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The Impact of Corruption on SMEs' Access to Finance

Evidence Using Firm-Level Survey Data from Developing Countries

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Abstract

The present paper estimates the impact of bureaucratic corruption on access to finance of small and medium-size enterprises in 114 developing countries. Corruption can hurt small and medium-size enterprises' access to finance by lowering profits, increasing credit demand, increasing bankruptcy chances, creating uncertainty about the firm's future profit, and exacerbating the asymmetric information problem between borrowers and lenders. Consistent with this view, the findings show a large adverse effect of higher corruption on small and medium-size enterprises' access to finance. An increase in corruption from its smallest to highest value increases the likelihood of small and medium-size enterprises being financially constrained from 6.9 to 10.9 percentage points. The analysis uncovers several heterogeneities in the corruption-finance relationship. For instance, the adverse effect of corruption on access to finance is much less in countries where financial institutions protect the rights of borrowers and lenders are stronger, laws provide for better credit information, and credit bureaus exist. The paper argues that these heterogeneities derive from the specific ways in which corruption impacts access to finance. Thus, they help to raise confidence against endogeneity concerns about the main results. Other heterogeneities uncovered suggest that corruption is more harmful to firms more that, absent corruption, are known to enjoy better access to finance, such as male versus female owned firms, relatively large firms, and better performing firms. The results have important policy implications for the growth of small and medium-size enterprises in the developing world.

The Impact of Corruption on SMEs' Access to Finance: Evidence Using Firm-Level Survey Data from Developing Countries

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1. Introduction

Access to finance plays a key role in the overall growth and development of the private sector (Banerjee & Duflo, 2014; King & Levine, 1993). Lack of adequate finance hampers firms' day-to-day operations and long-term investments. The problem of inadequate financing is especially severe for small and medium-size enterprises (SMEs) operating in the developing world. The extant literature highlights several drivers of financial access including firm and industry characteristics, and the quality of the institutional and legal environment (La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1997; Qian & Strahan, 2007).

However, important gaps remain. One such gap relates to the impact of bureaucratic corruption on firms' access to finance in the developing world. The present paper attempts to fill this gap by using firm-level survey data on SMEs in the manufacturing sector of developing countries. It does so by estimating the impact of corruption faced by firms in obtaining licenses and permits, etc. on the firms' chances of being financially constrained. Our results reveal a large positive relationship between higher corruption and the likelihood of a firm being financially constrained. That is, higher corruption adversely impacts the firm's access to finance. We also explore heterogeneities in the corruption-finance relationship. Some of these heterogeneities derive from the specific ways in which corruption impacts informational asymmetries between borrowers and lenders and thereby affects firms' access to finance. Thus, these heterogeneities serve the additional purpose of partly addressing endogeneity concerns with our main results.

Corruption is a significant economic issue in emerging and developing economies. It can adversely affect growth, productivity, and overall firm performance by diverting resources from productive to rent-seeking activities, and by increasing the cost of conducting business (D'agostino, Dunne, & Pieroni, 2016; Mauro, 1995; Méon & Weill,

2010; Wei & Shleifer, 2000). However, the opposite effect is also possible. Corruption may "grease the wheels" of an otherwise slow bureaucracy, thereby helping firms overcome tedious regulations and red tape (Dreher & Gassebner, 2013; Lui, 1985; Vial & Hanoteau, 2010). The impact of corruption on firms' access to finance has been discussed in the literature. With a few exceptions, studies in the area are confined to corruption in lending processes and corruption in the enforcement of recovery laws, such as judicial corruption (see for example, Blackburn & Sarmah, 2006, Fungáčová et al., 2015; Ullah, 2020, Wellalage et al., 2020). These studies are limited for another reason, which is that they typically focus on a few countries or a single region. In contrast, the present paper focuses on bureaucratic corruption (henceforth, corruption) defined as corruption that arises in obtaining government services such as licenses and permits, electricity connection, etc.[1] In the remainder of the paper, the terms finance, access to finance, and financial constraints are used interchangeably to denote firms' access to external finance.

The impact of corruption on firms' access to finance can be either positive or negative depending on whether corruption "sands the wheels" or "greases the wheels". There are several ways suggested in the literature by which corruption impacts access to finance. First, bribe payments act as a tax on firms raising their cost, lowering profits, and increasing the chance of bankruptcy. Due to lower profitability and higher chance of bankruptcy, lenders are forced to restrict lending to the relatively more profitable firms (supply side effect) and only the more profitable firms are confident of taking loans (demand side effect) (see for example, Blackburn & Sarmah, 2006; Wellalage et al., 2019;

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[1] Ullah (2020) analyzes the impact of this type of corruption on firms' access to finance. It claims that is the first paper to do so. Ullah (2020) uses firms' subjective opinions or perceptions about difficulties firms face in obtaining finance and due to corruption. In contrast, our analysis is based on objective indicators of corruption and access to finance (details below). Further, while Ullah (2020) focuses on transition countries, we use a broader sample of all developing and emerging countries for which data are available.

Ullah, 2020). In contrast, if a bribe payment "greases the wheels", it can increase the firm's profit, thereby improving the demand and supply of finance.

Second, bribe payments are clandestine in nature. Favors received in return for bribes are unpredictable and often shrouded in secrecy. Thus, bribery increases the informational asymmetry between borrowers and lenders about the firm's true profitability. As a result, credit market imperfections increase and equilibrium lending declines. Bribery also increases uncertainty about the firm's profitability. Higher uncertainty can adversely affect both the demand and supply of external finance (Alessandri & Bottero, 2020; Arellano, Bai, & Kehoe, 2019).

Third, judicial corruption increases uncertainty since courts cannot enforce loss recovery against defaulting debtors, and consequently banks refrain from lending (Bae & Goyal, 2009; Weill, 2011).[2] The corruption measures we use below do not cover judicial corruption directly. Nevertheless, this form of corruption may still affect our results if bribe paying firms are viewed as better connected firms and prone to bribing the judiciary (Qi & Ongena, 2019).

There are several reasons for focusing on SMEs. First, although corruption poses a major constraint for firms in general, it is perhaps more detrimental to the development of SMEs since SMEs are more likely to have severe restrictions in access to capital (Beck, Demirgüç-Kunt, & Maksimovic, 2008; Beck & Demirgüç-Kunt, 2006; Şeker & Yang, 2014). Second, SMEs constitute a large part of the economy in most countries. Economic growth of many less developed countries depends critically on the growth of their SMEs. At the same time, studies have shown that SMEs tend to experience significantly higher growth constraints in the business environment than large enterprises (Beck & Demirgüç-Kunt, 2006). Among these, financial constraint seems to be the most important one. Given

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[2] Also see La Porta et al. (1997) for how bank lending is adversely affected by weak investor protection laws and their poor enforcement.

the vastly different experiences of SMEs and large firms with obtaining finance, it is important to analyze SMEs separately from large firms. Third, empirical studies that have examined the corruption-finance nexus indicate that corruption increases SME financial constraints (Qi & Ongena, 2019; Wellalage et al., 2019; Wellalage et al., 2020; Ullah, 2020). However, these studies typically use firms' perception of corruption and access to finance problems rather than objective measures based on actual experience of firms with paying bribes and obtaining finance.[3]

The present paper contributes to the above literature in several ways. First, we use objective indicators of corruption derived from firms' actual experience with bribery in obtaining a specified list of government services. These objective measures do not suffer from perception bias potentially affecting macro-level indicators of corruption used in the literature (discussed in detail below). Objective measures are also used for the access to finance indicator. Second, taking advantage of firm-level surveys, we explore several heterogeneities in the corruption-finance nexus. Some of the heterogeneities derive from the specific ways or mechanisms by which corruption impacts access to finance.

As Rajan and Zingales (1998) note, testing for the theoretical mechanisms that drive the relationship between variables could be the "smoking gun" on the issue of causality. For instance, part of the credit market imperfections arises due to asymmetric information between borrowers and lenders – borrowers have better information about the profitability of investment than the lenders. The clandestine nature of bribe payments implies that the problem of asymmetric information is exacerbated by corruption. Thus,

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[3] In addition to perception-based measures, Ullah (2020) uses objective measures such as whether the firm has overdraft facility or not, whether the firm bought fixed assets last year or not, etc. However, our measure of access to finance is more in-depth based on the sorts of problems firms faced in obtaining a loan (high interest rates, lack of collateral, etc.) and the actual outcome of the loan application.

it becomes even more important for lenders to truly assess the profitability of the borrowers.

As a result, countries with poor credit reporting systems and other institutions to address asymmetric information related problems are likely to be more severely affected by corruption. We test for this formally and find that it holds in the data. Further, as predicted, the result is specific to corruption, and it does not hold for other business environment factors such as regulation and power supply. Third, using firm-level data allows us to focus on SMEs, arguably the more important group as far as access to finance related problems are concerned. Studies based on macro-level data cannot distinguish between SMEs and large firms and so may not provide an accurate picture about the true effects of corruption on firm finances.

The empirical analyses reveal that the likelihood of being financially constrained is significantly higher for firms that experience higher corruption. According to baseline estimates, increase in corruption from its lowest to highest level is associated with an increase in the probability of the firm being financially constrained by 6.9 to 10.9 percentage points across the different specifications considered. The mean percentage of financially constrained firms equals 18.2. Moreover, this corruption-finance relationship is highly heterogenous. This is so in two different ways. First, increase in the likelihood of a firm being financially constrained due to higher corruption is much smaller in countries that have stronger laws to protect borrowers and lenders, rules and practices that provide for better access to credit information, and the presence of credit bureaus. In short, the harmful impact of corruption on firms' access to finance is partly muted by better financial institutions. Second, the likelihood of a firm being financially constrained due to higher corruption is much greater for firms that, absent corruption, are known to enjoy

better access to finance. These are firms that are larger, more productive, faster growing, exporting firms, and firms with all male owners.

We organize the remainder of the study as follows. Section 2 describes the data, main variables used, and the estimation methodology. Section 3 provides the base regression results. Robustness checks are discussed in section 4. In section 5, we provide results for endogeneity checks based on heterogeneity in the corruption-finance relationship. Section 6 contains results for the mediating effect of firm performance measures and gender composition of owners on the corruption-finance relationship. We summarize our main findings in section 7 and suggest scope for future work.

2. Data and methods

2.1 *Data description*

In this section, we discuss the data and estimation method used in the empirical analysis. The main data source is Enterprise Surveys (ES), firm-level survey data collected by the World Bank. The ES are nationally representative surveys of non-agricultural and non-financial private enterprises with 5 or more full-time permanent workers. The surveys use a common sampling methodology, stratified random sampling, as well as a common questionnaire across all countries.[4] Stratification is done by firms' size, industry, and location within the country. Sampling weights are provided in the ES and used in all our regressions so that the sample is representative of the private sector in the country. We complement the ES with other data sources such as World Development Indicators (WDI), World Bank, and Doing Business (DB), World Bank.

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[4] Details of the sampling methodology and other survey related information are available at www.enterprisesurveys.org.

The sample we use consists of small and medium-size enterprises (SMEs) in the manufacturing sector of a large cross-section of developing and emerging countries. We follow the definition used by ES for stratification purposes whereby SMEs are all firms with fewer than 100 full-time permanent workers. The sample is cross-sectional in that each country and firm is included only once. All countries for which data are available are included in the sample and the most recent round of ES available in the country is used. Our main regression results are based on a sample of 20,502 SMEs spread across 114 countries and 22 manufacturing industries (at the 2-digit ISIC Rev. 3.1 level). In Appendix A, table A1 provides the list of countries in the sample, table A2 provides a formal definition of all the variables used in the regressions, table A3 provides the summary statistics of the variables, and table A4 provides the correlations between our main corruption measures and the baseline controls.

2.2 *Estimation methodology*

Our baseline results are obtained from estimating the following equation:

$$Y_{ijk} = \alpha + \beta_1 Corruption_{ijk} + CFE_j + IFE_k + Firm\ Controls_{ijk} + u_{ijk} \qquad (1)$$

where subscript *i* denotes the firm, *j* denotes the industry (at 2-digit ISIC Rev.3.1), and *k* denotes the country where the firm operates. *Y* is a dummy variable equal to 1 if the firm is financially constrained and 0 otherwise; *Corruption* is a measure of the level of corruption experienced by the firm; *CFE* is a set of dummy variables for the country where the firm operates (country fixed effects) and *IFE* is a set of dummy variables for the firm's industry (industry fixed effects). *Firm controls* include various controls for firm characteristics, and *u* is the error term. Equation (1) is estimated using logistic

regression. All regressions use Huber-White robust standard errors and clustered at the country times industry (2-digit ISIC Rev. 3.1) level.

As discussed above, we go beyond and explore how the relationship between corruption and being financially constrained depends on country and firm characteristics. This heterogeneity is estimated using the following equation:

$$Y_{ikj} = \alpha + \beta_1 Corruption_{ikj} + \beta_2 Corruption_{ikj} * Z_{ikj} + \beta_3 Z_{ikj} + CFE_j + IFE_k$$
$$+ Firm\ Controls_{ikj} + Interaction\ Controls_{ikj} + u_{ikj} \qquad (2)$$

Equation (2) differs from equation (1) in two ways. First, it includes the interaction term between corruption and country and firm characteristics captured by Z. These interaction terms estimate how the relationship between the likelihood of being financially constrained and corruption varies with country and firm characteristics (defined below). The second change in equation (2) from equation (1) is that it includes as controls interaction terms between corruption and overall economic development, firm-size, and several elements of the business environment such as regulatory burden on firms, human capital availability in the country, rule of law, physical infrastructure availability, etc. These controls ensure that our main interaction terms in the equation are not spuriously picking up the differential impact of corruption in rich vs. poor countries, small vs. large firms, etc. Equation (2) is estimated like equation (1).

2.3 *Dependent variable*

The dependent variable is a measure of financial constraint faced by the firm. The ES asked each firm if it applied for a loan during the last fiscal year. If a firm did not apply for a loan, it was asked to choose the main reason for not applying from the following

list: no need for a loan as the firm has enough internal funds; insufficient loan size and maturity; high collateral requirement; unfavorable interest rate; complex application procedures; and did not think it would be approved. For firms that applied for a loan, the ES asked if the loan application was rejected, still pending, approved partially, or approved in full. This information has been used in studies to identify financially constrained firms (Amin & Soh, 2020; Distinguin, Rugemintwari, & Tacneng, 2016; Kuntchev & Ramalho, 2013). We define a firm as *financially unconstrained* if it either did not apply for a loan because it had enough internal funds (i.e. retained earnings), or if it applied for a loan and the loan amount was approved in full. The remaining firms are classified as *financially constrained.* Thus, financially constrained firms include firms that applied for a loan but were either fully or partially rejected, and firms that did not apply for a loan because of reasons other than having sufficient internal funds (as listed above). Formally, the dependent variable that we use in the regressions is a dummy variable equal to 1 if the firm is financially constrained in the way described here and 0 otherwise (*Financially Constrained*). In our baseline sample, the mean value of the variable equals 0.182.

2.4 *Main explanatory variable*

The ES provides information on specific instances of corruption that firms experience in conducting a specified list of public transactions. These transactions include obtaining electricity connection, water connection, construction permit, import license, operating license, as well as paying taxes. The ES uses this information to compile two distinct measures of corruption. The first measure is the "incidence of petty corruption"*,* defined as a dummy equal to 1 if a firm experienced a bribe payment or request in one or more of the six transactions listed and 0 otherwise. The second measure is the "depth of petty

corruption", defined as the percentage of the six transactions for which the firm experienced a bribe payment or request.[5]

The firm-level responses to the bribery question cannot be directly used in the regressions as they are likely to be endogenous. That is, they could be affected by financial constraints faced the firm (reverse causality) and/or correlated with other firm characteristics that impact financial condition of the firm (omitted variable bias). For example, larger SMEs are likely to have higher ability to pay bribes. Therefore, public officials may target larger SMEs. Financial condition of the firm may also impact demand for bribes as cash rich firms may be targeted by public officials. One solution suggested in the literature is to proxy corruption experienced by a firm with the average level of corruption experienced by all other firms in the same "cell" (Amin & Soh, 2020; Aterido, Hallward-Driemeier, & Pagés, 2011; Fisman & Svensson, 2007). The cell is variously defined as the country, industry, country times industry group, etc. Note that the cell average does not include the firm in question thereby significantly reducing the chances of reverse causality and omitted variable bias. Additionally, using the cell average helps to control for measurement error if some firms refuse to answer or misreport incidence of bribery (Paunov, 2016). Thus, we follow this strategy and use cell averages of the incidence of petty corruption (*Incidence of Petty Corruption*) and depth of petty corruption (*Depth of Petty Corruption*) as our main explanatory variables, where the cell is defined at the country times industry level. Industry is at the 2-digit ISIC Rev. 3.1 level. All cells with fewer than 5 observations are excluded from the sample. In our baseline sample, there are 714 country-industry cells. The mean value of *Incidence of Petty*

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[5] These measures of corruption are available only for firms that solicited the public services previously mentioned. The ES methodology considers a refusal to answer a question on whether bribes were required or requested as an affirmative answer.

Corruption equals 0.203 and the standard deviation is 0.208. The corresponding values for the *Depth of Petty Corruption* are 0.165 and 0.184.

The ES also provides information on a firm's estimate about bribes that firms like itself pay to public officials to "get things done". The motivation for this question is that firms are likely to report their own experience with bribery in answering the question. This measure of overall corruption differs from the petty corruption measures above in two important ways. First, unlike the petty corruption measures that are based on a firm's actual experience with bribery, the overall corruption measure is based on a much bigger cognitive effort by the firms that involves first thinking of all interactions with the government and then estimating which interactions involved a bribe payment and how much. Second, the overall corruption measure is based on an open question about what is included in "get things done". Thus, part of the difference in reported bribes may have to do with how firms interpret the question. For these reasons, we focus on the incidence and depth of petty corruption as our main corruption variables. For robustness, however, we show that our main result holds if we use the incidence of overall corruption. That is, we use cell averages of the dummy variable equal to 1 if the firm reports paying (strictly positive) bribes to public officials to "get things done" and 0 otherwise (*Overall Corruption*). In our baseline sample, the mean value of *Overall Corruption* equals 0.184 and the standard deviation is 0.220.

2.5 *Control variables*

Reverse causality from a firm's financial condition to corruption experienced by other firms in the cell is highly unlikely, although it cannot be completely ruled out. The problem of omitted variable bias is also mitigated by use of cell averages, although to a lesser extent than reverse causality. For instance, if firms within a cell share common

characteristics such as age and size that impact financial constraint, it can cause the omitted variable bias problem. To guard against this problem, we control for several covariates of corruption that may also affect whether the firm is financially constrained. The choice of control variables is motivated by existing literature. In the baseline model, the controls include all country specific features, all sector specific features, and several firm characteristics. We discuss the motivation for the controls before formally defining them.

At the country or macro level, studies have found several factors that determine the availability of credit and therefore financial constraint faced by firms. These factors cover various aspects of the macroeconomic, institutional, and financial environment in the country - see World Bank (2008) for an excellent overview of the related literature. Examples include legal structure and the overall law and order situation (Demirgüç-Kunt & Maksimovic, 1998) enforcement of creditor rights (Bae & Goyal, 2009), financial outreach or number of bank branches (Beck, 2005), banking regulations (Elliot & Willesson, 2018), competition in the banking industry (Petersen & Rajan, 1995), and macroeconomic stability (Boyd, Levine, & Smith, 2001). If these variables happen to vary systematically across countries with high vs. low levels of corruption, our results may suffer from omitted variable bias. The need for finance and its availability may also vary across sectors. For instance, Rajan and Zingales (1998) suggest that there is a technological reason why some industries depend more on external finance than others. They note that this reason may be related to differences across industries in initial project scale, the gestation period, the cash harvest period, and the requirement for continuing investment. Similarly, growth and profitable opportunities and therefore availability of external finance may also vary by industry.

Regarding firm characteristics, studies have shown that both firm size and age matter since smaller and younger firms are more likely to be financially constrained and discouraged to borrow (Beck et al., 2004). Lenders are likely to consider the current and past performance of the firm in making their decision. Indicators of performance may be direct, such as firm's productivity level and growth rate, or indirect such as use of modern technology licensed from foreign-owned companies, quality of senior management, and having internationally recognized quality certification. Access to finance has also been linked with exporting activity, although it is not clear whether exporting causes improvements in access to finance or firms with greater access to finance are more likely to export (Motta, 2020). Similarly, firms with foreign ownership have been found to have greater access to finance via domestic and international capital markets (Beck, Demirgüç-Kunt, and Singer, 2013). Studies have also analyzed gender gaps in obtaining finance. Women-owned enterprises tend to be more financially constrained than enterprises owned by men (Aterido, Beck, & Iacovone, 2013; Bardasi, Sabarwal, & Terrell, 2011; Brixiová, Kangoye, & Tregenna, 2020; N. H. Wellalage et al., 2019). Getting finance is likely to be easier for firms that maintain transparency about their financial accounts through for example, independent auditing (Claessens, 2006). Next, firms may also invest in capital stock to expand their productive capacity. As a result, they are likely to have better access to finance (Mckenzie & Woodruff, 2008).[6] Last, aspects of the business environment impact the current and future performance and growth of firms and therefore their chances of obtaining finance. Some of these business environment factors include physical infrastructure availability, crime, law & order, business regulations, tax rates, competition from informal firms, among others (Aterido et al., 2011; Distinguin et al.,

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[6] Amin and Soh (2020) and Islam et al. (2019) also use this variable as a proxy for capital use.

2016; Djankov, Porta, Lopez-De-Silanes, & Shleifer, 2002; Klapper, Laeven, & Rajan, 2006).

Following the above discussion, we control for all macro or country-level factors using dummy variables for the country where the firm operates (Country fixed effects). Similarly, all industry-wide factors are accounted for by using dummy variables for the industry (at 2-digit ISIC Rev. 3.1) to which the firm belongs (Industry fixed effects). The data source for country and industry fixed effects is ES. The remaining controls in the baseline specification are for various firm characteristics and the business environment and include the following (all taken from ES): firm size proxied by (log of) total real or deflated sales of the firm (in constant 2009 USD) during the last fiscal year (*Annual Sales*); dummy equal to 1 if the firm is part of a larger establishment and 0 otherwise (*Multi-establishment firm*); (log of) age of the firm; proportion of the firm's annual sales made abroad (*Exports*); proportion of the firm's ownership that is with foreign individuals and companies (*Foreign Ownership*); dummy equal to 1 if the firm has one or more female owners and 0 otherwise; a proxy measure of capital use which is a dummy equal to 1 if the firm purchased fixed assets during the last fiscal year and 0 otherwise; dummy equal to 1 if the firm's accounts were audited in the last fiscal year and 0 otherwise; total hours of power outages faced by the firm in a typical month over the last fiscal year; a dummy equal to 1 if the firm suffered losses due to crime, theft and vandalism during the last fiscal year and 0 otherwise; and a dummy equal to 1 if the firm was inspected by tax officials during the last fiscal year and 0 otherwise. Measures of the business environment that are typically commonly shared by all firms in the country or country-industry are also included. These are country-industry level average of the proportion of firms that compete against informal sector firms, and a similar average of how severe is the (lack of

proper) functioning of courts as an obstacle (on 0-4 scale) for the firm's current operations as reported by the firms.

In the robustness section, we add several other controls to the baseline controls above. These controls include measures of firm-performance, additional measures of the business environment, firm's organizational structure, and other firm characteristics. For firm performance, we use labor productivity or (log of) firm's real annual sales in the last fiscal year (deflated and expressed in 2009 USD) divided by the total number of workers at the firm at the end of the last fiscal year; growth rate of the firm's annual sales over the last three years; and growth rate of the firm's labor productivity over the last three years. The business environment measures include average values at the country-industry level of the following variables: percentage of firm's senior management's time spent in dealing with business regulations (Time Tax), how severe is high taxes (on 0-4 scale) as an obstacle for firm's current operations as reported by the firm, how severe is obtaining licenses and permits (on 0-4 scale) as an obstacle for firm's current operations as reported by the firm, how severe is labor regulation (on 0-4 scale) as an obstacle for firm's current operations as reported by the firm. The remaining controls are (log of) number of years of experience firm's top manager has working in the industry (Top Manager Experience), dummy variables indicating legal status of the firm (sole proprietorship, partnership, limited partnership, publicly listed company, privately held limited liability company, and the residual category of all other companies), dummy variable equal to 1 if firm was registered when it started operations and 0 otherwise, dummy variable equal to 1 if firm competes against informal sector firms and 0 otherwise, dummy variable equal to 1 if firm uses technology licensed from a foreign company and 0 otherwise, and a dummy variable equal to 1 if firm has internationally recognized quality certificate and 0 otherwise.

2.6 *Endogeneity checks*

Our next defense against endogeneity is to test for some heterogeneities in the corruption-finance relationship that derive from the specific ways or mechanisms by which corruption affects firm's financial constraint. Since the heterogeneities are specific to corruption and finance linkage, there is no evident reason for them to hold if our corruption variable were a mere proxy for other correlated drivers of financial constraint (omitted variable bias problem), or if causality runs from financial constraint to corruption (reverse causality problem). This way of guarding against the endogeneity problem has been used in the literature. For instance, Rajan and Zingales (1998) estimate the impact of financial development on industry level growth. They suggest that one way to make progress on causality is to focus on the details of theoretical mechanisms through which financial development affects economic growth and document their working. Building on this idea, they argue that financial markets and institutions help a firm overcome problems of moral hazard and adverse selection, thus reducing the firm's cost of raising money from outsiders. So financial development should disproportionately help firms (or industries) typically dependent on external finance for their growth. They note that such a finding could be the "smoking gun" in the debate about causality.

We follow the strategy proposed by Rajan and Zingales (1998) to show that the impact of corruption on financial constraint faced by firms is most likely causal. As discussed above, there are several mechanisms or channels by which higher bribe payments increase the likelihood of a firm being financially constrained. These channels include lower profits, higher chances of bankruptcy, greater uncertainty about the future profits of the firm, and greater informational asymmetry between the firm (borrower) and the lender about bribe paid and the favors obtained in return. Clearly, many of these

channels could be at least partly blocked by financial institutions that provide for better disclosure of information (about borrowers), stronger creditor rights, widespread credit reporting, etc. For instance, Blackburn and Sarmah (2006) construct a theoretical model and derive several predictions about the impact of corruption and red tape on firm's access to finance. One of their main predictions is that ceteris paribus, higher corruption increases the size of loan or financing needed by firms to continue operations. Therefore, chance of bankruptcy among borrowers increases and with it the expected verification cost of financial intermediaries. The authors conclude that for these reasons, corruption serves to compound the inefficiencies of capital market imperfections or that greater the extent of capital market imperfections, the stronger the effects of corruption. The authors are quick to point out that bribery is different from other obstacles such as red tape. Both bribery and red tape increase the cost of business activity, but they do so for different reasons: in the case of red tape agents must spend time and effort on acquiring licenses to undertake the advanced project; in the case of bribery agents must spend physical and financial resources to obtain these licenses.

Based on the discussion in the previous paragraph, we obtain two testable hypotheses. First, increase in the likelihood of a firm being financially constrained due to higher corruption is less in countries with more developed financial institutions to address asymmetric information problem and other sources of credit market imperfections. The first proxy measure of the quality of financial institutions we use is the "Getting Credit" sub-index compiled by Doing Business, World Bank. The sub-index is a composite index of depth of credit information index and strength of legal rights index. The depth of credit information index measures practices and rules that affect both the accessibility and scope of credit information available through credit registries or bureaus. The legal rights index measures the degree to which both bankruptcy laws and collateral agreements protect the

rights of both borrowers and lenders to facilitate lending. The other proxy for the quality of financial institutions we use is a dummy variable equal to 1 if the country has credit bureaus and 0 otherwise. Data source for the variable is Doing Business, World Bank. Higher values of both the proxy measures imply better financial institutions to facilitate lending and borrowing. Thus, the prediction is that the interaction term between our corruption indicators and the two proxies for the quality of financial institutions is negative. We confirm that the results for these interaction terms are robust to controls for interaction terms between corruption and several other elements of the business environment such as regulation, human capital availability, rule of law, etc. They are also robust to control for the interaction term between corruption and GDP per capita, and between corruption and firm-size.

The second testable hypothesis is a falsification test. That is, as pointed out by Blackburn and Sarmah (2006), red tape and other elements of the business environment raise the cost of conducting business, but they do not affect financial market outcomes. Thus, there is no evident reason why the impact on the likelihood of being financially constrained of factors such as the level of red tape and physical infrastructure availability should be less positive (or more negative) in countries with better financial institutions. However, if our corruption variable is a proxy for the broader business environment, then we should find similar effects of regulation and physical infrastructure as we find for corruption. We test for this formally using two separate measures of red tape and power outages (hours) experienced by the firms.

3. Base regression results
3.1 *Incidence of petty corruption*

Baseline regression results with incidence of petty corruption as the main explanatory variable are provided in table 1. The estimated log odds ratios are provided in Panel A while Panel B shows the associated marginal effects. In the remainder of the paper and unless stated otherwise, the discussion relates to the estimated log odds ratios.

The results in table 1 show that higher incidence of petty corruption is associated with a significantly higher probability that a firm is financially constrained. This positive relationship is statistically significant at the 5 percent level in all the specifications shown. Without any other controls (except for country and industry fixed effects), the estimated coefficient value of incidence of petty corruption variable equals 0.635 (column 1). The coefficient value increases when we add the baseline controls to the specification (columns 2-6). It equals 0.835 in the final specification with all the baseline controls included (column 6). The estimated marginal effect of incidence of petty corruption is also positive, large, and significant at the 5 percent level for all the specifications shown (see Panel B). It ranges between 0.069 and 0.090. Thus, an increase in the incidence of petty corruption from its smallest value (0) to highest value (1) is associated with an increase in the probability of a firm being financially constrained by 6.9 percentage points at the lower end (column 1) and 9.0 percentage points at the higher end (column 5). This is a large increase as only 18.2 percent of the firms in our economies are financially constrained.

Regarding the various controls, some show a significant relationship with the dependent variable. As expected, larger firms in terms of annual sales are significantly less likely (at the 1 percent level) to be financially constrained than the relatively smaller firms. The same holds for firms that purchased assets during the last fiscal year and firms that experienced losses due to crime in the last fiscal year. One possible reason for the latter finding could be that criminals target the more profitable firms which also are less

likely to be financially constrained. We also find that worse functioning courts and greater competition from informal sector firms are associated with a significantly higher probability of a firm being financially constrained than their respective counterparts. The result for informal competition here is consistent with the findings in Distinguin et al. (2016). Firms that had their accounts audited are also less likely to be financially constrained than the rest, but this difference is significant in some of the specifications but not in the final specification.

3.2 *Depth of petty corruption*

Regression results for depth of petty corruption are provided in table 2. These results are like the ones discussed above for the incidence of petty corruption. That is, the estimated coefficient value of the depth of petty corruption variable is positive, large, and statistically significant at the 1 percent level in the final specification (column 6) and at the 5 percent level in the remaining specifications. As for the incidence of petty corruption, the estimated coefficient value of the depth of petty corruption increases from 0.759 (column 1) to 1.043 (column 6) as we add the various baseline controls to the specification. Regarding the marginal effect shown in Panel B of table 2, this ranges between 0.082 and 0.109 percent. Thus, an increase in the depth of petty corruption from its smallest to highest value (0 to 1) is associated with an increase in the probability of a firm being financially constrained by 8.2 to 10.9 percentage points across the baseline specifications. This is a large increase given that 18.2 percent of the firms are financially constrained in the sample. Results for the various controls are same as when using incidence of petty corruption (discussed in section 3.1).

4. Robustness

4.1 *Overall corruption*

We repeat the regression exercise above replacing petty corruption with *Overall Corruption*. The regression results are provided in table 3. These results are consistent with the findings above. That is, higher overall corruption is associated with a higher probability of a firm being financially constrained. The estimated coefficient value of overall corruption is positive and large. It is significant at the 1 percent level in all the specifications. As above, the coefficient value rises as we add the various controls to the specification. Similar results hold for the marginal effect of overall corruption (see Panel B, table 3). Depending on the specification, increase in overall corruption from its smallest to highest value (0 to 1) is associated with an increase in the probability of firm being financially constrained by 9.9 to 11.5 percentage points.

4.2 *Additional controls*

Regression results with the additional controls are provided in table 4. Columns 1-3 contain results using the incidence of petty corruption while results using the depth of petty corruption are provided in columns 4-6. Our main result passes the robustness check. That is, the estimated coefficient of corruption (incidence and depth) remains positive, large, and significant at the 5 percent level or less with the additional controls included. Even the coefficient value does not change much. For instance, for the incidence of petty corruption, the estimated coefficient value changes from 0.821 in the final baseline specification (column 6, table 1) to 0.899 with all the additional controls included (column 3, table 4). For the depth of petty corruption, the corresponding change is from 1.043 (column 6, table 2) to 1.036 (column 6, table 4).

5. Endogeneity checks

In this section, we provide results on how the impact of corruption on firm's financial constraint varies with the quality of financial institutions across countries. We also provide results for the falsification test. As argued above, these results help to raise our confidence against endogeneity concerns.

5.1 *Quality of financial institutions*

Two proxy measures are used for the quality of financial institutions that relate to laws to protect borrowers and lenders, rules and practices that provide for better access to credit information, and the presence of credit bureaus. The proxy measures used are the overall "Getting Credit" sub-index compiled by Doing Business, World Bank, and a dummy variable equal to 1 if the country has a private credit bureau and 0 otherwise. As discussed above, the expectation is that better credit information and legal protection of borrowers and lenders helps overcome part of the adverse effect of corruption on access to finance. We test for this idea using interaction terms between corruption and the two proxy measures stated. Since higher values of both the proxy measures imply better financial institutions in terms of facilitating lending and borrowing, we expect the interaction terms to be negative. Such a finding will help raise our confidence against endogeneity concerns.

Regression results for the interaction term between corruption and Getting Credit score are provided in table 5 and between corruption and the presence of credit bureaus are provided in table 6. In both these tables, columns 1-4 contain results for the incidence of petty corruption while columns 5-8 contain results for the depth of petty corruption. In addition to the baseline controls, we also include as controls several interaction terms between corruption and business environment elements. The motivation for this is to guard against the possibility that the differential effect of corruption between countries

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with high vs. low quality of financial institutions is a mere proxy for the differential effect of corruption across countries with varying levels of the quality of the broader business environment. The additional interaction term controls include interaction terms between corruption (incidence and depth of petty corruption, separately) and the following: Rule of Law (Worldwide Governance Indicators), Gross Primary Education Enrollment rate (WDI), Gross Secondary Education Enrollment rate (WDI), Freedom from Business Regulation (Economic Freedom of the World), Legal Systems and Property Rights (Economic Freedom of the World), and hours of power outages faced by the firm in a typical month (ES). These interaction term controls are in addition the ones between corruption and GDP per capita (logs, PPP adjusted and in constant 2011 international dollars) and between corruption and *Annual Sales* (firm-size). Data source for GDP per capita is WDI, World Bank. Regression results in table 5 and 6 confirm our prediction. That is, while higher corruption increases the likelihood of a firm being financially constrained, the increase is significantly smaller in countries that have better financial institutions.

5.2 *Falsification test*

Next, we provide results from the falsification test. That is, we check if like corruption, the impact of more burdensome regulation and higher power outages on exacerbating firm's financial constraints is smaller (less positive or more negative) in countries with better quality of financial institutions as measured by Getting Credit sub-index and the presence of credit bureaus. A failure to find such an effect will raise our confidence against endogeneity concerns with our main results. For regulation and in separate regressions, we use two measures – a dummy variable equal to 1 if the firm was inspected by tax officials and 0 otherwise; and percentage of firm's senior management's time spent

in dealing with government regulations (Time Tax). For power outages, we use total hours of power outages experienced by the firm in a typical month over the last year. As with corruption, we use country-industry cell average for regulation and power outage variables. Data source for these variables is ES.

Regression results for the falsification test concerning red tape or regulation are provided in table A5 in Appendix A while the same for power outages are provided in table A6 in the appendix. For brevity, results are shown with all the baseline controls included and with and without the various interaction term controls used in section 5.1. The results easily pass the falsification test. That is, we find no evidence that the impact of greater regulatory burden or more power outages on the likelihood of a firm being financially constrained is smaller (less positive or more negative) in countries with better financial institutions.

6. Do some firms suffer more from corruption?

In this section, we analyze how the impact of corruption on financial constraints faced by a firm may depend on the type of firm considered. We argued above that, problems associated with corruption, such as uncertainty and asymmetric information that make it more difficult to obtain finance, are likely to affect those firms more that otherwise enjoy better access to finance. We focus on two groups of firms that are known to enjoy better access to finance: firms with all male owners vs. the rest; and better performing firms in terms of annual sales (firm-size), labor productivity, growth rate of annual sales, and exporting status.

6.1 *Gender*

For the heterogeneous effect of corruption depending on gender composition of firm's owners, we use the interaction term between corruption and a dummy variable equal to 1 if the firm has one or more women owners and 0 otherwise. One concern with the interaction term could be that it may pick up the differential effect of corruption on small vs. large firms as female-owned firms tend to be smaller than male-owned firms. Similarly, the interaction term could proxy for the differential effect of corruption in rich vs. poor countries as richer countries tend to have more firms with female ownership. To address these concerns, we check if our results hold if we control for the interaction term between corruption and firm-size (*Annual Sales*, logs) and between corruption and GDP per capita (logs, PPP adjusted and in constant 2011 USD).

Regression results are provided in table 7. Columns 1-3 contain results for the incidence of petty corruption. Starting with the final baseline specification (as in column 6, table 1), we add the interaction term between incidence of petty corruption and female ownership dummy. Regression results are provided in column 1 and they show that the interaction term is large, negative, and significant at the 1 percent level. This result remains unchanged when we control for the interaction term between incidence of petty corruption and firm-size and between incidence of corruption and GDP per capita (columns 2-3). Corresponding results for the depth of petty corruption are provided in columns 4-6 and these are like the ones for the incidence of petty corruption. Summarizing, we find strong evidence that corruption hurts male-owned firms much more than female-owned firms as far as obtaining finance is concerned.

6.2 *Firm performance*

We now check if the impact of corruption varies with the performance of the firm. We use four different proxy measures of firm-performance: firm-size as captured by *Annual*

Sales; growth rate of Annual Sales over the last 3 years (annual, percentage); labor productivity defined as (log of) total sales (in 2009 USD) during the last fiscal year divided by the number of workers at the end of the last fiscal year; and exports as a proportion of firms' annual sales.

Regression results are provided in table 8 for the incidence of petty corruption and in table 9 for the depth of petty corruption. We add the interaction terms to the final baseline specification separately or one-by-one. This is done with and without controlling for the interaction term between GDP per capita and the firm performance measure. Regression results in tables 8 and 9 reveal that all the interaction terms between corruption and firm-performance measures are positive; they are statistically significant at the 5 percent level or less in most cases and at the 10 percent level in the remaining cases. Thus, corruption hurts better performing firms more in terms of obtaining finance.

7. Conclusion

Corruption is a significant economic issue in emerging and developing economies that may undermine SMEs' development. Using nationally representative survey data for SMEs in mostly developing countries, we examined how corruption affects SME financial constraint. Our results show that overall, more corruption leads to a higher likelihood of an SME being financially constrained. The finding is robust to several controls and endogeneity checks. We also showed that the corruption-finance link is far from uniform. It varies depending on the quality of financial institutions, which can partly mitigate credit market imperfections arising due to asymmetric information between borrowers and lenders and problems due to uncertainty about returns to capital. The link also varies across firms, with firms that are traditionally known to enjoy better access to finance being more adversely affected.

Several issues remain to be explored in the literature. We provide a few examples to illustrate the point. First, the present paper focuses on bureaucratic corruption. Other forms of corruption such as corruption in lending practices and judicial corruption are equally important. While some studies have analyzed the impact of these forms of corruption on firms' access to finance, the heterogeneity issue remains to be explored. Do judicial corruption and lending corruption impact the better performing firms as we found for bureaucratic corruption? Second, data limitations do not allow us to track the mechanism by which corruption impacts firms' financial condition. For instance, it will be interesting to check how much corruption affects firms' access to finance by lowering future profits as opposed to creating uncertainty about future profits, etc. Policy measures to address the problem due to corruption will depend on which of these mechanisms is more important. Third, problems posed by corruption may have implications for the type of financial instruments used by borrowers and lenders, the type of financial intermediaries used by borrowers, and the use of "soft information" vs. "hard information" in the lending process. For instance, the secretive nature of corruption suggests that it is especially problematic for large banks that tend to rely more on "hard information" compared to smaller banks that tend to rely relatively more on "soft information". It is plausible that adjustments on these and other such fronts may partly reduce the otherwise harmful effect of corruption on firms' financial condition. Last, from the policy point of view, it is extremely important to understand the impact of corruption induced financial problems on the performance of firms. We found above that corruption does not impact all firms equally as far as access to finance is concerned. This implies that the impact of the corruption induced access to finance problem on the overall economy may be different from the general effects of access to finance related problems

found in the literature. We hope that the present paper motivates research along these and other lines.

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Table 1: Base Regression Results for Incidence of Petty Corruption

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Estimated log-odds ratios						
Incidence of Petty Corruption (Cell average)	0.635**	0.678**	0.704**	0.757**	0.834**	0.821**
	(0.323)	(0.325)	(0.327)	(0.328)	(0.337)	(0.323)
Annual Sales (2009 USD, logs)		-0.170***	-0.164***	-0.120***	-0.116***	-0.123***
		(0.037)	(0.036)	(0.035)	(0.036)	(0.037)
Age of Firm (logs)			0.018	0.021	0.028	0.045
			(0.067)	(0.069)	(0.070)	(0.072)
Exports (proportion of sales)			-0.592*	-0.510	-0.468	-0.450
			(0.309)	(0.324)	(0.349)	(0.363)
Firm Has Female Owners Y:1 N:0				-0.180	-0.182	-0.194
				(0.116)	(0.117)	(0.118)
Foreign Ownership (proportion)				-0.021	-0.035	-0.047
				(0.278)	(0.272)	(0.282)
Multi-establishment Firm Y:1 N:0				-0.287	-0.295	-0.283
				(0.181)	(0.189)	(0.194)
Firm Purchased Assets Last Fiscal Year Y:1 N:0				-0.563***	-0.529***	-0.529***
				(0.106)	(0.107)	(0.111)
Firm is Audited Y:1 N:0				-0.238**	-0.237**	-0.186
				(0.118)	(0.120)	(0.126)
Hours of Power Outages in a Month					0.000	0.000
					(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0					-0.461**	-0.486**
					(0.189)	(0.191)
Firm Inspected/Visited by Tax Officials Y:1 N:0						-0.114
						(0.119)
Informal Competition (average)						0.670**
						(0.312)
How Much of an Obstacle?: Courts (average)						0.300**
						(0.135)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	20,502	20,502	20,432	20,086	19,060	18,931
Panel B: Marginal effects						
Incidence of Petty Corruption (Cell average)	0.069**	0.073**	0.075**	0.079**	0.090**	0.086**
	(0.035)	(0.035)	(0.035)	(0.034)	(0.036)	(0.034)
Other controls as above	Yes	Yes	Yes	Yes	Yes	Yes

All coefficients in Panel A are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country time industry in brackets. *** (1%), ** (5%), * (10%). Sample size varies due to missing data.

Table 2: Base Regression Results for Depth of Petty Corruption

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Estimated log-odds ratio						
Depth of Petty Corruption (Cell average)	0.759**	0.830**	0.850**	0.923**	0.993**	1.043***
	(0.377)	(0.381)	(0.381)	(0.385)	(0.395)	(0.366)
Annual Sales (2009 USD, logs)		-0.171***	-0.164***	-0.120***	-0.116***	-0.123***
		(0.037)	(0.036)	(0.035)	(0.036)	(0.037)
Age of Firm (logs)			0.016	0.018	0.025	0.042
			(0.067)	(0.069)	(0.070)	(0.072)
Exports (proportion of sales)			-0.589*	-0.506	-0.461	-0.447
			(0.309)	(0.324)	(0.350)	(0.364)
Firm Has Female Owners Y:1 N:0				-0.179	-0.181	-0.194
				(0.116)	(0.118)	(0.119)
Foreign Ownership (proportion)				-0.026	-0.038	-0.050
				(0.279)	(0.273)	(0.283)
Multi-establishment Firm Y:1 N:0				-0.287	-0.295	-0.283
				(0.181)	(0.189)	(0.193)
Firm Purchased Assets Last Fiscal Year Y:1 N:0				-0.565***	-0.532***	-0.532***
				(0.105)	(0.106)	(0.109)
Firm is Audited Y:1 N:0				-0.241**	-0.239**	-0.190
				(0.118)	(0.120)	(0.125)
Hours of Power Outages in a Month					0.000	0.000
					(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0					-0.461**	-0.486**
					(0.188)	(0.190)
Firm Inspected/Visited by Tax Officials Y:1 N:0						-0.114
						(0.118)
Informal Competition (average)						0.687**
						(0.312)
How Much of an Obstacle?: Courts (average)						0.312**
						(0.135)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	20,502	20,502	20,432	20,086	19,060	18,931
Panel B: Marginal effect of the corruption variable						
Depth of Petty Corruption (Cell average)	0.082**	0.089**	0.091**	0.096**	0.107**	0.109***
	(0.041)	(0.041)	(0.041)	(0.040)	(0.043)	(0.039)
Other controls as above	Yes	Yes	Yes	Yes	Yes	Yes

All coefficients in Panel A are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country time industry in brackets. *** (1%), ** (5%), * (10%). Sample size varies due to missing data.

Table 3: Regression Results for Overall Corruption						
Dependent variable: Financially Constrained (dummy)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Panel A: Estimated log-odds ratio						
Overall Corruption (cell average)	0.931***	1.027***	1.046***	1.089***	1.125***	1.123***
	(0.316)	(0.316)	(0.316)	(0.304)	(0.312)	(0.310)
Annual Sales (2009 USD, logs)		-0.189***	-0.181***	-0.140***	-0.138***	-0.145***
		(0.037)	(0.037)	(0.036)	(0.037)	(0.038)
Age of Firm (logs)			0.035	0.038	0.044	0.053
			(0.069)	(0.071)	(0.071)	(0.073)
Exports (proportion of sales)			-0.863**	-0.807**	-0.744*	-0.687*
			(0.347)	(0.358)	(0.401)	(0.397)
Firm Has Female Owners Y:1 N:0				-0.185	-0.195*	-0.186
				(0.116)	(0.117)	(0.118)
Foreign Ownership (proportion)				0.015	0.009	0.023
				(0.304)	(0.298)	(0.303)
Multi-establishment Firm Y:1 N:0				-0.226	-0.230	-0.220
				(0.181)	(0.189)	(0.194)
Firm Purchased Assets Last Fiscal Year Y:1 N:0				-0.576***	-0.560***	-0.567***
				(0.105)	(0.106)	(0.107)
Firm is Audited Y:1 N:0				-0.214*	-0.225*	-0.189
				(0.121)	(0.123)	(0.127)
Hours of Power Outages in a Month					0.000	0.000
					(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0					-0.377*	-0.416**
					(0.199)	(0.201)
Firm Inspected/Visited by Tax Officials Y:1 N:0						-0.076
						(0.117)
Informal Competition (average)						0.672**
						(0.326)
How Much of an Obstacle?: Courts (average)						0.296**
						(0.134)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	19,996	19,996	19,929	19,592	18,765	18,674
Panel B: Marginal effect of the corruption variable						
Overall Corruption (Cell average)	0.099***	0.107***	0.109***	0.110***	0.115***	0.112***
	(0.034)	(0.033)	(0.033)	(0.031)	(0.032)	(0.031)
Other controls as above	Yes	Yes	Yes	Yes	Yes	Yes

All coefficients in Panel A are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country time industry in brackets. *** (1%), ** (5%), * (10%). Sample size varies due to missing data.

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)
Incidence of Petty Corruption (Cell average)	0.779**	0.842**	0.899**			
	(0.336)	(0.333)	(0.350)			
Depth of Petty Corruption (Cell average)				0.982***	1.053***	1.036***
				(0.363)	(0.363)	(0.381)
Annual Sales (2009 USD, logs)	-0.128***	-0.126***	-0.374***	-0.128***	-0.126***	-0.374***
	(0.038)	(0.038)	(0.079)	(0.038)	(0.038)	(0.079)
Age of Firm (logs)	-0.046	-0.043	-0.016	-0.050	-0.048	-0.021
	(0.088)	(0.089)	(0.096)	(0.089)	(0.089)	(0.096)
Exports (proportion of sales)	-0.855**	-0.839**	-0.603	-0.848**	-0.830**	-0.590
	(0.384)	(0.387)	(0.393)	(0.385)	(0.389)	(0.394)
Firm Has Female Owners Y:1 N:0	-0.247**	-0.233**	-0.255**	-0.245**	-0.232*	-0.254**
	(0.118)	(0.118)	(0.126)	(0.118)	(0.119)	(0.126)
Foreign Ownership (proportion)	0.156	0.154	0.138	0.150	0.145	0.129
	(0.303)	(0.306)	(0.321)	(0.305)	(0.307)	(0.323)
Multi-establishment Firm Y:1 N:0	-0.148	-0.160	-0.248	-0.148	-0.161	-0.247
	(0.201)	(0.203)	(0.227)	(0.200)	(0.202)	(0.226)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.591***	-0.597***	-0.518***	-0.594***	-0.600***	-0.519***
	(0.107)	(0.106)	(0.120)	(0.106)	(0.105)	(0.120)
Firm is Audited Y:1 N:0	-0.054	-0.054	-0.064	-0.058	-0.057	-0.068
	(0.125)	(0.125)	(0.139)	(0.125)	(0.125)	(0.139)
Hours of Power Outages in a Month	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.542***	-0.536***	-0.498**	-0.543***	-0.536***	-0.495**
	(0.205)	(0.203)	(0.222)	(0.204)	(0.202)	(0.221)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.164	-0.155	-0.202	-0.163	-0.155	-0.201
	(0.118)	(0.118)	(0.125)	(0.118)	(0.118)	(0.125)
Informal Competition (average)	0.433	0.403	0.342	0.449	0.417	0.361
	(0.330)	(0.328)	(0.317)	(0.328)	(0.326)	(0.316)
How Much of an Obstacle?: Courts (average)	0.372***	0.503***	0.498***	0.384***	0.516***	0.503***
	(0.135)	(0.150)	(0.157)	(0.136)	(0.150)	(0.158)

	(1)	(2)	(3)	(4)	(5)	(6)
Top Manager Experience (logs)	0.281***	0.280***	0.216**	0.282***	0.281***	0.217**
	(0.092)	(0.092)	(0.101)	(0.092)	(0.092)	(0.101)
Legal Form of the Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Registered When It Started Operations Y:1 N:0	0.181	0.188	0.317**	0.178	0.184	0.315**
	(0.140)	(0.139)	(0.142)	(0.140)	(0.139)	(0.143)
Firm Uses Technology Licensed from Foreign Company Y:1 N:0	-0.278	-0.291	-0.197	-0.278	-0.291	-0.197
	(0.191)	(0.190)	(0.203)	(0.190)	(0.190)	(0.203)
Firm Competes Against Informal Firms Y:1 N:0	0.036	0.040	0.094	0.038	0.042	0.095
	(0.106)	(0.106)	(0.111)	(0.106)	(0.106)	(0.111)
Firm Has Internationally Recognized Quality Certificate Y:1 N:0	-0.268	-0.282	-0.181	-0.266	-0.279	-0.180
	(0.215)	(0.214)	(0.218)	(0.215)	(0.214)	(0.217)
Time Tax (average)		-0.024***	-0.024***		-0.024***	-0.024***
		(0.008)	(0.009)		(0.008)	(0.008)
How Much of an Obstacle?: Tax Rates (average)		0.054	-0.025		0.054	-0.021
		(0.126)	(0.128)		(0.126)	(0.128)
How Much of an Obstacle?: Obtaining Licenses & Permits (average		-0.162	-0.247		-0.177	-0.255
		(0.163)	(0.171)		(0.163)	(0.172)
How Much of an Obstacle?: Labor Laws (average)		-0.079	-0.013		-0.069	0.001
		(0.149)	(0.156)		(0.149)	(0.155)
Labor Productivity (logs)			0.276***			0.276***
			(0.085)			(0.085)
Sales Growth Rate (annual, %)			-0.004			-0.004
			(0.004)			(0.004)
Labor Productivity Growth Rate (annual, %)			0.006			0.006
			(0.004)			(0.004)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	17,329	17,329	15,995	17,329	17,329	15,995

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Table 5: Getting Credit Score and Corruption								
	Incidence of Petty Corruption				Depth of Petty Corruption			
Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Incidence of Petty Corruption (Cell average)*Getting Credit Score (DB)	-0.287**	-0.399***	-0.395***	-0.470***				
	(0.130)	(0.112)	(0.130)	(0.152)				
Depth of Petty Corruption (Cell average)*Getting Credit Score (DB)					-0.296**	-0.431***	-0.436***	-0.514***
					(0.144)	(0.127)	(0.152)	(0.177)
Incidence or Depth of Petty Corruption (Cell average)	2.506**	3.602***	3.242	0.474	2.536**	3.924***	2.865	1.515
	(1.126)	(0.895)	(3.444)	(2.321)	(1.194)	(0.939)	(4.311)	(2.616)
Incidence or Depth of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)			0.246**	0.269**			0.259*	0.270*
			(0.108)	(0.116)			(0.140)	(0.145)
Incidence or Depth of Petty Corruption (Cell average)*GDP per capita (logs)			-0.318				-0.239	
			(0.458)				(0.550)	
Annual Sales (2009 USD, logs)		-0.084**	-0.161***	-0.166***		-0.084**	-0.154***	-0.156***
		(0.040)	(0.053)	(0.054)		(0.040)	(0.055)	(0.056)
Age of Firm (logs)		0.054	0.063	0.062		0.055	0.062	0.061
		(0.086)	(0.085)	(0.086)		(0.087)	(0.086)	(0.086)
Exports (proportion of sales)		-0.291	-0.358	-0.355		-0.270	-0.310	-0.305

	(0.408)	(0.413)	(0.410)	(0.411)	(0.405)	(0.404)
Firm Has Female Owners Y:1 N:0	-0.214	-0.217	-0.214	-0.210	-0.213	-0.209
	(0.147)	(0.146)	(0.146)	(0.147)	(0.147)	(0.147)
Foreign Ownership (proportion)	0.143	0.165	0.179	0.146	0.168	0.179
	(0.292)	(0.294)	(0.301)	(0.292)	(0.294)	(0.300)
Multi-establishment Firm Y:1 N:0	-0.069	-0.048	-0.063	-0.069	-0.049	-0.061
	(0.233)	(0.235)	(0.236)	(0.231)	(0.234)	(0.236)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.595***	-0.595***	-0.586***	-0.597***	-0.591***	-0.586***
	(0.113)	(0.113)	(0.113)	(0.112)	(0.113)	(0.113)
Firm is Audited Y:1 N:0	-0.314**	-0.291*	-0.293*	-0.316**	-0.297*	-0.297*
	(0.159)	(0.159)	(0.160)	(0.159)	(0.159)	(0.160)
Hours of Power Outages in a Month	0.001	0.001	-0.001	0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.121	-0.120	-0.131	-0.123	-0.123	-0.141
	(0.187)	(0.188)	(0.185)	(0.187)	(0.187)	(0.184)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.122	-0.117	-0.126	-0.120	-0.117	-0.125
	(0.131)	(0.130)	(0.130)	(0.132)	(0.131)	(0.131)
Informal Competition (average)	0.831**	0.808**	0.826**	0.870**	0.860**	0.869**
	(0.371)	(0.370)	(0.372)	(0.371)	(0.369)	(0.370)
How Much of an Obstacle?: Courts (average)	0.782***	0.782***	0.799***	0.828***	0.831***	0.848***
	(0.198)	(0.201)	(0.209)	(0.203)	(0.207)	(0.214)

Incidence or Depth of Petty Corruption (Cell average)*Rule of Law				0.511				0.720
				(0.766)				(0.832)
Incidence or Depth of Petty Corruption (Cell average)*Primary Enrollment				0.008				0.005
				(0.013)				(0.015)
Incidence or Depth of Petty Corruption (Cell average)*Secondary Enrollment				-0.008				-0.007
				(0.013)				(0.015)
Incidence or Depth of Petty Corruption (Cell average)*Legal System & Property Rights				0.430				0.509
				(0.521)				(0.568)
Incidence or Depth of Petty Corruption (Cell average)*Freedom from Regulation				-0.249				-0.331
				(0.355)				(0.377)
Incidence or Depth of Petty Corruption (Cell average)*Hours of Power Outages in a Month				0.003				0.003
				(0.003)				(0.003)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	15,158	13,946	13,946	13,946	15,158	13,946	13,946	13,946

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Table 6: Credit Bureaus and Corruption

Dependent variable: Financially Constrained (dummy)	Incidence of Petty Corruption				Depth of Petty Corruption			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Incidence or Depth of Petty Corruption (Cell average)*Credit Bureau Present (dummy)	-1.564***	-1.984***	-1.596**	-1.956***				
	(0.603)	(0.627)	(0.686)	(0.696)				
Depth or Depth of Petty Corruption (Cell average)*Credit Bureau Present (dummy)					-1.475**	-1.769**	-1.344*	-1.746**
					(0.701)	(0.721)	(0.789)	(0.801)
Incidence or Depth of Petty Corruption (Cell average)	1.110**	1.457***	5.426*	-0.563	1.097**	1.458***	6.312	0.558
	(0.469)	(0.440)	(3.077)	(2.039)	(0.517)	(0.482)	(3.871)	(2.335)
Incidence or Depth of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)			0.200**	0.194**			0.199*	0.193
			(0.095)	(0.096)			(0.116)	(0.119)
Incidence or Depth of Petty Corruption (Cell average)*GDP per capita (logs)			-0.776**				-0.875**	
			(0.372)				(0.445)	
Annual Sales (2009 USD, logs)		-0.140***	-0.199***	-0.197***		-0.140***	-0.192***	-0.189***
		(0.036)	(0.044)	(0.044)		(0.036)	(0.045)	(0.046)
Age of Firm (logs)		0.032	0.035	0.033		0.029	0.031	0.031
		(0.072)	(0.071)	(0.072)		(0.072)	(0.071)	(0.071)

	(1)	(2)	(3)	(4)	(5)	(6)
Exports (proportion of sales)	-0.659*	-0.670*	-0.681*	-0.630	-0.625	-0.636
	(0.392)	(0.393)	(0.395)	(0.394)	(0.390)	(0.391)
Firm Has Female Owners Y:1 N:0	-0.189*	-0.185	-0.181	-0.181	-0.179	-0.180
	(0.114)	(0.113)	(0.112)	(0.114)	(0.114)	(0.113)
Foreign Ownership (proportion)	0.010	0.018	0.012	0.005	0.013	0.004
	(0.281)	(0.280)	(0.285)	(0.282)	(0.282)	(0.282)
Multi-establishment Firm Y:1 N:0	-0.246	-0.220	-0.231	-0.242	-0.216	-0.222
	(0.194)	(0.194)	(0.192)	(0.194)	(0.194)	(0.192)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.594***	-0.593***	-0.590***	-0.591***	-0.587***	-0.584***
	(0.102)	(0.103)	(0.102)	(0.102)	(0.102)	(0.102)
Firm is Audited Y:1 N:0	-0.215*	-0.202	-0.205	-0.215*	-0.206*	-0.204
	(0.125)	(0.124)	(0.126)	(0.125)	(0.125)	(0.126)
Hours of Power Outages in a Month	0.000	0.000	-0.001	0.000	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.485**	-0.491**	-0.500***	-0.487**	-0.492**	-0.503***
	(0.192)	(0.192)	(0.189)	(0.192)	(0.192)	(0.188)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.069	-0.071	-0.074	-0.067	-0.069	-0.074
	(0.114)	(0.113)	(0.115)	(0.115)	(0.114)	(0.115)
Informal Competition (average)	0.584*	0.561*	0.567*	0.580*	0.594*	0.562*
	(0.307)	(0.311)	(0.310)	(0.310)	(0.313)	(0.314)
How Much of an Obstacle?: Courts (average)	0.398***	0.411***	0.404***	0.382***	0.392***	0.411***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		(0.134)	(0.133)	(0.140)		(0.135)	(0.135)	(0.143)
Incidence or Depth of Petty Corruption (Cell average)*Rule of Law				0.199				0.114
				(0.676)				(0.789)
Incidence or Depth of Petty Corruption (Cell average)*Primary Enrollment				0.004				-0.001
				(0.010)				(0.012)
Incidence or Depth of Petty Corruption (Cell average)*Secondary Enrollment				-0.016				-0.021*
				(0.010)				(0.011)
Incidence or Depth of Petty Corruption (Cell average)*Legal System & Property Rights				-0.405				-0.348
				(0.447)				(0.502)
Incidence or Depth of Petty Corruption (Cell average)*Freedom from Regulation				0.291				0.185
				(0.308)				(0.342)
Incidence or Depth of Petty Corruption (Cell average)*Hours of Power Outages in a Month				0.002				0.002
				(0.003)				(0.003)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	20,344	18,806	18,806	18,806	20,344	18,806	18,806	18,806

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. ***
(1%), ** (5%), * (10%).

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)
Incidence of Petty Corruption (Cell average)*Firm Has Female Owners Y:1 N:0	-1.805***	-1.779***	-1.756***			
	(0.515)	(0.522)	(0.508)			
Depth of Petty Corruption (Cell average)*Firm Has Female Owners Y:1 N:0				-2.056***	-2.024***	-2.046***
				(0.610)	(0.621)	(0.600)
Incidence of Petty Corruption (Cell average)	1.294***	5.313	4.228			
	(0.356)	(3.268)	(3.422)			
Incidence of Petty Corruption (Cell average)*GDP per capita (logs)		-0.476	-0.691*			
		(0.395)	(0.382)			
Incidence of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)			0.242**			
			(0.099)			
Depth of Petty Corruption (Cell average)				1.561***	5.263	3.442
				(0.421)	(4.196)	(4.569)
Depth of Petty Corruption (Cell average)*GDP per capita (logs)					-0.439	-0.626
					(0.511)	(0.476)
Depth of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)						0.288**
						(0.131)
Annual Sales (2009 USD, logs)	-0.124***	-0.125***	-0.197***	-0.125***	-0.126***	-0.200***
	(0.038)	(0.038)	(0.044)	(0.038)	(0.038)	(0.044)
Age of Firm (logs)	0.044	0.043	0.050	0.040	0.040	0.046
	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)	(0.072)
Exports (proportion of sales)	-0.469	-0.443	-0.487	-0.458	-0.440	-0.466
	(0.359)	(0.356)	(0.358)	(0.358)	(0.356)	(0.351)
Firm Has Female Owners Y:1 N:0	0.234	0.224	0.227	0.206	0.198	0.209
	(0.162)	(0.161)	(0.161)	(0.160)	(0.160)	(0.160)
Foreign Ownership (proportion)	-0.045	-0.049	-0.031	-0.048	-0.050	-0.031
	(0.280)	(0.280)	(0.280)	(0.280)	(0.280)	(0.280)
Multi-establishment Firm Y:1 N:0	-0.297	-0.294	-0.272	-0.291	-0.288	-0.262
	(0.194)	(0.194)	(0.194)	(0.193)	(0.193)	(0.194)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.521***	-0.517***	-0.516***	-0.519***	-0.516***	-0.513***

	(0.111)	(0.112)	(0.111)	(0.110)	(0.110)	(0.110)
Firm is Audited Y:1 N:0	-0.187	-0.187	-0.173	-0.191	-0.191	-0.177
	(0.126)	(0.126)	(0.126)	(0.125)	(0.125)	(0.126)
Hours of Power Outages in a Month	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.493***	-0.497***	-0.500***	-0.498***	-0.500***	-0.505***
	(0.189)	(0.188)	(0.189)	(0.188)	(0.188)	(0.189)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.117	-0.120	-0.117	-0.115	-0.116	-0.115
	(0.117)	(0.116)	(0.116)	(0.117)	(0.116)	(0.115)
Informal Competition (average)	0.687**	0.672**	0.667**	0.708**	0.701**	0.720**
	(0.310)	(0.312)	(0.315)	(0.311)	(0.312)	(0.314)
How Much of an Obstacle?: Courts (average)	0.299**	0.317**	0.325**	0.316**	0.326**	0.333**
	(0.132)	(0.133)	(0.133)	(0.133)	(0.135)	(0.134)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	18,931	18,931	18,931	18,931	18,931	18,931

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Annual sales		Labor Productivity		Sales growth rate		Exports	
Incidence of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)	0.196* (0.102)	0.248** (0.099)						
Incidence of Petty Corruption (Cell average)*Labor Productivity (logs, 2009 USD)			0.219** (0.104)	0.277*** (0.105)				
Incidence of Petty Corruption (Cell average)*Sales growth rate (%, annual)					0.024*** (0.007)	0.024*** (0.007)		
Incidence of Petty Corruption (Cell average)*Exports (proportion of sales)							1.814* (0.961)	2.055** (0.967)
Incidence of Petty Corruption (Cell average)*GDP per capita (logs)		-0.741** (0.378)		-0.725* (0.397)		-0.974*** (0.369)		-0.590 (0.379)
Incidence of Petty Corruption (Cell average)	-1.520 (1.263)	4.120 (3.462)	-1.218 (1.009)	4.370 (3.417)	0.780** (0.336)	8.931*** (3.135)	0.728** (0.328)	5.703* (3.212)
Annual Sales (2009 USD, logs)	-0.180*** (0.042)	-0.197*** (0.043)	-0.344*** (0.072)	-0.342*** (0.072)	-0.171*** (0.035)	-0.175*** (0.035)	-0.123*** (0.037)	-0.124*** (0.038)
Age of Firm (logs)	0.050 (0.072)	0.052 (0.072)	0.076 (0.072)	0.076 (0.072)	0.009 (0.078)	0.005 (0.078)	0.050 (0.072)	0.050 (0.072)
Exports (proportion of sales)	-0.496 (0.362)	-0.471 (0.359)	-0.364 (0.370)	-0.345 (0.367)	-0.496 (0.372)	-0.439 (0.372)	-0.965** (0.463)	-1.006** (0.465)
Firm Has Female Owners Y:1 N:0	-0.188 (0.117)	-0.188 (0.116)	-0.175 (0.119)	-0.175 (0.118)	-0.200* (0.118)	-0.209* (0.117)	-0.190 (0.118)	-0.192* (0.117)
Foreign Ownership (proportion)	-0.030	-0.031	0.029	0.027	0.019	0.010	-0.032	-0.034

Table 8: Incidence of Petty Corruption and Firm Performance Interaction terms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(0.282)	(0.281)	(0.283)	(0.282)	(0.296)	(0.295)	(0.283)	(0.282)
Multi-establishment Firm Y:1 N:0	-0.266	-0.257	-0.234	-0.227	-0.284	-0.275	-0.285	-0.281
	(0.194)	(0.194)	(0.195)	(0.194)	(0.213)	(0.212)	(0.194)	(0.194)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.530***	-0.524***	-0.504***	-0.498***	-0.545***	-0.545***	-0.528***	-0.523***
	(0.110)	(0.111)	(0.111)	(0.113)	(0.113)	(0.113)	(0.111)	(0.112)
Firm is Audited Y:1 N:0	-0.174	-0.170	-0.125	-0.123	-0.275**	-0.278**	-0.185	-0.185
	(0.126)	(0.126)	(0.125)	(0.125)	(0.136)	(0.135)	(0.126)	(0.126)
Hours of Power Outages in a Month	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.488**	-0.494***	-0.481**	-0.487**	-0.433**	-0.436**	-0.489**	-0.495***
	(0.192)	(0.191)	(0.191)	(0.189)	(0.209)	(0.207)	(0.191)	(0.190)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.111	-0.114	-0.117	-0.121	-0.134	-0.143	-0.106	-0.108
	(0.118)	(0.116)	(0.119)	(0.117)	(0.120)	(0.119)	(0.119)	(0.117)
Informal Competition (average)	0.671**	0.647**	0.648**	0.625**	0.727**	0.689**	0.676**	0.657**
	(0.315)	(0.317)	(0.315)	(0.317)	(0.309)	(0.310)	(0.312)	(0.314)
How Much of an Obstacle?: Courts (average)	0.299**	0.328**	0.289**	0.317**	0.305**	0.337**	0.296**	0.319**
	(0.136)	(0.135)	(0.136)	(0.135)	(0.135)	(0.133)	(0.135)	(0.135)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	18,931	18,931	18,921	18,921	17,413	17,413	18,931	18,931

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Table 9: Depth of Petty Corruption and Firm Performance Interaction terms

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Annual sales		Labor Productivity		Sales growth rate		Exports	
Depth of Petty Corruption (Cell average)*Annual Sales (2009 USD, logs)	0.250* (0.139)	0.286** (0.134)						
Depth of Petty Corruption (Cell average)*Labor Productivity (logs, 2009 USD)			0.255* (0.142)	0.300** (0.140)				
Depth of Petty Corruption (Cell average)*Sales growth rate (%, annual)					0.026*** (0.008)	0.025*** (0.008)		
Depth of Petty Corruption (Cell average)*Exports (proportion of sales)							2.071* (1.217)	2.194* (1.199)
Depth of Petty Corruption (Cell average)*GDP per capita (logs)		-0.704 (0.457)		-0.710 (0.482)		-1.123** (0.441)		-0.562 (0.477)
Depth of Petty Corruption (Cell average)	-1.905 (1.643)	3.624 (4.552)	-1.275 (1.287)	4.321 (4.384)	0.865** (0.381)	10.253*** (3.740)	0.959*** (0.367)	5.703 (4.014)
Annual Sales (2009 USD, logs)	-0.186*** (0.044)	-0.198*** (0.044)	-0.345*** (0.072)	-0.347*** (0.072)	-0.171*** (0.035)	-0.176*** (0.036)	-0.123*** (0.037)	-0.125*** (0.038)
Age of Firm (logs)	0.047 (0.072)	0.048 (0.072)	0.071 (0.072)	0.072 (0.072)	0.005 (0.078)	0.001 (0.078)	0.045 (0.072)	0.046 (0.072)
Exports (proportion of sales)	-0.477 (0.356)	-0.455 (0.354)	-0.340 (0.363)	-0.320 (0.360)	-0.473 (0.372)	-0.426 (0.374)	-0.919** (0.442)	-0.926** (0.440)
Firm Has Female Owners Y:1 N:0	-0.190 (0.118)	-0.189 (0.117)	-0.178 (0.119)	-0.176 (0.118)	-0.201* (0.118)	-0.207* (0.118)	-0.192 (0.118)	-0.191 (0.118)
Foreign Ownership (proportion)	-0.032	-0.033	0.025	0.024	0.011	0.005	-0.036	-0.038

	(0.282)	(0.282)	(0.284)	(0.283)	(0.298)	(0.298)	(0.283)	(0.282)
Multi-establishment Firm Y:1 N:0	-0.260	-0.254	-0.231	-0.225	-0.282	-0.272	-0.283	-0.281
	(0.194)	(0.194)	(0.194)	(0.194)	(0.214)	(0.212)	(0.193)	(0.193)
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.530***	-0.524***	-0.504***	-0.497***	-0.544***	-0.543***	-0.530***	-0.525***
	(0.109)	(0.110)	(0.110)	(0.111)	(0.112)	(0.112)	(0.109)	(0.110)
Firm is Audited Y:1 N:0	-0.177	-0.176	-0.129	-0.128	-0.275**	-0.281**	-0.191	-0.192
	(0.126)	(0.126)	(0.125)	(0.125)	(0.135)	(0.135)	(0.125)	(0.126)
Hours of Power Outages in a Month	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0	-0.491**	-0.495***	-0.485**	-0.489***	-0.430**	-0.430**	-0.490**	-0.493***
	(0.192)	(0.191)	(0.190)	(0.189)	(0.209)	(0.207)	(0.191)	(0.190)
Firm Inspected/Visited by Tax Officials Y:1 N:0	-0.113	-0.114	-0.120	-0.121	-0.132	-0.137	-0.107	-0.107
	(0.117)	(0.117)	(0.118)	(0.118)	(0.120)	(0.119)	(0.118)	(0.118)
Informal Competition (average)	0.705**	0.696**	0.678**	0.668**	0.736**	0.720**	0.695**	0.686**
	(0.314)	(0.316)	(0.314)	(0.315)	(0.310)	(0.313)	(0.312)	(0.314)
How Much of an Obstacle?: Courts (average)	0.313**	0.329**	0.304**	0.320**	0.306**	0.329**	0.308**	0.321**
	(0.135)	(0.136)	(0.136)	(0.137)	(0.136)	(0.136)	(0.135)	(0.137)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	18,931	18,931	18,921	18,921	17,413	17,413	18,931	18,931

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Appendix A

Table A1: List of countries		
Afghanistan	Georgia	Panama
Albania	Ghana	Papua New Guinea
Angola	Guatemala	Paraguay
Antigua and Barbuda	Guinea	Peru
Argentina	Guinea-Bissau	Philippines
Armenia	Honduras	Poland
Azerbaijan	India	Romania
Bangladesh	Indonesia	Russian Federation
Barbados	Iraq	Rwanda
Belarus	Jordan	Senegal
Benin	Kazakhstan	Serbia
Bhutan	Kenya	Sierra Leone
Bolivia	Kosovo	Slovak Republic
Bosnia and Herzegovina	Kyrgyz Republic	South Africa
Botswana	Lao PDR	South Sudan
Brazil	Lebanon	Sri Lanka
Bulgaria	Lesotho	St. Lucia
Burkina Faso	Liberia	Vincent and the Grenadines
Burundi	Lithuania	Suriname
Cabo Verde	North Macedonia	Sweden
Cambodia	Madagascar	Tajikistan
Cameroon	Malawi	Tanzania
Central African Republic	Malaysia	Thailand
Chad	Mali	Timor-Leste
Chile	Mauritania	Tonga
Colombia	Mauritius	Trinidad and Tobago
Congo, Dem. Rep.	Mexico	Tunisia
Costa Rica	Moldova	Turkey
Côte d'Ivoire	Mongolia	Uganda
Croatia	Morocco	Ukraine
Djibouti	Mozambique	Uruguay
Ecuador	Myanmar	Uzbekistan
Egypt, Arab Rep.	Namibia	Venezuela, RB
El Salvador	Nepal	Vietnam
Eritrea	Nicaragua	West Bank and Gaza
Eswatini	Niger	Yemen, Rep.
Ethiopia	Nigeria	Zambia
Gambia, The	Pakistan	Zimbabwe

Table A2: Description of Variables

Variable	Description
Financially Constrained (dummy)	A dummy variable equal to 1 if the firm is financially constrained and 0 otherwise. The ES asked firms if they applied for a loan during the last fiscal year. If the firm did not apply for a loan, the ES asked the firm to choose the main reason for not applying from the following list: no need for a loan as the firm has enough internal funds; insufficient loan size and maturity; high collateral requirement; unfavorable interest rate; complex application procedures; and did not think it would be approved. For firms that applied for a loan, the ES asked if the loan application was rejected, still pending, approved partially, or approved in full. Based on this information, a firm is financially constrained if either of the following two conditions hold: (i) the firm applied for a loan during and the loan application was rejected partially or fully; (ii) the firm did not apply for a loan during the last fiscal year for reasons listed above other than "no need for a loan". Source: Enterprise Surveys. www.enterprisesurveys.org
Incidence of Petty Corruption (Cell average)	Proportion of firms in the country-industry cell other than the firm in question that report paying a bribe in conducting one or more of the following public transactions: obtaining electricity connection, obtaining water connection, obtaining construction permit, obtaining import license, obtaining operating license, and in meetings with tax officials. Information on bribery is available for a firm only if the firm conducted the specified transaction. We follow the ES methodology whereby a refusal to answer if the firm paid bribe or not is treated as an affirmative answer. For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org
Depth of Petty Corruption (Cell average)	In the first step, for each firm, the proportion of the six transactions for which a firm reported paying a bribe or being requested for one is computed. The transactions include obtaining electricity connection, obtaining water connection, obtaining construction permit, obtaining import license, obtaining operating license, and in meetings with tax officials. We follow the ES

	methodology whereby a refusal to answer if the firm paid bribe or not is treated as an affirmative answer. Further, information on the bribes paid for the various transactions is available for only those firms that availed the public service. The proportion of transactions for which the bribe is paid by a firm is computed over those transactions for which information on bribe payments/requests is available. In the second step, for each firm, the average value of the proportion of transactions computed in the first step is obtained, where the average is taken over all firms in the same country-industry cell (excluding the firm in question). For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org
Overall Corruption (Cell average)	The ES asked firms how much bribes do firms like itself pay as a proportion of their annual sales to public officials to "get things done". Using this information, we define a dummy variable equal to 1 if the firm reports a strictly positive bribe payment to "get things done" and 0 otherwise. Next, for each firm, we compute the average of the dummy variable where the average is taken over all firms other than the firm in question in the same country-industry cell. For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org
Country fixed effects	A set of dummy variables (one for each country) indicating the country where the firm is located. Source: Enterprise Surveys. www.enterprisesurveys.org
Industry fixed effects	A set of dummy variables (one for each industry) indicating the industry to which the firm belongs. Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
Annual Sales (2009 USD, logs)	Log of total sales of the firm in the last fiscal year (prior to the survey year). Sales are defined in USD using official exchange rate obtained from World Development Indicators, World Bank. They are also

	deflated to 2009 prices using GDP deflator obtained from World Development Indicators, World Bank. Source: Enterprise Surveys (www.enterprisesurveys.org) and World Development Indicators, World Bank.
Age of Firm (logs)	Log of age of the firm. Source: Enterprise Surveys. www.enterprisesurveys.org
Exports (proportion of sales)	Proportion of the firm's annual sales made abroad in the last fiscal year (prior to the survey year). Only direct sales made abroad by the firm are considered as exports. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Has Female Owners Y:1 N:0	A dummy variable equal to 1 if the firm has at least one female owner and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Foreign Ownership (proportion)	Proportion of the firm's ownership that is with foreign individuals, companies, and organizations. Source: Enterprise Surveys. www.enterprisesurveys.org
Multi-establishment Firm Y:1 N:0	A dummy variable equal to 1 if the firm is part of a larger firm and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Purchased Assets Last Fiscal Year Y:1 N:0	A dummy variable equal to 1 if the firm purchased physical assets during the last fiscal year (prior to the survey year) and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm is Audited Y:1 N:0	A dummy variable equal to 1 if in the last fiscal year (prior to the survey year), the firm had its annual financial statements checked and certified by an external auditor and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Hours of Power Outages in a Month	Total hours of power outages experienced by the firm in a typical month in the last fiscal year (prior the survey year). Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Experienced Losses from Crime Y:1 N:0	A dummy variable equal to 1 if the firm suffered losses due to theft, vandalism, and arson in the last fiscal year (prior to the survey year) and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org

Firm Inspected/Visited by Tax Officials Y:1 N:0	A dummy variable equal to 1 if over the last year (prior to the survey year), the firm was visited or inspected by tax officials or required to meet with them and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Informal Competition (average)	Average value at the country times industry level of a dummy variable equal to 1 if the firm reports competing against informal or unregistered firms and 0 otherwise. Industry is at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
How Much of an Obstacle?: Courts (average)	The ES asked firms if the functioning of courts is no obstacle (0), minor obstacle (1), moderate obstacle (2), major obstacle (3) or a very severe obstacle (4) for its day-to-day operations. We compute the average at the country times industry level of the reported score (0 to 4). Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
Top Manager Experience (logs)	Log of number of years of experience the top manager of the firm has working in the industry. Source: Enterprise Surveys. www.enterprisesurveys.org
Legal Form of the Firm fixed effects	A set of dummy variables (one for each legal structure) indicating the legal structure of the firm. The categories include the following: publicly listed company, privately held limited liability company, sole proprietorship, partnership, and limited partnership. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Registered When It Started Operations Y:1 N:0	A dummy variable equal to 1 if the firm was formally registered when it started operations and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Uses Technology Licensed from Foreign Company Y:1 N:0	A dummy variable equal to 1 if the firm uses technology licensed from a foreign-owned company, excluding office software and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Firm Competes Against Informal Firms Y:1 N:0	A dummy variable equal to 1 if the firm reports competing against informal or unregistered firms and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org

Firm Has Internationally Recognized Quality Certificate Y:1 N:0	A dummy variable equal to 1 if the firm an internationally recognized quality certification and 0 otherwise. Source: Enterprise Surveys. www.enterprisesurveys.org
Time Tax (average)	The ES asked firms the percentage of its senior management's time in a typical week during the last year (prior to the survey year) that is spent in dealing with requirements imposed by government regulations. Senior management includes managers, directors, and officers above direct supervisors of production or sales workers. We compute the average at the country times industry level of the time so spent. Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
How Much of an Obstacle?: Tax Rates (average)	The ES asked firms if the taxes is no obstacle (0), minor obstacle (1), moderate obstacle (2), major obstacle (3) or a very severe obstacle (4) for its day-to-day operations. We compute the average at the country times industry level of the reported score (0 to 4). Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
How Much of an Obstacle?: Obtaining Licenses & Permits (average)	The ES asked firms if the obtaining licenses and permits is no obstacle (0), minor obstacle (1), moderate obstacle (2), major obstacle (3) or a very severe obstacle (4) for its day-to-day operations. We compute the average at the country times industry level of the reported score (0 to 4). Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
How Much of an Obstacle?: Labor Laws (average)	The ES asked firms if labor regulations is no obstacle (0), minor obstacle (1), moderate obstacle (2), major obstacle (3) or a very severe obstacle (4) for its day-to-day operations. We compute the average at the country times industry level of the reported score (0 to 4). Industry is defined at the 2-digit ISIC Rev. 3.1 level. Source: Enterprise Surveys. www.enterprisesurveys.org
Labor Productivity (logs)	Log of total annual sales of the firm in the last fiscal year (prior to the survey year) divided by the total number of full-time workers at the firm at the end of the last fiscal year. Annual sales is in USD and in constant 2009 prices (see Annual sales defined above in this table). Full-time workers included permanent and temporary workers

	where the latter is adjusted for the average number of months worked in the year. Source: Enterprise Surveys. www.enterprisesurveys.org
Sales Growth Rate (annual, %)	Annualized percentage change in sales between the last completed fiscal year (prior to the survey year) and a previous period. For most countries, the previous period is two fiscal years ago and three fiscal years ago for some countries. All sales values are deflated to 2009 using each country's GDP deflators obtained from World Development Indicators, World Bank. The change is expressed as a percentage of the average value of real sales in the two periods. The variable ranges between plus/minus 100. Source: Enterprise Surveys and World Development Indicators, World Bank. www.enterprisesurveys.org
Labor Productivity Growth Rate (annual, %)	Annualized growth of permanent full-time workers expressed as a percentage. Annual employment growth is the change in full-time employment reported in the last fiscal year (prior to the survey year) from a previous period. For most countries the difference between the two fiscal year periods is two years. However, for some countries the interval is three years. The change is expressed as a percentage of the average value of real sales in the two periods. The variable ranges between plus/minus 100. Source: Enterprise Surveys. www.enterprisesurveys.org
Getting Credit Score (DB)	The overall "Getting Credit" sub-indicator as compiled by the World Bank's Doing Business project. It is lagged by 1 year from the year covered by the ES in the country. The variable is a composite indicator of two sub-indicators. The first sub-indicator measures the legal rights of borrowers and lenders with respect to secured transactions. That is, whether certain features that facilitate lending exist within the applicable collateral and bankruptcy laws are present or not. The second sub-indicator measures the coverage, scope, and accessibility of credit information available through credit reporting service providers such as credit bureaus or credit registries. Source: Doing, Business, World Bank. https://www.doingbusiness.org/en/methodology/getting-credit

Credit Bureau Present (dummy)	Dummy variable equal to 1 if the country has a private credit bureau covering individuals and firms and 0 otherwise. The variable is lagged by 1 year from the year covered by the ES in the country. Source: Doing, Business, World Bank. https://www.doingbusiness.org/en/methodology/getting-credit
GDP per capita (logs)	Log of GDP per capita, PPP adjusted and at constant 2011 International Dollars. The variable is lagged by 1 year from the year covered by the ES in the country. Source: World Development Indicators, World Bank.
Rule of Law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Points estimates of the variable are used. The variable is lagged by 1 year from the year covered by the ES in the country. Source: Worldwide Governance Indicators, World Bank.
Primary Enrollment	Gross enrollment rate in primary education. The variable is lagged by 1 year from the year covered by the ES in the country. Source: World Development Indicators, World Bank.
Secondary Enrollment	Gross enrollment rate in secondary education. The variable is lagged by 1 year from the year covered by the ES in the country. Source: World Development Indicators, World Bank.
Legal System & Property Rights	Protection of persons and their rightfully acquired property as measured by Fraser Institute's Economic Freedom of the World. The values used are for the "Legal System and Property Rights sub-index. The variable is lagged by 1 year from the year covered by the ES in the country. Source: Economic Freedom of the World, Fraser Institute. https://www.fraserinstitute.org/studies/economic-freedom
Freedom from Regulation	Freedom from regulation as measured Fraser Institute's Economic Freedom of the World. The values used are for the "Regulation" sub-index. The variable is lagged by 1 year from the year covered by the ES in the country. Source: Economic Freedom of the World, Fraser Institute. https://www.fraserinstitute.org/studies/economic-freedom

Firm Inspected/Visited by Tax Officials Y:1 N:0 (Cell average)	We first define a dummy variable equal to 1 if over the last year (prior to the survey year) the firm was visited or inspected by tax officials or required to meet with them and 0 otherwise. Next, for each firm, we compute the average of the dummy, where the average is taken over all firms other than the firm in question in the same country-industry cell. For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org
Time Tax (Cell average)	The ES asked firms the percentage of its senior management's time in a typical week during the last year (prior to the survey year) that is spent in dealing with requirements imposed by government regulations. Senior management includes managers, directors, and officers above direct supervisors of production or sales workers. For each firm, we compute the average of the reported time spent, where the average is taken over all firms other than the firm in question in the same country-industry cell. For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org
Hours of Power Outages in a Month (Cell average)	The ES reports on total hours of power outages experienced by the firm in a typical month in the last fiscal year (prior the survey year). For each firm, we compute the average value of total hours of power outages, where the average is taken over all firms other than the firm in question in the same country-industry cell. For constructing the country-industry cell, industry is defined at the 2-digit ISIC Rev. 3.1 level. All country-industry cells with fewer than 5 firms are excluded from the sample. Source: Enterprise Surveys. www.enterprisesurveys.org

Table A3: Summary statistics					
Variable	**Mean**	**Standard deviation**	**Minimum**	**Maximum**	**Observations**
Financially Constrained (dummy)	0.182	0.386	0	1	20,502
Depth of Petty Corruption (Cell average)	0.165	0.184	0	1	20,502
Incidence of Petty Corruption (Cell average)	0.203	0.208	0	1	20,502
Overall Corruption: (Cell average)	0.184	0.220	0	1	19,996
Annual Sales (2009 USD, logs)	12.368	2.290	1.768	25.283	20,502
Age of Firm (logs)	2.629	0.713	0	5.366	20,502
Exports (proportion of sales)	0.059	0.189	0	1	20,432
Firm Has Female Owners Y:1 N:0	0.324	0.468	0	1	20,502
Foreign Ownership (proportion)	0.062	0.222	0	1	20,417
Multi-establishment Firm Y:1 N:0	0.155	0.362	0	1	20,448
Firm Purchased Assets Last Fiscal Year Y:1 N:0	0.430	0.495	0	1	20,422
Firm is Audited Y:1 N:0	0.418	0.493	0	1	20,347
Hours of Power Outages in a Month	34.535	100.352	0	720	19,508
Firm Experienced Losses from Crime Y:1 N:0	0.177	0.381	0	1	20,454
Firm Inspected/Visited by Tax Officials Y:1 N:0	0.574	0.495	0	1	20,386
Informal Competition (average)	0.569	0.266	0	1	20,472
How Much of an Obstacle?: Courts (average)	0.933	0.671	0	3.870	20,480

Table A4: Correlation between corruption and baseline controls

	Depth of Petty Corruption (Cell average)	Incidence of Petty Corruption (Cell average)	Overall Corruption: (Cell average)
Annual Sales (2009 USD, logs)	-0.150	-0.150	-0.127
Age of Firm (logs)	-0.060	-0.079	-0.052
Exports (proportion of sales)	-0.007	-0.002	0.032
Firm Has Female Owners Y:1 N:0	-0.065	-0.050	-0.034
Foreign Ownership (proportion)	0.007	0.004	0.050
Multi-establishment Firm Y:1 N:0	0.020	0.013	0.014
Firm Purchased Assets Last Fiscal Year Y:1 N:0	-0.083	-0.079	-0.001
Firm is Audited Y:1 N:0	-0.107	-0.114	-0.107
Hours of Power Outages in a Month	0.182	0.163	0.106
Firm Experienced Losses from Crime Y:1 N:0	0.015	0.032	0.058
Firm Inspected/Visited by Tax Officials Y:1 N:0	0.092	0.098	0.104
Informal Competition (average)	0.004	0.027	-0.027
How Much of an Obstacle?: Courts (average)	0.086	0.101	0.056

Table A5: Falsification test using Red tape

Dependent variable: Financially Constrained (dummy)	(1)	(2)	(3)	(4)	(5)	(6)
Firm Inspected/Visited by Tax Officials Y:1 N:0 (Cell average)	-1.217*	-1.260*	-3.453			
	(0.723)	(0.725)	(3.439)			
Firm Inspected/Visited by Tax Officials Y:1 N:0 (Cell average)*Getting Credit Score (DB)	0.184**	0.184**	0.164*			
	(0.083)	(0.088)	(0.090)			
Firm Inspected/Visited by Tax Officials Y:1 N:0 (Cell average)*Annual Sales (200			0.329***			
			(0.103)			
Firm Inspected/Visited by Tax Officials Y:1 N:0 (Cell average)*GDP per capita (logs)			-0.220			
			(0.432)			
Time Tax (Cell average)				-0.002	-0.022	0.131
				(0.025)	(0.025)	(0.096)
Time Tax (Cell average)*Getting Credit Score (DB)				0.001	0.003	0.006**
				(0.003)	(0.003)	(0.003)
Time Tax (Cell average)*Annual Sales (2009 USD, logs)						0.005*
						(0.003)
Time Tax (Cell average)*GDP per capita (logs)						-0.028**
						(0.012)
Annual Sales (2009 USD, logs)		-0.111***	-0.324***		-0.117**	-0.171***
		(0.041)	(0.077)		(0.046)	(0.044)
Age of Firm (logs)		0.058	0.059		0.020	0.026
		(0.082)	(0.080)		(0.083)	(0.082)
Exports (proportion of sales)		0.101	0.153		0.012	0.026
		(0.346)	(0.338)		(0.356)	(0.357)
Firm Has Female Owners Y:1 N:0		-0.279*	-0.287**		-0.286*	-0.304**
		(0.143)	(0.144)		(0.147)	(0.151)
Foreign Ownership (proportion)		-0.065	-0.100		-0.053	-0.042
		(0.299)	(0.300)		(0.297)	(0.298)
Multi-establishment Firm Y:1 N:0		-0.092	-0.113		0.038	0.035
		(0.224)	(0.225)		(0.213)	(0.213)
Firm Purchased Assets Last Fiscal Year Y:1 N:0		-0.562***	-0.552***		-0.518***	-0.523***
		(0.112)	(0.110)		(0.114)	(0.113)
Firm is Audited Y:1 N:0		-0.231	-0.224		-0.240	-0.233
		(0.153)	(0.151)		(0.158)	(0.157)

Hours of Power Outages in a Month		0.001	0.001		0.001	0.001
		(0.001)	(0.001)		(0.001)	(0.001)
Firm Experienced Losses from Crime Y:1 N:0		-0.002	-0.007		-0.046	-0.063
		(0.192)	(0.193)		(0.201)	(0.203)
Informal Competition (average)		0.396	0.352		0.468	0.455
		(0.313)	(0.313)		(0.333)	(0.337)
How Much of an Obstacle?: Courts (average)		0.407***	0.403***		0.420***	0.452***
		(0.137)	(0.139)		(0.160)	(0.159)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	16,011	14,724	14,724	15,786	14,567	14,567

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).

Table A6: Falsification test using power outages			
Dependent variable: Financially Constrained (dummy)	**(1)**	**(2)**	**(3)**
Hours of Power Outages in a Month (Cell average)	-0.007**	-0.004	-0.007
	(0.003)	(0.002)	(0.017)
Hours of Power Outages in a Month (Cell average)*Getting Credit Score (DB)	0.001***	0.001**	0.001**
	(0.001)	(0.000)	(0.000)
Hours of Power Outages in a Month (Cell average)*Annual Sales (2009 USD, logs)			0.001***
			(0.000)
Hours of Power Outages in a Month (Cell average)*GDP per capita (logs)			-0.001
			(0.002)
Annual Sales (2009 USD, logs)		-0.111***	-0.150***
		(0.040)	(0.044)
Age of Firm (logs)		0.058	0.061
		(0.080)	(0.080)
Exports (proportion of sales)		-0.112	-0.100
		(0.356)	(0.355)
Firm Has Female Owners Y:1 N:0		-0.278**	-0.280**
		(0.140)	(0.140)
Foreign Ownership (proportion)		0.018	0.028
		(0.318)	(0.320)
Multi-establishment Firm Y:1 N:0		-0.060	-0.054
		(0.212)	(0.213)
Firm Purchased Assets Last Fiscal Year Y:1 N:0		-0.552***	-0.548***
		(0.109)	(0.109)
Firm is Audited Y:1 N:0		-0.166	-0.166
		(0.156)	(0.156)
Firm Inspected/Visited by Tax Officials Y:1 N:0		-0.136	-0.127
		(0.125)	(0.125)
Firm Experienced Losses from Crime Y:1 N:0		-0.049	-0.046
		(0.181)	(0.182)
Informal Competition (average)		0.436	0.427
		(0.318)	(0.318)
How Much of an Obstacle?: Courts (average)		0.361**	0.360**
		(0.141)	(0.143)
Industry fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Number of observations	15,663	15,181	15,181

All coefficient values are log odds ratios obtained from logit estimation. Huber-White robust standard errors clustered on country times industry in brackets. *** (1%), ** (5%), * (10%).