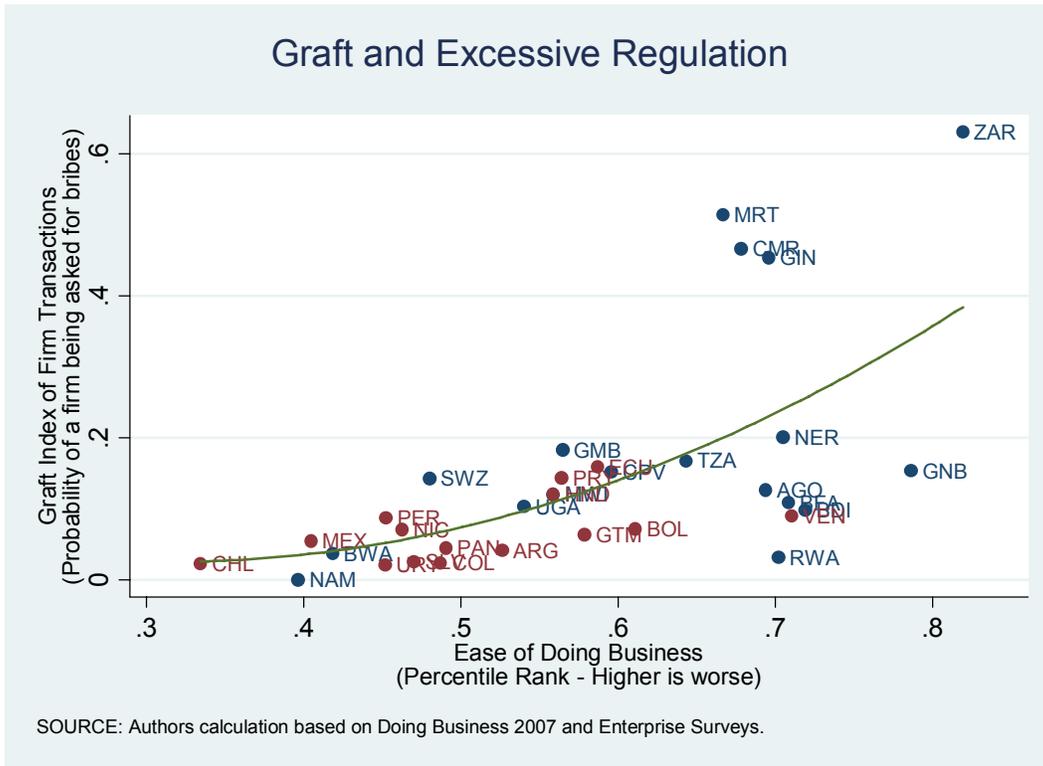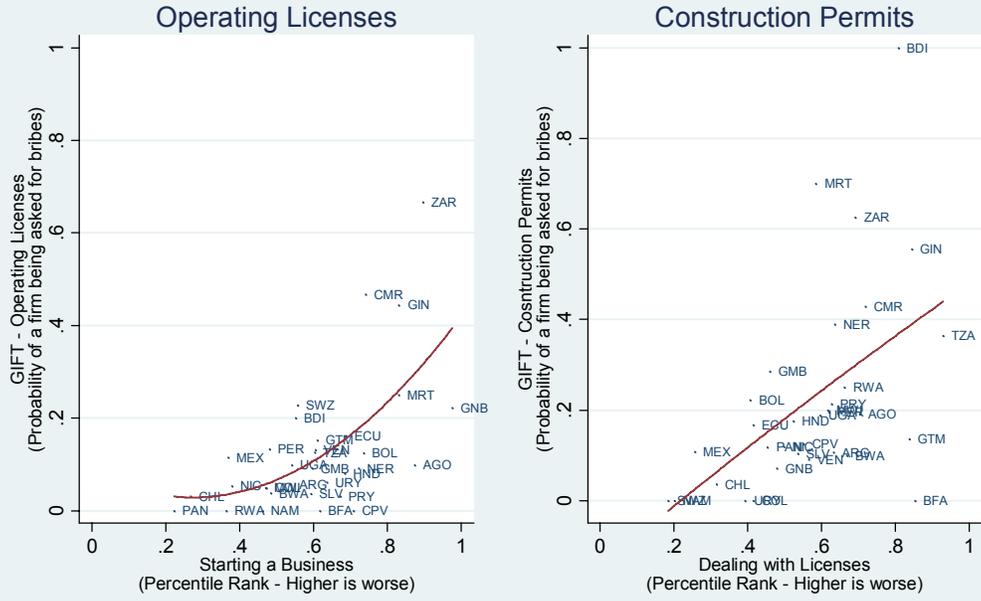
Figure 1

Graft Index of Firm Transactions (GIFT)

Probability that a firm will be asked for bribes when undertaking any of six transactions

SOURCE: Authors calculation based on World Bank's Enterprise Surveys data.

Figure 2

Figure 3

Graft and Excessive Licensing Requirements

Operating Licenses — Construction Permits

SOURCE: Authors calculation based on Doing Business 2007 and Enterprise Surveys.