

# Bank ownership structure, lending corruption and the regulatory environment

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## Accepted Manuscript

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## Highlights

- Examine whether bank lending corruption is influenced by banks' ownership structure.
- State and family ownership increase lending corruption in developed and developing countries, banks controlled by other banks reduce it.
- Stronger regulatory environment can curb lending corruption, but only for family owned banks.
- Results have policy implications as lending corruption reduces economic growth and financial stability.

ACCEPTED MANUSCRIPT

# Bank ownership structure, lending corruption and the regulatory environment\*

Thierno Barry<sup>†</sup>    Laetitia Lepetit<sup>‡</sup>    Frank Strobel<sup>§</sup>

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## Abstract

We empirically examine whether bank lending corruption is influenced by the ownership structure of banks, a country's regulatory environment and its level of economic development. We find that corruption in lending is higher when state-owned banks or family-owned banks provide a higher proportion of credit to the economy, in both developed and developing countries. A stronger regulatory environment, either through a stronger supervisory regime or a higher quality of external audits, helps to curtail bank lending corruption if induced by family-controlled ownership, but not if induced by state-controlled ownership. We further find that controlled-ownership of banks by other banks contributes to reduce corruption in lending; the same applies to widely-held ownership of banks, but only for developed countries.

*JEL classification:* D73, G21, G28, O16

*Keywords:* bank lending, corruption, ownership structure, regulatory environment, economic development

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# 1 Introduction

Well-functioning banking systems can channel savings to the most productive investment projects, thereby assuring efficient capital allocation and enhancing economic development and growth (see e.g. Levine (1997), Levine (2005)). A potential friction that could endanger the efficiency of this capital allocation mechanism is corruption arising in the lending process. Corruption in financial intermediaries hinders the efficient allocation of capital to smaller firms, forcing them to abandon profitable investment opportunities and thereby reducing firm growth (Beck et al. (2005)), while firms with bank connections may have easier access to funding than firms without such ties (Laeven (2001), Charumilind et al. (2006)). Loans offered to related parties (shareholders of the bank, their associates and the firms they control) can have higher default rates and lower recovery rates than unrelated ones (La Porta et al. (2003)). Given the negative effects of lending corruption on the efficient allocation of capital, firm growth and bank soundness, it is important to determine the causes of lending corruption in order to help policymakers better understand how to reduce it. Our study refines and builds on the existing literature examining these issues, with a particular focus on the role of ownership characteristics, the regulatory environment and the degree of economic development of the countries concerned.

Several papers look into the country-level factors that might influence the occurrence of corruption in banks' lending decisions, using a firm-level database drawn from the World Business Environment Survey (World Bank (2000)). Beck et al. (2006) examine the impact of different supervisory policies on lending corruption and find that powerful supervisory agencies reduce integrity in bank lending, whereas greater private monitoring of banks decreases lending corruption. Barth et al. (2009) extend that study and find that greater competition in banking and information sharing via credit bureaus/registries contribute to reducing lending corruption. Building on these two studies, Houston et al. (2011) find that state ownership of media accentuates bank lending corruption as it decreases the likelihood of corruption being detected and punished.<sup>1</sup> A complementary literature, using loan-level data for particular countries, high-

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<sup>1</sup>More recently, Zheng et al. (2013) find evidence that firms domiciled in 'collectivist' countries are more affected by lending corruption than firms in 'individualist' countries.

lights that banks are more prone to lending corruption when the controlling owner is the state: government ownership of banks facilitates the financing of politically desirable projects that maximize the private welfare of politicians instead of maximizing social welfare (see e.g. La Porta et al. (2002), Sapienza (2004), Dinç (2005), Khwaja and Mian (2005)). In line with this political capture view, Houston et al. (2011) find that government ownership of banks induces more lending corruption, whereas Beck et al. (2006) do not observe a significant relationship between the two; both introduce simple control variables reflecting the prevalence of state owned banks in national banking systems. Barth et al. (2009) control for private bank ownership instead, arguing that it can help reduce lending corruption by shaping managerial incentives; they find only weak support for greater private bank ownership lowering lending corruption.

Our paper complements this literature by exploring further the linkages between bank corporate governance and lending corruption. To examine these issues in more detail, we consider a finer classification of bank ownership type than in previous studies, by differentiating banking systems according to the amount of credit provided by banks that are widely held or that are controlled by a single owner. As incentives to extract private benefits of control, such as those related to lending corruption, can vary across different types of controlling owners, we investigate if the degree of lending corruption depends on whether the prevalent controlling bank ownership type in an economy is either the state, a family, an industrial company, a bank or an institutional investor. Shareholders who are themselves owned by multiple owners have lower incentives to extract private benefits as these will be diluted among their multiple owners (Villalonga and Amit (2006)); this is more likely to be the case for banks, industrial firms and mutual and pension funds. On the other hand, the incentives for private benefit extraction are stronger when the controlling owner is a family or the state, since those are better able to effectively divert benefits to themselves (Claessens et al. (2002), Villalonga and Amit (2006)). Moreover, banks controlled by owners with multiple business connections with non-financial firms might be more readily inclined to engage in lending corruption (Laeven (2001), La Porta et al. (2003), Charumilind et al. (2006)); this might be the case for governments, but also for families, industrial companies and banks.

Where controlling owners have incentives to engage in lending corruption and thereby influence credit allocations, it becomes of interest to determine if governance by external

stakeholders, in particular regulators, can curb such behavior. For this, we examine if the level of monitoring and control imposed by external audits and supervisory actions can constrain any opportunistic corrupt behavior in the lending process associated with controlling owners. We also take the investigation further by examining if the level of economic development of a country has an impact on the relationship between controlling ownership and bank lending corruption. Resources available to combat corruption are more abundant in developed countries (Rose-Ackerman (1999)); however, there are also more transactions and therefore greater opportunities for corruption in these countries compared to developing ones (Laffont (2006)).

In order to study the role of ownership structure on bank lending corruption in greater detail, we examine a sample of 4693 firms across 51 countries, using survey data from the World Business Environment Survey (World Bank (2000)) to measure bank lending corruption. We find evidence that the ownership structure of banks has a significant influence on corruption in lending. On the one hand, our results show that firms located in countries where state-owned banks provide a higher proportion of loans to the economy face higher lending corruption, both in developing and developed countries with a substantial level of corruption of public official. We additionally find that family-controlled ownership contributes to increased lending corruption in both developed and developing countries. Banks, when controlled by industrial companies, also contribute to increased lending corruption, but only in developed countries. On the other hand, when banks are controlled by other banks, lending corruption is reduced. We further find that banks with a dispersed ownership structure help to decrease corruption in lending, but only in developed countries. Our results also show that a strong supervisory regime or a high quality of external audits help to curb bank lending corruption induced by family-controlled ownership, but do not reduce lending corruption when banks are controlled by the state or an industrial company.

We thus contribute to the literature examining the causes of bank lending corruption in several ways. First, we investigate whether the corporate governance of banks influences lending corruption by analyzing if controlling ownership is associated with higher levels of bank corruption, and if this relationship depends on the type of the controlling shareholder. By examining the two dimensions of ownership concentration and ownership type, we aim to obtain a better understanding of the underlying mecha-

nisms at work, to promote better ways of combating and deterring lending corruption. Second, we examine whether the regulatory environment, through the strength of supervisors and the quality of external audits, can have an impact on the likelihood of corrupt behavior being detected, and thereby lower the incentives of a bank's controlling shareholder to engage in bank lending corruption. Lastly, we explore whether banks having controlled ownership has a greater influence on lending corruption in developing countries than in developed countries.

The remainder of the paper is organized as follows. Section 2 discusses the link between corporate governance and lending corruption; Section 3 describes our data and provides definitions of the key variables used in the analysis; Section 4 presents the methodology we use to conduct our empirical investigation and discusses our results; Section 5 contains robustness checks; and Section 6 concludes the paper and provides relevant policy implications.

## 2 Corporate governance and lending corruption

Corporate governance specifies the distribution of rights and responsibilities among the different participants in the corporation such as shareholders, managers, the board, and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs (OECD (1999)). The corporate governance structure of a bank therefore determines which participants have the power to engage in lending corruption; those that are able to do so might then trade off the benefits from corruption against the risk of being caught and punished. In this context, lending corruption can be defined as an arrangement between borrowers and bank decision makers over loan issuance and lending conditions, where the latter abuse their responsibilities for private ends, such as immediate or future monetary or non-monetary compensation.

When banks' ownership structure is widely dispersed, a conflict of interest between managers and shareholders is known to arise (Jensen and Meckling (1976)). Managers can engage in corrupt behavior to maximize their own interest to the detriment of the one of shareholders. Lending corruption may offer the manager the opportunity to benefit from immediate monetary (or non-monetary) compensation while it exposes them, but also the shareholders, to legal risk if the corrupt behavior is detected. Such practices

can also expose the shareholders to substantial financial risks as the reputation of banks amounts to a significant component of their overall market value. Lending corruption can furthermore arise from low-level managers and employees such as loan officers. The challenge of shareholders is then to give top managers strong incentives to discourage such corrupt behavior by monitoring and controlling agents inside the bank. It is the function of the board, through compensation mechanisms and dismissal threats, to prevent opportunistic behavior of the managers and to lead them to maximize shareholder value (Fama and Jensen (1983)). Another mechanism to control management can be the market for corporate control: the threat of a hostile takeover can make managers behave in accordance with the interests of current shareholders (Jensen (1988)). However, in banking, hostile takeovers are extremely rare (Prowse (1997)), mainly due to the opacity of banks and the regulatory approval process for mergers and acquisitions in the banking industry.

These different corporate mechanisms aiming to rein in managers' behavior are much less relevant, however, when the ownership structure is concentrated (Davies (2000), Sáez and Riaño (2013)). Large investors can elect their representative(s) to the board of directors who will appoint a manager that will act in the interest of these controlling shareholders. The conflict of interest then shifts away from managers vs. shareholders to one of controlling owner vs. minority shareholders. The effect of controlling ownership on firm value and on the decision to engage in lending corruption depends upon the trade-off between shared benefits of control and any private extraction of firm value by controlling shareholders. The theoretical literature demonstrates that controlling owners can impose greater monitoring on management and use their influence to push managers to make decisions that increase overall shareholder value and thereby benefit all shareholders; this is the alignment hypothesis (Jensen and Meckling (1976), Shleifer and Vishny (1986)). Under the alignment hypothesis, having a controlling owner might therefore leave less scope for managers to engage in lending corruption.

However, there can also be private benefits of control in the sense that they profit only controlling owners (Grossman and Hart (1988), Bebchuk (1999), Shleifer and Wolfenzon (2002)). When controlling shareholders can engage in actual extraction of corporate resources, such as through perks, transfer of assets on non-market terms to related parties, then other shareholders would be affected through the resulting reduction

in firm value; this is the entrenchment hypothesis (Jensen and Meckling (1976)). Under the entrenchment hypothesis, corrupt lending by controlling shareholders can take different forms. Firstly, they can extract private benefits by taking bribes from borrowers in exchange for loan acceptances and/or preferential terms, while sharing reputational and financial costs with the other shareholders if they are caught. Secondly, controlling shareholders can distort the allocation of funds from non-related borrowers to related borrowers. Related lending can be beneficial for all shareholders (and other stakeholders) if it improves credit allocation efficiency. This can be the case if the uncertainty about the risk characteristics of projects is reduced by the availability of more information on related borrowers (Rajan (1992)). However, a potential for abuse exists when related borrowers receive favorable terms relative to similarly risky loans to non-related borrowers, or if controlling shareholders receive private benefits such as opportunities to maintain other transactions with the related borrowers that are beneficial to themselves or related parties (e.g. their privately owned companies). Controlling shareholders then divert resources from minority shareholders or debtholders to serve their own interest, in line with the looting (Akerlof et al. (1993)) and tunneling (Johnson et al. (2000)) views.<sup>2</sup> The looting view in particular argues that such behavior might be even stronger in the presence of a deposit insurance system that encourages controlling shareholders to take excessive risk or make loans to related borrowers on non-market terms, as the government then bears part or all of the cost of such activities (La Porta et al. (2003)). When controlling shareholders pursue objectives that are not profit-maximizing but increase their personal utility, the entrenchment hypothesis thus implies that higher levels of lending corruption may ensue.

As already discussed above, incentives to extract private benefits of control, and to this end to potentially engage in corrupt lending, can vary across different types of controlling owners. State-owned banks could be expected to maximize social welfare, however the "political capture" view stipulates that state-owned banks might be used by politicians to maximize their own personal objectives instead, by diverting resources to finance firms having political patronage or to individuals in order to obtain their political support (see e.g. La Porta et al. (2002), Sapienza (2004), Dinç (2005), Khwaja and Mian (2005)). Families as controlling shareholders of banks might have strong

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<sup>2</sup>Tunneling refers to the transfer of resources out of a company to its controlling shareholder.

incentives to engage in lending corruption as they can directly benefit from any extraction of private benefits (Claessens et al. (2002), Villalonga and Amit (2006)), and as such the channeling of funds to related firms. Favoritism towards related firms might also influence lending decisions in banks controlled by industrial companies, banks and institutional investors; however, as these might themselves have multiple owners, the advantages from any private benefit extraction might be reduced as they are diffused amongst several owners (Villalonga and Amit (2006)). Banks (excluding state-owned banks) as controlling shareholders of other banks, on the other hand, might be more reluctant to encourage lending corruption due to the substantial reputational risk attached to such behavior in an already inherently opaque industry.

Whether or not lending corruption is prevalent in a particular banking system should then depend on whether or not banks generally have a controlling shareholder, and if so if it is the state, a family, another bank, an industrial firm or an institutional investor. Our paper contributes to the existing literature on the determinants of lending corruption by investigating in detail how the prevalent type of controlling shareholder in a banking system influences the presence of lending corruption.

### **3 Data and methodology**

#### **3.1 Data**

To examine the impact of bank ownership structure on bank lending corruption, we combine data from several sources: (1) the World Business Environment Survey (World Bank (2000)) is used to create proxies for bank lending corruption and to control for firm-level characteristics; (2) BvD Bankscope, Thomson ONE and annual bank reports are used to construct our bank ownership variables; and (3) the World Bank's Bank Regulation and Supervision Database is used to construct country-level indices on the regulatory environment of the banking industry.

The World Business Environment Survey (WBES) is a survey conducted by the World Bank in 1999 on 10032 firms from 81 countries on managers' perception of factors that ease or restrain firms' performance and growth, including questions on corruption, economic policy, regulation, infrastructure, finance, and institutional envi-

ronment.<sup>3</sup> This data set is relevant to study bank lending corruption for at least three reasons, as explained in Beck et al. (2006). Firstly, the survey requests managers to rank the degree to which corruption in lending is an obstacle for the operation and growth of their business; this direct information reduces measurement error compared to proxies constructed from inferred information. Secondly, the surveyed firms display heterogeneity regarding country of origin, business sector, ownership (public and private firms), and size (large proportion of small and medium-sized firms). Thirdly, the coverage of the data set is excellent, for a large panel of heterogeneous countries and a broad set of firm-specific characteristics; this allows us to draw appropriate inferences on the influence of bank ownership structure on lending corruption.

In addition to these data sets, we further use the World Development Indicators (The World Bank) to control for macroeconomic factors, and the Economic Freedom Index of The Heritage Foundation to control for institutional factors that might impact on the level of lending corruption in a country.

Among the 10032 firm observations included in WBES for 81 countries, we only keep the 7746 firms for which we have information on the questions concerning lending corruption and firm characteristics. Once we combine this with the World Bank's database on the bank regulatory environment, we end up with a final sample of 4693 firms in 51 countries (see Table A1 in the Appendix for the list of countries included in our analysis). The description and data sources of each variable are presented in Table 1, and Table 2 provides summary statistics on the key variables.

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<sup>3</sup>The World Bank did not conduct another survey giving the same level of detail regarding the corruption questions after 1999. Even if our analysis is based on a survey carried out only in 1999, one can argue that the incentives of the different types of controlling shareholders to engage in lending corruption did not change over time.

## 3.2 Variable construction

As developed in greater detail in Section (4), we will use our data set to estimate variations/extensions of the following empirical baseline specification

$$LendingCorruption_{ij} = \alpha + \beta BankOwnership_j + \sum_m \theta_m FirmControl_{ijm} + \sum_n \gamma_n CountryControl_{jn} + \epsilon_{ij} \quad (1)$$

where the  $i$  and  $j$  subscripts stand for firm and country, respectively.  $LendingCorruption_{ij}$  is the level of bank lending corruption,  $BankOwnership_j$  represents our bank ownership variables,  $FirmControl_{ij}$  are firm control variables, and  $CountryControl_j$  are country control and bank regulatory environment variables; the detailed construction of these variables is described in the following sections.

### 3.2.1 Bank lending corruption

The WBES survey gives information on the degree to which corruption in bank lending represents an obstacle to firms. Following Beck et al. (2006), the level of bank lending corruption ( $LendingCorruption_{ij}$ ) is measured with a variable taking the values 1 to 4 according to the answer provided by firm  $i$  (located in country  $j$ ) to the following question: "Is corruption of bank officials an obstacle for the operation and growth of your business?", with answers varying between 1 (no obstacle), 2 (a minor obstacle), 3 (a moderate obstacle), and 4 (a major obstacle). Thus, a higher value of this variable indicates a greater perception of corruption in bank lending. In our sample, 10.61% of the firms declare bank lending corruption as a major obstacle, 9.97% report that it is a moderate obstacle, 17.64% respond that it is a minor obstacle, and 61.77% affirm that lending corruption is not an obstacle to firm growth and operation.

Beck et al. (2006) provide a detailed explanation for why the WBES survey data should not be biasing the results in favor of our findings. They argue that if managers facing the same obstacle respond differently to questions because they are confronted with different cultural and institutional environments, such a measurement error would bias the results against finding, for example, a significant relationship between controlling ownership and lending corruption. To address such a potential bias problem, we

control for a range of country-specific characteristics as in Beck et al. (2006). Furthermore, existing papers using the same WBES data set show that firms' responses to the survey on financing obstacles more generally are associated with various measurable outcomes in terms of investment flows, firm growth, institutions, corruption of public officials, property rights, access to banking services and operation obstacles (see Beck et al. (2006) and Barth et al. (2009) for a review and discussion). These studies support the argument that managers' responses to the survey on financing obstacles are capturing more than idiosyncratic differences in the perception of lending corruption.

### 3.2.2 Bank ownership structure

The WBES data set does not provide the details of firms' bank(s). As we are therefore not able to link individual firms' perception of lending corruption with the ownership structure of their particular bank(s), we use instead country-level variables to measure the proportion of credit to the economy provided by banks that are widely held or that are controlled by a single owner. To match up with the WBES data, we construct our country-level variables for the year 1999. We include in our sample all types of financial intermediaries that provide loans to the economy. BvD Bankscope provides financial statement data for 5070 banks in 1999 for the 51 countries included in our analysis. As for the ownership structure of banks, we combine data from several sources, i.e. BvD Bankscope, Thomson ONE and hand-collected annual reports, in order to obtain information as complete as possible. Limiting our sample to banks for which we have information on their ownership structure, we are left with a final sample of 1737 banks (see Table A1 in the Appendix for a breakdown of banks by country). The median data coverage of our sample, as measured in percent of total loans (or in total assets) in the wider Bankscope one, lies around 81% (see Table A1 in the Appendix).

In a first step, we identify banks that have a controlling owner using a control threshold of 50%. This threshold allows to identify when there is only one controlling owner per bank; we can then consider that the potential decision of such a bank to engage in lending corruption can be driven by the preferences of its controlling owner. If the identified controlling shareholder is independent (family or the state), that is, if he is not controlled by another shareholder, we consider him to be the ultimate controlling owner. If, however, the controlling shareholder is a financial or a non-financial corpo-

ration, we go deeper to find its controlling shareholder, that we then consider as the ultimate controlling shareholder of the bank.<sup>4</sup> We calculate our ownership variables based on the categories of controlling owners for which we are able to identify their type, behavior and incentives to engage in lending corruption, and for the categories that hold sufficient shares to control the bank (at the 50% level). Consequently, we end up with five categories of controlling owners: (i) the government (*State*); (ii) non-financial companies (*Industrial*); (iii) individual/family investors (*Family*); (iv) banks (*Bank*); and (v) institutional investors - insurance companies, financial companies and mutual & pension funds - (*Institutional*). We further identify banks that are widely held (*Widely*), i.e. the ones where the largest owner holds less than 10% of total outstanding shares.<sup>5</sup> We finally create the category *Others* that regroups: (i) banks that are neither controlled by a single owner at the 50% level nor widely held at the 10% level; and (ii) banks that are controlled by foundations, for which we do not know their incentives to engage in lending corruption.<sup>6</sup>

In a second step, we calculate the market share of each bank in terms of total loans provided in its country for the year 1999, defined as total loans of each bank divided by total loans of the full sample of banks for the country  $j$  available in BvD Bankscope. We then calculate for each country  $j$  the proportion of the banking system's loans, i.e. the sum of loans' market shares, that is provided by banks that are: (i) controlled by the State (*ShareLoan State<sub>j</sub>*); (ii) controlled by industrial firms (*ShareLoan Industrial<sub>j</sub>*); (iii) controlled by families (*ShareLoan Family<sub>j</sub>*); (iv) controlled by banks (*ShareLoan Bank<sub>j</sub>*); (v) controlled by institutional investors (*ShareLoan Institutional<sub>j</sub>*); (vi) widely held (*ShareLoan Widely<sub>j</sub>*); and (vii) neither controlled by a single owner nor widely held using a threshold of 50% and 10%, respectively (*ShareLoan Others<sub>j</sub>*). We also calculate the proportion of loans owned by banks controlled by the private sector (*ShareLoan Private<sub>j</sub>*) as in Barth et al. (2009), i.e. banks either controlled by an industrial company, a family, a bank or an institutional

<sup>4</sup>We use the information provided by BvD Bankscope and Amadeus to identify the ultimate controlling shareholder, using a threshold of 50%. For example, we consider that the state is the controlling shareholder of a bank when its controlling shareholder is another bank which is itself controlled by a state.

<sup>5</sup>We also use the thresholds of 20% and 33% as robustness checks to classify banks as widely held; see Section 5.

<sup>6</sup>We only have 16 banks controlled by a foundation in our sample of 1737 banks.

investor.

From Table 2 we observe that banks controlled by other banks provide, on average, the largest share of credit to the economy (29%) followed by state-owned banks (11%). Banks controlled by families, industrial companies, institutional investors or widely-held banks, on the other hand, contribute much less to the financing of the economy. We expect countries where a higher proportion of loans are provided by state- or family-owned banks to display a higher level of lending corruption, whereas countries where widely-held banks or banks controlled by institutional investors are more prevalent should have a lower level of lending corruption. The expected impact of other types of controlling ownership on lending corruption is less clear, though. If the alignment hypothesis prevails, i.e. if controlling owners impose stronger monitoring on managers, we expect that countries where banks controlled by other banks or industrial companies are more common to show lower levels of lending corruption. However, if such controlling owners divert lending to related borrowers in line with the entrenchment hypothesis, we expect more lending corruption to occur if larger numbers of banks are controlled either by industrial companies or other banks.

### 3.2.3 Regulatory environment

One of our aims is to examine whether the regulatory environment can constrain the potential lending corruption behavior of banks. Bardhan (1997) argues that the regulatory state, with its elaborate system of permits and licences, contributes to producing corruption. In line with this argument, the political capture view asserts that politicians and supervisory agencies maximize their own private welfare instead of maximizing social welfare (Becker (1983), Shleifer and Vishny (2002)). Politicians and supervisory agencies might therefore use their power to instigate banks to divert funds to politically connected firms. However, a powerful supervisory agency can contribute to improving the corporate governance of firms in a context where information and transactions costs interfere with the incentives and the abilities of private agents to monitor them (Stigler (1971)). As the banking industry is highly regulated, this is of importance to determine whether the regulatory environment encourages or curbs bank lending corruption. Beck et al. (2006), Barth et al. (2009) and Houston et al. (2011) find a positive relationship between bank lending corruption and an index measuring the strength of supervisory

regime, in line with the political capture view.

We first construct an index for strength of supervisory regime (*Supervisory Strength<sub>j</sub>*) drawn from the World Bank's 2003 Bank Regulation and Supervision Database. It ranges in principle from zero to ten, and covers capital stringency and powers to intervene in and resolve troubled banks (see the definition in Table 1 for more details). In our sample, the index has a median of six and ranges from zero to ten. This heterogeneity comes from different propensities of regulatory authorities to do on-site examinations in order to make an overall assessment of banks to determine their economic condition, and to detect potential opportunistic behavior such as corrupt lending. It also stems from regulators' differing abilities to remove and replace managers and directors or to force a bank to change its internal organizational structure when problems are detected.

We also construct an index measuring the quality of external audits for each country (*Audit Quality<sub>j</sub>*) based on the World Bank's 2003 Bank Regulation and Supervision Database. This index takes into account (i) whether there is independent assessment of the accuracy of financial statements disclosed to the public, and (ii) whether supervisors are empowered to take specific actions to prevent and correct problems (see the definition in Table 1 for more details). The external audit quality index ranges in principle from zero to eleven; in our sample it has a median of six, with a minimum of three and a maximum of eight. There is substantial heterogeneity in our sample regarding the role of supervisors in ensuring the reliability and integrity of the financial process, depending on whether they have influence over the independence of auditors and can take legal action against them if problems are detected.

We compute the dummy variable  $d(\text{High Quality Audit}_j)$  that takes the value of one for a country if the index  $\text{Quality Audit}_j$  is greater than the cross-country median, and zero otherwise, and the dummy variable  $d(\text{High Supervisory Strength}_j)$  taking the value of one for a country if the index  $\text{Supervisory Strength}_j$  is greater than the cross-country median, and zero otherwise. We expect a negative (positive) sign for these two variables if the level of monitoring and control imposed by external audits and a strong supervisory regime can constrain (encourage) opportunistic lending corruption.

### 3.2.4 Control variables

We control for a large set of firm- and country-level determinants of lending corruption to appropriately isolate the role of bank ownership structure in this context.

**Firm characteristics** We control for firms' size, competitive environment and business characteristics. For this we include the natural logarithm of firm sales in USD ( $\text{Log}(\text{Sales})_i$ ) to control for firm size, and the natural logarithm of the number of competitors that each firm faces ( $\text{Log}(\text{Number Competitors})_i$ ) to control for the competitive environment. Larger firms may perceive less lending corruption if they consider the bribes they have to pay to access bank credit to be of a nominal amount. The regressions also include a dummy variable characterizing whether the firm is an exporter ( $d(\text{Exporter})_i$ ). We expect  $d(\text{Exporter})_i$  to be negatively related to lending corruption if exporting firms can have access to external finance abroad and therefore maintain a stronger bargaining position vis-à-vis domestic banks.

Barth et al. (2009) find a negative relationship between lending corruption and both government ownership and state ownership. We therefore include the two following dummy variables to control for the firm's ownership type: (i)  $d(\text{Firm State owned})_i$  takes the value of one if any government agency or state body holds an equity stake in the firm, and zero otherwise; (ii)  $d(\text{Firm Foreign owned})_i$  takes the value of one if any foreign investors have a financial stake in the firm, and zero otherwise.

We also incorporate the overall perception of financing obstacles faced by the firm as a control variable ( $\text{General Financing Obstacle}_i$ ). We use for that the firm responses in WBES to the question: "How problematic is financing for the operation and growth of your business?", with the answers varying between 1 (no obstacle), 2 (a minor obstacle), 3 (a moderate obstacle), and 4 (a major obstacle). Including the variable  $\text{General Financing Obstacle}_i$  is important to establish that the relationship we find is with lending corruption and not with overall complaints about the banking system.

**Country controls** We further include the Index of Economic Freedom of The Heritage Foundation for 1999 ( $\text{Economic Freedom}_j$ ) to control for differences in institutions across countries. This index ranges from zero to one hundred taking into account four broad categories of economic freedom: rule of law (property rights, freedom from

corruption), limited government (fiscal freedom, government spending), regulatory efficiency (business freedom, labor freedom, monetary freedom), and open markets (trade freedom, investment freedom, financial freedom). Higher scores indicate that a country enjoys greater economic freedom, i.e. governments allow the free movement of labor, capital and goods, and refrain from coercing or constraining liberty beyond what is necessary to protect and maintain it. We also aim to control for the growth rate of GDP per capita ( $GDP\ Growth_j$ ) and the inflation rate ( $Inflation_j$ ), as firms located in faster growing countries and more stable monetary environments may face lower financing obstacles due to bank corruption. We further control for the level of development, using the World Bank classification as in Delis (2012) to split the sample into developing and developed countries.<sup>7</sup> Low-income and middle-income economies are referred to as developing economies (37 countries in our sample) and high-income countries as developed economies (14 countries). The dummy variable  $d(High_j\ Development_j)$  takes the value of one if a country is classified as developed and zero otherwise, and we expect a negative (positive) sign if firms located in developed countries face lower (higher) corruption.

Checking the correlations between firm-level and country-level ownership variables, we found that only the correlation coefficient between  $Economic\ Freedom_j$  and  $Inflation_j$  is higher than 0.5 (see Table A2 in the Appendix). We therefore decided to only include  $Economic\ Freedom_j$ ,  $GDP\ Growth_j$  and  $d(High_j\ Development_j)$  as country-level control variables in our main regressions, and we introduce  $Inflation_j$  separately as a robustness check.

[Insert Tables 1 and 2]

## 4 Empirical results

### 4.1 Bank ownership structure and lending corruption

We examine whether countries' differences in the level of lending corruption can be explained by differences in the ownership structure of banks. Countries where banks

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<sup>7</sup>Countries are divided according to GNI per capita, calculated using the World Bank Atlas method. We use the classification of 2000 (as the one of 1999 is not available): low income, \$755 or less; lower middle income, \$756 - \$2,995; upper middle income, \$2,996 - \$9,265; and high income, \$9,266 or more.

controlled by one owner play a more prevalent role in the financing of the economy might display higher or lower degrees of lending corruption according to the type of the controlling owner. To explore this impact of bank ownership characteristics on lending corruption, we consider the following specification (we restate Equation (1) for convenience)

$$\begin{aligned} LendingCorruption_{ij} = & \alpha + \beta BankOwnership_j \\ & + \sum_m \theta_m FirmControl_{ijm} + \sum_n \gamma_n CountryControl_{jn} + \epsilon_{ij} \end{aligned}$$

where the  $i$  and  $j$  subscripts indicate firm and country, respectively. Firm control variables, indexed by  $m$ , and country control and bank regulatory environment variables, indexed by  $n$ , are as defined in the previous section.

The bank ownership variables are based on the proportion of loans provided by the six different ownership categories of banks considered: widely held or controlled by the state, a family, an industrial company, another bank or an institutional investor. We cannot include all the categories of bank together to avoid singular matrix. We first include the six categories one by one to analyze the specific influence of a bank ownership category on lending corruption in comparison with the other ownership categories considered together (Table 3). We alternatively remove the category state-owned banks from Equation (1) in order to use state-owned banks as a benchmark (Table 4), as the link between lending corruption and state ownership is the most established.<sup>8</sup>

We estimate Equation (1) as an ordered probit model;<sup>9</sup> the threshold parameters and regression coefficients are obtained simultaneously using standard maximum likelihood estimation with heteroskedasticity robust standard errors. We can meaningfully

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<sup>8</sup>See e.g. La Porta et al. (2002), Sapienza (2004), Dinç (2005) and Khwaja and Mian (2005) that show that state-owned banks divert resources to finance politically connected firms.

<sup>9</sup>We formally tested for the possibility that our regulatory environment variables *Supervisory Strength<sub>j</sub>* and *Quality Audit<sub>j</sub>* are endogenous. For this, we ran an instrumental variable version of Equation (1), where those variables were instrumented by variables commonly used in the literature (see Beck et al. (2006), Houston et al. (2011)), drawn from Beck et al. (2003). In particular, we instrumented using the absolute value of a country's latitude, ethnic fractionalization, and the length of time it has been independent, as defined in Table 1. Performing the Smith and Blundell (1986) test of exogeneity, we overwhelmingly cannot reject the hypothesis that our regulatory environment variables are exogenous, with p-values ranging between 14% and 98%.

interpret the coefficient estimates' signs and statistical significance for each independent variable; their economic significance must, however, be gauged by calculating the marginal probability effects of a one-unit increase in those variables, which we present predicting the highest category of lending corruption ("major obstacle") for an average firm in the empirical results obtained in Tables 3 and 4.

Looking now at column 1 of Table 3, our results show that the variable *ShareLoan State<sub>j</sub>* is positively associated with bank lending corruption, with both a statistically significant and positive coefficient and marginal probability effect. This result indicates that firms located in countries where state-owned banks provide a higher proportion of credit to the economy face higher lending corruption; this is in line with the political capture view, discussed in Section 2, which argues that politicians create banks to channel funds to politically connected firms. While we do not find a significant coefficient associated with the variable *ShareLoan Private<sub>j</sub>* (column 2), our more refined results show that the influence of private ownership on bank lending corruption depends on the particular type of controlling owner. For instance, in countries where the proportion of loans provided by banks controlled by a family is higher, we also find an increased level of lending corruption (column 5). This empirical result is in support of the view that families divert the allocation of funds to related borrowers when they are in control of banks, as they might perceive private benefits from such opportunistic behavior; this is in line with the entrenchment hypothesis. Such opportunistic behavior is not observed for the two other categories of controlling shareholders that might have business relationships with multiple firms, i.e. industrial companies and banks. We observe that industrial companies' bank ownership does not have a significant influence on corruption in lending (column 6), whereas having a larger proportion of loans provided by banks that are controlled by other banks significantly reduces it (column 3). The latter result is consistent with banks imposing greater monitoring on management when they control other banks, leaving less scope for managers to engage in lending corruption; this is in line with the alignment hypothesis. The reputational risk of having corrupt activity detected in financial institutions that a bank controls might have negative repercussions for its overall market value and business development. Such concerns might also be essential for institutional investors such as pension or mutual funds; however, our results show that controlling ownership by such institutional investors does not contribute to

a reduction in bank lending corruption. Our findings do, however, indicate that having widely held banks helps to decrease corruption in lending (column 7). This result is consistent with the argument that existing corporate mechanisms in place in widely held banks are effective in encouraging managers to limit and control corrupt bank lending behavior.<sup>10</sup>

When we use state-owned banks as a benchmark instead of including the ownership variables one by one (see Table 4), we find that lending corruption is higher in countries where family-owned banks are more prevalent compared to state-owned banks. Our results further highlight that firms face lower lending corruption in countries where banks controlled either by a bank, an institutional investor or an industrial company provide a higher proportion of the credits to the economy compared to countries where state-owned banks are more common.

The country and firm-level control variables we include in Equation (1) have the expected sign when significant. Our findings suggest that firms that are of larger size, have more government connections, a stronger bargaining power or that are located in countries with a higher level of development suffer less from lending corruption. Furthermore, the variable *General Financing Obstacle* is significantly and positively associated with corruption in lending, indicating that our results are not biased by overall complaints about the banking system. In addition, we find that firms operating in countries with a stronger supervisory regime face more lending corruption, in line with Beck et al. (2006), Barth et al. (2009) and Houston et al. (2011).

Overall, our empirical results show that lending corruption is higher in countries where family- and state-controlled banks provide a higher proportion of loans to the economy, whereas banks that are either controlled by other banks or are widely-held help to significantly reduce such lending corruption. These results highlight that it is vitally important for policymakers to internalize the relevance of bank ownership structure for banks' incentives and disposition to engage in lending corruption.

We are now going further by analyzing whether the regulatory environment and the level of development of a country strengthen or weaken the relationship between the

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<sup>10</sup>Only 25 percent of the widely held banks of our sample are listed on the stock market. Our results that widely held banks contribute to decrease corruption in lending cannot therefore be attributed to stronger scrutiny by the market.

ownership structure of banks and lending corruption.

[Insert Tables 3 and 4]

## 4.2 Factors affecting the link between bank ownership structure and lending corruption

### 4.2.1 Regulatory environment

Similarly to Beck et al. (2006), Barth et al. (2009) and Houston et al. (2011), we find a positive relationship between the index of strength of supervisory regime and bank lending corruption, in line with the argument that politicians use regulatory agencies to induce banks to divert the flow of credit to politically connected firms. Our goal is to go further by analyzing if the influence of politicians on bank lending corruption through the supervisory agency depends on the type of controlling owners. One could argue that a supervisory agency may be able to influence lending decisions of a bank controlled by a single owner only if the latter will receive substantial benefit from supporting politicians. This is much more likely to be the case for state-owned banks (La Porta et al. (2002), Sapienza (2004), Dinç (2005), Khwaja and Mian (2005)), but not necessarily the case for the other types of controlling owners (family, industrial companies, banks and institutional investors). Therefore, the impact of a stronger supervisory regime on bank lending corruption is not necessarily a clear cut issue when banking systems are dominated by banks controlled by only one owner. To examine these issues in more detail, we augment Equation (1) with interaction terms between our bank ownership variables and a regulatory variable  $d(regulatory)_j$  as follows

$$\begin{aligned}
 LendingCorruption_{ij} = & \alpha + \beta BankOwnership_j \\
 & + \lambda BankOwnership_j \cdot d(regulatory)_j + \sum_m \theta_m FirmControl_{ijm} \\
 & + \sum_n \gamma_n CountryControl_{jn} + \epsilon_{ij} \quad (2)
 \end{aligned}$$

For the regulatory variable  $d(regulatory)_j$ , we first consider the dummy variable  $d(High Supervisory Strength_j)$  which discriminates among countries according to the strength

of bank supervisory policies. We expect the interaction term  $Bank\ Ownership_j \cdot d(High\ Supervisory\ Strength_j)$  to be significant and negative if a stronger supervisory regime can constrain corruption in lending in countries where banks controlled by a single owner are more prevalent, or otherwise positive if the political capture view dominates. We alternatively use the dummy variable  $d(High\ Quality\ Audit_j)$  which differentiates countries according to the quality of external audits. We expect a significant and negative coefficient of the interaction term  $Bank\ Ownership_j \cdot d(High\ Quality\ Audit_j)$  if the level of monitoring and control imposed by external audits and supervisory actions can curtail corruption in lending in countries where banks controlled by a single owner are more prevalent. Due to problems of colinearity, we cannot run Equations (2) when we include all our ownership variables and the interaction terms together. We therefore include the six different ownership variables with their interaction terms one by one.

The empirical results are presented in Tables 5 and 6 for regressions considering the strength of the supervisory regime and the quality of external audits, respectively. Each of these tables has six columns corresponding to the six different bank ownership variables introduced one by one in Equation (2). The results confirm that firms located in countries where state-owned banks provide a higher proportion of credit to the economy face higher lending corruption; we further find that such lending corruption induced by state-controlled ownership is not curbed by either stronger supervisory regimes or higher quality of external audits. We also find that countries with a stronger regulatory environment and a higher proportion of loans provided by banks controlled by an industrial company display higher levels of lending corruption (noting that the respective Wald tests are positive and significant). The two latter results are in line with the argument of Beck et al. (2006) that politicians can use regulatory agencies to induce banks to divert the flow of credit to firms that are politically connected. However, this result does not hold in countries where a higher proportion of loans is provided by banks controlled by a family or another bank, as for those stronger supervisory regimes or a higher quality of external audits lead to reduced bank lending corruption. Our results therefore show that political capture only arises when banks are controlled by the state or an industrial company, but not in the case of family or bank controlled ownership.

[Insert Tables 5 and 6]

#### 4.2.2 Level of national income

Corruption is generally seen as a serious issue in developing economies, as resources available to fight corruption there are scarcer than in developed countries (see e.g. Rose-Ackerman (1999)). However, Laffont (2006) argues that opportunities for corruption might increase with the level of development of countries, as the number of transactions affected by corruption increases, which could allow the overall amount of corruption to increase if corruption per transaction remains stable. The impact of the level of development on corruption may not therefore be a clear cut issue; Dinc (2005) e.g. finds that state-owned banks located in developing countries facilitate the financing of firms that are politically connected through increased lending in election years, whereas he does not find evidence of such behavior in developed countries.

We therefore proceed to examine whether the level of lending corruption faced by firms is more pronounced in developing countries than in developed countries,<sup>11</sup> in particular when state- or family-controlled banks provide a higher proportion of credit to the economy. For this we augment Equation (1) with interaction terms between our bank ownership variables and a variable classifying countries according to the level of their national income as follows

$$\begin{aligned} LendingCorruption_{ij} = & \alpha + \beta BankOwnership_j \\ & + \lambda BankOwnership_j \cdot d(HighDevelopment_j) \\ & + \sum_m \theta_m FirmControl_{ijm} + \sum_n \gamma_n CountryControl_{jn} + \epsilon_{ij} \quad (3) \end{aligned}$$

We use the dummy variable  $d(High_j Development_j)$  to differentiate developing and developed countries. As above, bank ownership variables are introduced one by one to avoid problems of colinearity; our empirical results are presented in Table 7. Our results show that firms located in both developing and developed countries face higher lending corruption when state-owned banks provide a higher proportion of loans to the economy, but with a stronger impact of state-controlled ownership on lending corruption for

<sup>11</sup>We observe that in the group of developed (developing) countries, 3.88% (13.22%) of the firms declare bank lending corruption as a major obstacle, 6.62% (11.27%) report that it is a moderate obstacle, 15.68% (18.4%) respond that it is a minor obstacle, and 73.58% (57.38%) affirm that lending corruption is not an obstacle to firm growth and operation.

the group of developed countries (the respective Wald test is positive and significant). These results suggest that the political capture phenomenon associated with state-owned banks is more pronounced in developed countries. However, if we differentiate developed and developing countries according to the level of perceived corruption between public officials and politicians as measured by the Transparency International's Corruption Perception Index (CPI),<sup>12</sup> the result that state-controlled ownership contributes to increase lending corruption only holds in countries with a substantial level of corruption of public officials (see Table A3 in the Appendix). On the contrary, we find that a higher proportion of loans provided by state-owned banks contributes to lower bank lending corruption in both developed and developing countries presenting a low level of corruption by public officials, in line with the "agency view" arguing that governments seek to maximize social welfare (Sapienza (2004)). These results taken all together suggest that the political capture phenomenon associated with state-owned banks is only observed in countries with a substantial level of corruption of public officials.

We further find that our previous result that the level of lending corruption is higher in countries where the proportion of loans provided by banks controlled by a family is higher holds identically for both developing and developed countries. This indicates that families adopt similar behavior in developing and developed countries by diverting funds to related borrowers when they control a bank, independently of the level of development. We also find that controlling ownership by industrial companies plays a significant role for lending corruption only for the group of developed countries. The latter result suggests that favoritism toward related firms when an industrial company controls a bank is more likely to occur in developed countries where firms might have multiple connections with other firms.

Our result that controlled ownership by banks contributes to reduce bank lending corruption holds in the two group of countries, but does so even more strongly in

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<sup>12</sup>This index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians. It ranges from zero to ten, with a score of zero representing very high corruption. We compute a dummy variable  $d(Low\ Official\ Corruption_j)$  taking the value of one if the CPI index for a given country is higher than the sample upper quartile (q75). We then augment Equation (1) with interaction terms between the variable  $Share\ Loan\ State_j$  and  $d(Low\ Official\ Corruption_j)$  and estimate it separately for the two subsamples of developed/developing countries.

developed countries (the respective Wald test is negative and significant). This is in line with the argument that banks impose greater control when they control other banks in order to curtail lending corruption that could have a negative impact on their reputation if detected. We also find that having a higher proportion of an economy's loans created by banks that are widely-held helps to decrease corruption in lending only in developed countries. This result suggests that corporate mechanisms that exist in widely-held banks to control for the conflict of interest between managers and shareholders are most effective in developed countries.

[Insert Table 7]

#### 4.2.3 Foreign ownership

The link between controlled ownership of banks and corruption in lending might depend on whether the controlling owner is domestic or foreign-based. On the one hand, it can be argued that foreign owners may be less prone to succumb to local political pressure and less inclined to lend to local related borrowers. On the other hand, as domestic banks often have important advantages in terms of knowledge of local customers, foreign banks often target more specific market niches to be able to compete with domestic banks, such as multinational corporations or large domestic firms (Levine (1996), Clarke et al. (2005), Mian (2006)). They may further use bribery as a strategy to penetrate these markets: according to the Transparency International Bribe Payers Index, companies in some of the leading exporting countries are among the most likely to pay bribes abroad to gain advantages vis-à-vis their competitors (Transparency International (1999)).

We have three types of controlling owners that can be either domestic or foreign-based: industrial companies, institutional investors and banks. To allow for the possible effect of foreign ownership on lending corruption, we augment Equation (1) with the variable *Foreign Loan Prop<sub>j</sub>*, which gives the proportion of loans given by banks controlled by one of these three ownership types where that owner is foreign-based.

As above, we introduce bank ownership variables one by one; empirical results are given in Table 8. Our results confirm that the level of lending corruption is lower in countries where the proportion of loans provided by banks controlled by other banks is

higher, irrespective of whether the controlling bank is foreign- or domestic-based. This would be supportive of the argument that the reputational risk arising from corrupt behavior is similar irrespective of whether a bank is domestic or foreign-owned. Our previous result that controlling ownership by institutional investors does not contribute to a reduction in bank lending is also unaffected by whether those institutional investors are foreign- or domestic-based. Lastly, as before, having a larger proportion of loans provided by banks that are controlled by industrial companies does not affect lending corruption per se; however, lending corruption is lower the larger the proportion of foreign industrial companies exerting control. This could be in line with the argument that foreign industrial companies that control a bank lead to less lending to local related borrowers for lack of a substantial local network.

[Insert Table 8]

## 5 Robustness checks

We further check the robustness of our results as discussed in the previous sections in several ways.<sup>13</sup>

To address the potential bias problem that we might face if managers' response to the questions on corruption depend on cultural and institutional environments, we control for a large range of country-specific characteristics as in Beck et al. (2006). As some of these variables are highly correlated with each other, we include them individually in Equations (1)-(3). We first incorporate the level of overall banking industry development (*Banking Development<sub>j</sub>*), measured by the ratio of credit by banks to the private sector to GDP as in Beck et al. (2000), with the expectation that more credit provided by the banking sector should reduce the obstacles to firm growth induced by bank lending corruption. We then include some of the World Governance Indices composed by Kaufmann et al. (2006) to control for several dimensions of governance: (i) voice and accountability (*Voice & Accountability<sub>j</sub>*) to measure political, civil and human rights; (ii) government effectiveness (*Government Effectiveness<sub>j</sub>*) to consider the competence

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<sup>13</sup>We do not include all estimation results discussed in this section; however, they are available on request.

of the bureaucracy and the quality of public service delivery; (iii) rule of law (*Rule of Law<sub>j</sub>*) to measure the quality of contract enforcement and the court system; and (iv) control of corruption (*Control of Corruption<sub>j</sub>*) to allow for the exercise of public power for private gain, including corruption and state capture; detailed definitions of these indices are provided in Table 1. Our empirical results are highly robust regarding the introduction of these different variables. As expected, we find less corruption in lending in countries where there are higher levels of banking development, higher levels of voice and accountability, more effective government, better rule of law and better control of corruption.

We alternatively use a simple probit model instead of an ordered probit one, creating a dummy variable  $d(Lending\ Corruption_{ij})$  to proxy bank lending corruption which takes the value of one if the manager's response to the survey is "moderate" or "major" and zero if the response is "no obstacle" or "minor". This allows us to test the robustness of our results, as the estimates of the ordered probit model might be invalidated if outliers in one of the categories with a small number of responses exert an influence on the results (Beck et al. (2006)). Using  $d(Lending\ Corruption_{ij})$  as the dependent variable and repeating the previous analysis of Section 4 with the probit approach, we obtain results that are very similar to our previous findings.

As an alternative proxy measuring the role played by each category of controlled banks in the economy, we calculate the market share of each bank in terms of total assets. We then compute for each country the proportion of its banking system's assets that are owned by banks that are controlled either by the state, a family, a bank, an industrial company, an institutional investor or that are widely held. We re-run Equations (1)-(3) with these alternative measures and find similar results to those obtained before using the market share in terms of total loans.

In our main regressions, we had restricted our sample to the 51 countries for which we have information on the bank regulatory environment in the World Bank's database. We re-run Equations (1) and (3) on the larger set of observations we retain when we do not impose this constraint; this results in a sample of 72 countries, with 6,162 firms answering the questionnaire on lending corruption, again leading to similar results.

Lastly, we apply two alternative thresholds to identify banks that are widely held; we alternatively define banks as widely-held when the largest owner holds less than either

20% or 33% of total outstanding shares. This increases the number of banks classified as widely-held rather than being included in the category "Others", but leaves our main results unchanged. The influence of widely-held banks on lending corruption turns out to be not significant when we use these two higher thresholds, meaning that only banks with a very dispersed ownership structure can induce lower lending corruption.

## 6 Conclusion

We empirically examined whether bank lending corruption is influenced by the ownership structure of banks, the regulatory environment in place and the country's level of economic development. We find that differences in the level of lending corruption faced by firms can be explained by banks' ownership structure. The influence on lending corruption of having controlled ownership by a single owner depends on the type of this owner, the strength of the supervisory regime, the quality of external audits and the level of development.

On the one hand, we find that family-controlled ownership contributes to increase bank lending corruption in both developed and developing countries. This supports the view that families divert the allocation of funds to related borrowers when they control banks. We also find that when banks controlled by the state contribute to a greater extent to the financing of the economy, this leads to a higher level of lending corruption in the two groups of developed and developing countries, but only in countries where there is a substantial level of corruption of public officials, in line with the political capture phenomenon. On the contrary, we find that state-owned banks contribute to decrease bank lending corruption when the level of corruption of public officials is relatively low, consistent with the argument that governments in this context seek to maximize social welfare. We furthermore find that the level of lending corruption is higher when banks controlled by industrial companies provide a higher proportion of credit to the economy, but only in the group of developed countries. This result suggests that preferential treatment toward related firms when an industrial company controls a bank is more likely to occur in developed countries where firms might have multiple connections with other firms.

On the other hand, our results show that controlling ownership can help to reduce

lending corruption when banks are controlled by other banks, both in developed and developing countries. This is consistent with banks that control another bank exerting better monitoring on managers than the state or a family; banks' reputation has an important impact on their ability to develop and maintain business, leading to reduced lending corruption. Our findings also indicate that having widely held banks helps to curb corruption in lending, but only for the group of developed countries. This indicates that the corporate mechanisms existing in developed countries for widely held banks are effective in encouraging managers to limit and control corrupt bank lending behavior.

We further analyzed if the regulatory environment can help to curb the lending corruption behavior we observed for banks controlled by the state, a family or an industrial company. We find empirical evidence that both the strength of the supervisory regime and the quality of external audits help to curb lending corruption induced by family-controlled ownership. However, we find that lending corruption induced by state- or industrial company-controlled ownership is not reduced by either stronger supervisory regimes or higher quality of external audits. These results suggest that banks controlled either by the state (when there is a substantial level of public officials' corruption) or an industrial company divert the flow of credit to firms that are politically connected, in line with the political capture view.

Our paper has important policy implications. Given that bank lending corruption can undermine the role of banks in allocating funds efficiently, lead to lower economic growth and increased financial instability, policy makers should make every effort to rein in such behavior. Our investigation demonstrates that corruption in bank lending is driven in part by the ownership structure of the banking system. Our results suggest that a way to curb the adverse effects on bank lending corruption of having a family-controlled ownership is to improve the strength of the supervisory regime and the quality of external audits. However, as such regulatory constraints do not help to curb lending corruption induced by state- or industrial company-controlled ownership, a more forceful way to limit their influence on misallocation of funds could be to limit the size of the stake they can hold in a bank.

## References

- Akerlof, G.A., Romer, P.M., Hall, R.E., Mankiw, N.G., 1993. Looting: the economic underworld of bankruptcy for profit. *Brookings Papers on Economic Activity* 1993, 1–73.
- Bardhan, P., 1997. Corruption and development: a review of issues. *Journal of Economic Literature* 35, 1320–1346.
- Barth, J.R., Lin, C., Lin, P., Song, F.M., 2009. Corruption in bank lending to firms: cross-country micro evidence on the beneficial role of competition and information sharing. *Journal of Financial Economics* 91, 361–388.
- Bebchuk, L.A., 1999. A rent-protection theory of corporate ownership and control. NBER Working Paper 7203 .
- Beck, T., Demirgüç-Kunt, A., Levine, R., 2000. A new database on financial development and structure. *World Bank Economic Review* 14, 597–605.
- Beck, T., Demirgüç-Kunt, A., Levine, R., 2003. Law, endowments, and finance. *Journal of Financial Economics* 70, 137–181.
- Beck, T., Demirgüç-Kunt, A., Levine, R., 2006. Bank supervision and corruption in lending. *Journal of Monetary Economics* 53, 2131–2163.
- Beck, T., Demirgüç-Kunt, A., Maksimovic, V., 2005. Financial and legal constraints to growth: does firm size matter? *The Journal of Finance* 60, 137–177.
- Becker, G.S., 1983. A theory of competition among pressure groups for political influence. *The Quarterly Journal of Economics* 98, 371–400.
- Charumilind, C., Kali, R., Wiwattanakantang, Y., 2006. Connected lending: Thailand before the financial crisis. *The Journal of Business* 79, 181–218.
- Claessens, S., Djankov, S., Fan, J.P., Lang, L.H., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *The Journal of Finance* 57, 2741–2771.
- Clarke, G., Cull, R., Peria, M.S.M., Sánchez, S.M., 2005. Bank lending to small businesses in Latin America: does bank origin matter? *Journal of Money, Credit and Banking* 37, 83–118.

- Davies, P.L., 2000. The board of directors: composition, structure, duties and powers. unpublished working paper, Organisation for Economic Co-operation and Development, Paris, France.
- Delis, M.D., 2012. Bank competition, financial reform, and institutions: the importance of being developed. *Journal of Development Economics* 97, 450–465.
- Dinç, I.S., 2005. Politicians and banks: political influences on government-owned banks in emerging markets. *Journal of Financial Economics* 77, 453–479.
- Fama, E.F., Jensen, M.C., 1983. Separation of ownership and control. *Journal of Law and Economics* 26, 301–325.
- Grossman, S.J., Hart, O.D., 1988. One share-one vote and the market for corporate control. *Journal of Financial Economics* 20, 175–202.
- Houston, J.F., Lin, C., Ma, Y., 2011. Media ownership, concentration and corruption in bank lending. *Journal of Financial Economics* 100, 326–350.
- Jensen, M.C., 1988. Takeovers: their causes and consequences. *The Journal of Economic Perspectives* 2, 21–48.
- Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305–360.
- Johnson, S., La Porta, R., Lopez-de Silanes, F., Shleifer, A., 2000. Tunneling. *American Economic Review Papers and Proceedings* 90, 22–27.
- Kaufmann, D., Kraay, A., Mastruzzi, M., 2006. Governance matters V: governance indicators for 1996-2005. World Bank Policy Research Working Paper .
- Khwaja, A.I., Mian, A., 2005. Do lenders favor politically connected firms? Rent provision in an emerging financial market. *The Quarterly Journal of Economics* 120, 1371–1411.
- La Porta, R., Lopez-de Silanes, F., Shleifer, A., 2002. Government ownership of banks. *The Journal of Finance* 57, 265–301.
- La Porta, R., Lopez-de Silanes, F., Zamarripa, G., 2003. Related lending. *The Quarterly Journal of Economics* 118, 231–268.

- Laeven, L., 2001. Insider lending and bank ownership: the case of Russia. *Journal of Comparative Economics* 29, 207–229.
- Laffont, J.J., 2006. Corruption and development, in: Banerjee, A.V., Benabou, R., Dilip, M. (Eds.), *Understanding Poverty*. Oxford University Press, Oxford, pp. 161–168.
- Levine, R., 1996. Foreign banks, financial development, and economic growth, in: Barfield, C.E. (Ed.), *International Financial Markets: Harmonization versus Competition*. The AEI Press, Washington, D.C., pp. 224–254.
- Levine, R., 1997. Financial development and economic growth: views and agenda. *Journal of Economic Literature* 35, 688–726.
- Levine, R., 2005. Finance and growth: theory and evidence, in: Aghion, P., Durlauf, S. (Eds.), *Handbook of Economic Growth*. Elsevier. volume 1. chapter 12, pp. 865–934.
- Mian, A., 2006. Distance constraints: The limits of foreign lending in poor economies. *The Journal of Finance* 61, 1465–1505.
- OECD, 1999. *Principles of corporate governance (Organisation for Economic Co-operation and Development)* Paris.
- Prowse, S., 1997. The corporate governance system in banking: what do we know? *Banca Nazionale del Lavoro Quarterly Review* , 11–40.
- Rajan, R.G., 1992. Insiders and outsiders: the choice between informed and arm’s-length debt. *The Journal of Finance* 47, 1367–1400.
- Rose-Ackerman, S., 1999. *Corruption and Government*. Cambridge University Press, Cambridge, MA.
- Sáez, M.I., Riaño, D., 2013. Corporate governance and the shareholders’ meeting: voting and litigation. *European Business Organization Law Review* 14, 343–399.
- Sapienza, P., 2004. The effects of government ownership on bank lending. *Journal of Financial Economics* 72, 357–384.
- Shleifer, A., Vishny, R.W., 1986. Large shareholders and corporate control. *Journal of Political Economy* 94, 461–88.

- Shleifer, A., Vishny, R.W., 2002. *The Grabbing Hand: Government Pathologies and their Cures*. Harvard University Press.
- Shleifer, A., Wolfenzon, D., 2002. Investor protection and equity markets. *Journal of Financial Economics* 66, 3–27.
- Smith, R.J., Blundell, R.W., 1986. An exogeneity test for a simultaneous equation tobit model with an application to labor supply. *Econometrica* 54, 679–685.
- Stigler, G.J., 1971. The theory of economic regulation. *The Bell Journal of Economics and Management Science* 2, 3–21.
- Transparency International, 1999. *Transparency International's Bribe Payers Survey*. Technical Report. Transparency International.
- Villalonga, B., Amit, R., 2006. How do family ownership, control and management affect firm value? *Journal of Financial Economics* 80, 385–417.
- World Bank, 2000. *World Business Environment Survey (The World Bank)* Washington, DC.
- Zheng, X., El Ghouli, S., Guedhami, O., Kwok, C.C., 2013. Collectivism and corruption in bank lending. *Journal of International Business Studies* 44, 363–390.

Table 1. Variable definitions and data sources

Variables	Definition	Source
<b>Dependent variables</b>		
<i>Lending Corruption</i>	The degree to which a firm manager views corruption in bank lending as an obstacle to a firm's operation and growth (1-no obstacle, 2-minor obstacle, 3- moderate obstacle, 4- major obstacle).	WBES (2000)
<i>d(Lending Corruption)</i>	Dummy variable that takes the value of one if the manager's response to the survey is "moderate" or major" and zero if the response is "no obstacle" or "minor".	
<b>Country level bank ownership variables</b>		
<i>ShareLoan State</i>	The proportion of loans provided by banks in which governments hold at least 50% of the shares.	Bankscope, Thomson One, annual reports
<i>ShareLoan Industrial</i>	The proportion of loans provided by banks in which industrial companies hold at least 50% of the shares.	ibid.
<i>ShareLoan Family</i>	The proportion of loans provided by banks in which families hold at least 50% of the shares.	ibid.
<i>ShareLoan Bank</i>	The proportion of loans provided by banks in which other banks hold at least 50% of the shares.	ibid.
<i>ShareLoan Institutional</i>	The proportion of loans provided by banks in which institutional investors hold at least 50% of the shares.	ibid.
<i>ShareLoan Private</i>	The proportion of loans provided by banks in which the private sector (industrial companies, families, banks and institutional investors) hold at least 50% of the shares.	ibid.
<i>ShareLoan Widely</i>	The proportion of loans provided by widely held banks, i.e. ones where the largest owner holds less than 10% of total outstanding shares.	ibid.
<i>ShareLoan Others</i>	The proportion of loans provided by banks that are neither controlled by a single shareholder at the 50% level nor widely held at the 10% level.	
<i>Foreign Loan Prop. Bank</i>	The proportion of loans provided by banks controlled by other banks where those banks are foreign-based.	ibid.
<i>Foreign Loan Prop. Industrial</i>	The proportion of loans provided by banks controlled by industrial companies where those companies are foreign-based.	ibid.
<i>Foreign Loan Prop. Institutional</i>	The proportion of loans provided by banks controlled by institutional investors where those institutional investors are foreign-based.	ibid.
<b>Banking supervision variables</b>		
<i>Supervisory Strength</i>	Index measuring the strength of supervisory regime. The yes/no responses to the following questions are coded as 1/0: (1) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? (2) Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse? (3) Can supervisors take legal action against external auditors for negligence? (4) Can the supervisory authority force a bank to change its internal organizational structure? (5) Are off-balance sheet items disclosed to supervisors? (6) Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses? (7) Can the supervisory agency suspend directors' decision to distribute: (a) Dividends? (b) Bonuses? (c) Management fees? (8) Can the supervisory agency legally declare - such that this declaration supersedes the rights of bank shareholders - that a bank is insolvent?	Bank regulation and supervision database (The World Bank 2003)

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	(9) Does the Banking Law give authority to the supervisory agency to intervene that is, suspend some or all ownership rights in a problem bank? And (10) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: (a) Supersede shareholder rights? (b) Remove and replace management? (c) Remove and replace directors? A higher value indicates wider and stronger authority for bank supervisors.	
<i>d(High Supervisory Strength)</i>	Dummy variable that takes the value of one for a country if the index <i>Supervisory Strength</i> is greater than the cross-country median, and zero otherwise.	
<i>Quality Audit</i>	Index measuring the quality of external audits. The yes/no responses to the following questions are coded as 1/0: (1) Is an external audit a compulsory obligation for banks?; (2) Are auditing practices for banks in accordance with international auditing standards?; (3) Is it required by the regulators that bank audits be publicly disclosed?; (4) Are specific requirements for the extent or nature of the audit spelled out?; (5) Are auditors licensed or certified?; (6) Do supervisors get a copy of the auditor's report?; (7) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank?; (8) Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse?; (9) Are external auditors legally required to report to the supervisory agency any other information discovered in an audit that could jeopardize the health of a bank? ; (10) Can supervisors take legal action against external auditors for negligence?; and (11) Has legal action been taken against an auditor in the last 5 years?	Bank regulation and supervision database (The World Bank 2003)
<i>d(High Quality Audit)</i>	Dummy variable that takes the value of one for a country if the index <i>Quality Audit</i> is greater than the cross-country median, and zero otherwise.	
<b>Firm-level variables</b>		
<i>Log(Sales)</i>	Natural logarithm of firm sales in USD.	WBES (2000)
<i>Log(Number Competitors)</i>	Natural logarithm of the number of competitors, which is from the survey question "Regarding your firm's major product line, how many competitors do you face in your market?"	ibid.
<i>d(Exporter)</i>	Dummy variable that equals one if the firm exports, and zero otherwise.	ibid.
<i>d(Firm State-owned)</i>	Dummy variable that equals one if any government agency or state body has a financial stake in the ownership of the firm, and zero otherwise.	ibid.
<i>d(Firm Foreign-owned)</i>	Dummy variable that equals one if any foreign company or individual has a financial stake in the ownership of the firm, and zero otherwise.	ibid.
<i>General Financing Obstacle</i>	The degree to which a firm manager indicates that financing is problematic for the operation and growth of the firm (1- no obstacle, 2- minor obstacle, 3- moderate obstacle, 4- major obstacle).	ibid.
<b>Country-level variables</b>		
<i>Economic Freedom</i>	A country's overall economic freedom score, given as an average of its 10 subcomponents, including business freedom, trade freedom, fiscal freedom, government size, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption and labor freedom. This index ranges from 0 to 100, with a higher score	Heritage foundation

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	indicating that a country is more economically free. Individuals in an economically free society would be free and entitled to work, produce, consume, and invest in any way they please under a rule of law, with their freedom at once both protected and respected by the state. The value of this index in 1999 is used.	
<i>GDP Growth</i>	Log of GDP per capita in 1999, in USD.	WDI (The World Bank)
<i>Inflation</i>	Log difference of consumer price index in 1999 (CPI).	WDI (The World Bank)
<i>d(High Development)</i>	Dummy variable that takes the value of one if a country is classified as developed and zero otherwise (based on the World Bank classification).	The World Bank
<i>d(Low Official Corruption)</i>	Dummy variable that takes the value of one if the Transparency International's Corruption Perception Index (CPI) for a given country is higher than the sample upper quartile (q75). The CPI index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians. It ranges from zero to ten, with a score of zero representing very high corruption. The value of year 1999 is used in this study.	Transparency International
<b>Additional country-level variables</b>		
<i>Banking Development</i>	Ratio of private credit by deposit money banks to GDP in 1999.	Beck et al (2000)
<i>Voice &amp; Accountability</i>	The indicator which measures the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media. The value of year 1999 is used in this study. Higher values mean greater political rights.	Kaufman et al. (2006)
<i>Government Effectiveness</i>	The indicator which measures the quality of public services, the quality of the civil service, and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The value of year 1999 is used in this study. Higher values mean higher quality of public and civil service.	ibid.
<i>Rule of Law</i>	The indicator which measures the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. The value of year 1999 is used in this study. Higher values mean stronger law and order.	ibid.
<i>Control of Corruption</i>	The indicator which measures the extent to which public power is exercised for private gain, and private interests. The value of year 1999 is used in this study. Higher values indicate better control of corruption.	ibid.
<b>Instrument variables</b>		
<i>Ethnic fractionalization</i>	Probability that two randomly selected individuals in a country will not speak the same language.	Beck et al (2003)
<i>Independence</i>	Percentage of years since 1776 that a country has been independent.	ibid.
<i>Latitude</i>	Absolute value of the latitude of a country's capital, normalized between zero and one.	ibid.

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Table 2. Summary statistics of key variables

Variables	Observations	Mean	Std. dev.	Minimum	Median	Maximum
<b>Dependent variable</b>						
<i>Lending Corruption</i>	4693	1.69	1.02	1	1	4
<b>Country level bank ownership variables</b>						
<i>ShareLoan State</i>	51	10.78	18.91	0	0.94	79.43
<i>ShareLoan Industrial</i>	51	4.18	8.27	0	0.18	43.60
<i>ShareLoan Family</i>	51	5.29	22.00	0	0	100
<i>ShareLoan Bank</i>	51	29.29	25.76	0	22.26	99.21
<i>ShareLoan Institutional</i>	51	1.28	3.27	0	0	28.70
<i>ShareLoan Widely</i>	51	5.25	9.05	0	0.18	46.02
<b>Banking supervision variables</b>						
<i>Supervisory Strength</i>	51	6.18	2.60	0	6	10
<i>Quality Audit</i>	51	6.21	1.16	3	6	8
<b>Firm-level variables</b>						
<i>Log(Sales)</i>	4693	8.86	7.92	-2.12	9.16	25.33
<i>Log(Number Competitors)</i>	4693	0.82	0.34	0	0.69	1.39
<i>d(Exporter)</i>	4693	0.36	0.48	0	0	1
<i>d(Firm State-owned)</i>	4693	0.12	0.33	0	0	1
<i>d(Firm Foreign-owned)</i>	4693	0.18	0.38	0	0	1
<i>General Financing Obstacle</i>	4693	2.72	1.14	1	3	4
<b>Country-level variables</b>						
<i>Economic Freedom</i>	51	60.21	9.47	29.43	59.86	86.91
<i>GDP Growth</i>	51	2.57	3.95	-7.76	3.08	10.33
<i>Inflation</i>	51	4.19	0.45	2.27	4.37	4.56

Detailed variable definitions and sources are given in Table 1.

Table 3. Bank ownership structure and corruption in lending (ordered probit model, ownership variables are included one by one)

Dependent variable: Lending corruption							
<type> =	State	Private	Bank	Institutional	Family	Industrial	Widely
ShareLoan <type>	0.00502*** (0.000)	0.00053 (0.473)	-0.00322*** (0.000)	-0.00560 (0.233)	0.00549*** (0.000)	-0.00140 (0.525)	-0.00454** (0.043)
Log(Sales)	-0.0101*** (0.002)	-0.00851** (0.011)	-0.0150*** (0.000)	-0.00881*** (0.006)	-0.0117*** (0.000)	-0.00986*** (0.003)	-0.00843*** (0.008)
d(Firm State-owned)	-0.363*** (0.000)	-0.369*** (0.000)	-0.357*** (0.000)	-0.367*** (0.000)	-0.353*** (0.000)	-0.368*** (0.000)	-0.366*** (0.000)
d(Firm Foreign-owned)	-0.0349 (0.502)	-0.0250 (0.629)	-0.0160 (0.757)	-0.0226 (0.661)	-0.0199 (0.700)	-0.0251 (0.628)	-0.0285 (0.582)
d(Exporter)	-0.192*** (0.000)	-0.202*** (0.000)	-0.179*** (0.000)	-0.198*** (0.000)	-0.185*** (0.000)	-0.200*** (0.000)	-0.205*** (0.000)
Log(Number Competitors)	0.0351 (0.568)	0.0299 (0.625)	0.0524 (0.397)	0.0350 (0.568)	0.0368 (0.548)	0.0309 (0.614)	0.0325 (0.595)
General Financing Obstacle	0.283*** (0.000)	0.283*** (0.000)	0.283*** (0.000)	0.284*** (0.000)	0.292*** (0.000)	0.283*** (0.000)	0.282*** (0.000)
d(High Supervisory Strength)	0.376*** (0.000)	0.372*** (0.000)	0.381*** (0.000)	0.383*** (0.000)	0.315*** (0.000)	0.376*** (0.000)	0.381*** (0.000)
d(High Quality Audit)	-0.0729 (0.111)	-0.0435 (0.338)	-0.0532 (0.239)	-0.0422 (0.352)	-0.0683 (0.134)	-0.0363 (0.424)	-0.0491 (0.279)
Economic Freedom	0.00583** (0.050)	0.00211 (0.487)	0.00549* (0.064)	0.00256 (0.379)	0.000657 (0.822)	0.00303 (0.298)	0.00184 (0.531)
GDP Growth	0.0372*** (0.000)	0.0317*** (0.000)	0.0315*** (0.000)	0.0324*** (0.000)	0.0149** (0.010)	0.0320*** (0.000)	0.0312*** (0.000)
d(High Development)	-0.427*** (0.000)	-0.447*** (0.000)	-0.438*** (0.000)	-0.450*** (0.000)	-0.365*** (0.000)	-0.460*** (0.000)	-0.440*** (0.000)
Pseudo R <sup>2</sup>	0.0688	0.0662	0.0677	0.0662	0.0695	0.0661	0.0666
Observations	4693	4693	4693	4693	4693	4693	4693
Marginal probability effect for ShareLoan <type>	0.00076*** (0.000)	0.00008 (0.473)	-0.00049*** (0.000)	-0.00085 (0.234)	0.00082*** (0.000)	-0.00021 (0.526)	-0.00069** (0.042)

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*. Marginal effects predict the highest category of lending corruption "major obstacle".

Table 4. Bank ownership structure and corruption in lending (probit model, the baseline is state-owned banks)

Dependent variable: Lending corruption

ShareLoan Bank	-0.00293*** (0.004)
ShareLoan Institutional	-0.00542 (0.271)
ShareLoan Family	0.00405*** (0.000)
ShareLoan Industrial	-0.00387 (0.113)
ShareLoan Widely	-0.00604** (0.015)
ShareLoan Other	-0.000441 (0.625)
Log(Sales)	-0.0156*** (0.000)
d(Firm State-owned)	-0.342*** (0.000)
d(Firm Foreign-owned)	-0.0204 (0.695)
d(Exporter)	-0.175*** (0.000)
Log(Number Competitors)	0.0508 (0.413)
General Financing Obstacle	0.290*** (0.000)
d(High Supervisory Strength)	0.335*** (0.000)
d(High Quality Audit)	-0.0721 (0.115)
Economic Freedom	0.00251 (0.420)
GDP Growth	0.0132** (0.028)
d(High Development)	-0.360*** (0.000)
Pseudo R <sup>2</sup>	0.0710
Observations	4693

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*

Table 5. Bank ownership structure, supervisory strength and corruption in lending (ordered probit model)

Dependent variable: Lending corruption						
<type> =	State	Bank	Institutional	Family	Industrial	Widely
ShareLoan <type>	0.00491*** (0.006)	0.00811*** (0.000)	0.0598*** (0.000)	0.260*** (0.000)	-0.0218*** (0.000)	-0.0130** (0.014)
ShareLoan <type> × d(High Supervisory Strength)	0.000158 (0.938)	-0.0157*** (0.000)	-0.0737*** (0.000)	-0.255*** (0.000)	0.0283*** (0.000)	0.0102* (0.082)
Log(Sales)	-0.0101*** (0.002)	-0.0148*** (0.000)	-0.00990*** (0.002)	-0.00871*** (0.007)	-0.00696** (0.035)	-0.00858*** (0.007)
d(Firm State-owned)	-0.363*** (0.000)	-0.339*** (0.000)	-0.356*** (0.000)	-0.350*** (0.000)	-0.366*** (0.000)	-0.367*** (0.000)
d(Firm Foreign-owned)	-0.0347 (0.506)	-0.00936 (0.857)	-0.0116 (0.823)	-0.0188 (0.716)	-0.0308 (0.551)	-0.0284 (0.584)
d(Exporter)	-0.192*** (0.000)	-0.162*** (0.000)	-0.197*** (0.000)	-0.190*** (0.000)	-0.206*** (0.000)	-0.206*** (0.000)
Log(Number Competitors)	0.0353 (0.565)	0.0399 (0.514)	0.0527 (0.393)	0.0315 (0.605)	0.0168 (0.783)	0.0319 (0.603)
General Financing Obstacle	0.283*** (0.000)	0.293*** (0.000)	0.281*** (0.000)	0.297*** (0.000)	0.282*** (0.000)	0.281*** (0.000)
d(High Supervisory Strength)	0.375*** (0.000)	0.830*** (0.000)	0.459*** (0.000)	0.368*** (0.000)	0.294*** (0.000)	0.341*** (0.000)
d(High Quality Audit)	-0.0732 (0.111)	0.0224 (0.632)	-0.0910* (0.050)	-0.0459 (0.321)	-0.0939** (0.046)	-0.0540 (0.234)
Economic Freedom	0.00582 (0.050)	0.00288 (0.332)	0.00206 (0.481)	-0.000977 (0.740)	0.00292 (0.313)	0.00191 (0.512)
GDP Growth	0.0372*** (0.000)	0.0302*** (0.000)	0.0323*** (0.000)	0.0205*** (0.001)	0.0363*** (0.000)	0.0329*** (0.000)
d(High Development)	-0.427*** (0.000)	-0.273*** (0.000)	-0.418*** (0.000)	-0.354*** (0.000)	-0.471*** (0.000)	-0.429*** (0.000)
Wald Tests		-0.0076*** (0.000)	-0.0139*** (0.006)	0.0049*** (0.000)	0.0065*** (0.010)	-0.0029 (0.245)
Pseudo R <sup>2</sup>	0.0688	0.0759	0.0681	0.0717	0.0691	0.0669
Observations	4693	4693	4693	4693	4693	4693
Differential marginal probability effect of d(High Supervisory Strength) for ShareLoan <type>	0.0004 (0.132)	-0.0022*** (0.000)	-0.0090*** (0.000)	-0.0982*** (0.001)	0.0033*** (0.000)	0.0008 (0.241)

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*. Marginal effects predict the highest category of lending corruption "major obstacle". Wald tests are only reported if coefficients significant.

Table 6. Bank ownership structure, quality of external audit and corruption in lending (ordered probit model)

Dependent variable: Lending corruption						
<type> =	State	Bank	Institutional	Family	Industrial	Widely
ShareLoan <type>	0.00778*** (0.000)	0.00455*** (0.003)	0.00182 (0.723)	0.129*** (0.000)	-0.0293*** (0.000)	-0.0221*** (0.000)
ShareLoan <type> × d(High Quality Audit)	-0.00340 (0.156)	-0.0104*** (0.000)	-0.0142 (0.109)	-0.124*** (0.000)	0.0371*** (0.000)	0.0226*** (0.000)
Log(Sales)	-0.00993*** (0.002)	-0.0111*** (0.001)	-0.00890*** (0.006)	-0.0132*** (0.000)	-0.00732** (0.026)	-0.00945*** (0.003)
d(Firm State-owned)	-0.364*** (0.000)	-0.345*** (0.000)	-0.368*** (0.000)	-0.349*** (0.000)	-0.359*** (0.000)	-0.362*** (0.000)
d(Firm Foreign-owned)	-0.0383 (0.462)	-0.0217 (0.675)	-0.0235 (0.650)	-0.0175 (0.735)	-0.0284 (0.582)	-0.0360 (0.487)
d(Exporter)	-0.192*** (0.000)	-0.156*** (0.000)	-0.200*** (0.000)	-0.190*** (0.000)	-0.208*** (0.000)	-0.197*** (0.000)
Log(Number Competitors)	0.0342 (0.578)	0.0404 (0.509)	0.0269 (0.662)	0.0398 (0.517)	0.0215 (0.726)	0.0286 (0.640)
General Financing Obstacle	0.284*** (0.000)	0.283*** (0.000)	0.284*** (0.000)	0.295*** (0.000)	0.279*** (0.000)	0.280*** (0.000)
d(High Supervisory Strength)	0.385*** (0.000)	0.429*** (0.000)	0.376*** (0.000)	0.288*** (0.000)	0.323*** (0.000)	0.389*** (0.000)
d(High Quality Audit)	-0.0468 (0.346)	0.256*** (0.000)	-0.0218 (0.651)	0.0220 (0.653)	-0.151*** (0.002)	-0.160*** (0.003)
Economic Freedom	0.00622** (0.037)	0.00417 (0.166)	0.00268 (0.356)	0.00129 (0.660)	0.00315 (0.276)	0.00502* (0.098)
GDP Growth	0.0384*** (0.000)	0.0308*** (0.000)	0.0317*** (0.000)	0.0164*** (0.005)	0.0375*** (0.000)	0.0380*** (0.000)
d(High Development)	-0.435*** (0.000)	-0.475*** (0.000)	-0.452*** (0.000)	-0.357*** (0.000)	-0.469*** (0.000)	-0.482*** (0.000)
Wald Tests		-0.00589*** (0.000)		0.00539*** (0.000)	0.00782*** (0.002)	0.00051 (0.841)
Pseudo R <sup>2</sup>						
Observations	4693	4693	4693	4693	4693	4693
Differential marginal probability effect of d(High Quality Audit) for ShareLoan <type>	-0.000638 (0.115)	-0.00155*** (0.000)	-0.00214 (0.114)	-0.0372*** (0.000)	0.0055*** (0.000)	0.0036*** (0.000)

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*. Marginal effects predict the highest category of lending corruption "major obstacle". Wald tests are only reported if coefficients significant.

Table 7. Bank ownership structure, level of development and corruption in lending (ordered probit model)

Dependent variable: Lending corruption							
<type> =	State	Bank	Institutional	Family	Industrial	Widely	
ShareLoan <type>	0.00489*** (0.000)	-0.00259*** (0.003)	-0.00408 (0.394)	0.00549*** (0.000)	-0.00338 (0.142)	-0.00214 (0.379)	
ShareLoan <type> × d(High Development)	0.0148** (0.045)	-0.00402** (0.041)	-0.0166 (0.349)	-0.0125 (0.984)	0.0601*** (0.000)	-0.0165*** (0.005)	
Log(Sales)	-0.0114*** (0.001)	-0.0172*** (0.000)	-0.00895*** (0.005)	-0.0117*** (0.000)	-0.0148*** (0.000)	-0.00581* (0.082)	
d(Firm State-owned)	-0.367*** (0.000)	-0.359*** (0.000)	-0.366*** (0.000)	-0.353*** (0.000)	-0.369*** (0.000)	-0.368*** (0.000)	
d(Firm Foreign-owned)	-0.0332 (0.524)	-0.0132 (0.798)	-0.0223 (0.665)	-0.0199 (0.699)	-0.0273 (0.599)	-0.0320 (0.537)	
d(Exporter)	-0.190*** (0.000)	-0.174*** (0.000)	-0.196*** (0.000)	-0.185*** (0.000)	-0.186*** (0.000)	-0.211*** (0.000)	
Log(Number Competitors)	0.0303 (0.622)	0.0611 (0.323)	0.0323 (0.599)	0.0367 (0.549)	0.0274 (0.654)	0.0347 (0.572)	
General Financing Obstacle	0.287*** (0.000)	0.282*** (0.000)	0.284*** (0.000)	0.292*** (0.000)	0.286*** (0.000)	0.279*** (0.000)	
d(High Supervisory Strength)	0.362*** (0.000)	0.419*** (0.000)	0.392*** (0.000)	0.315*** (0.000)	0.353*** (0.000)	0.372*** (0.000)	
d(High Quality Audit)	-0.0678 (0.140)	-0.0773 (0.103)	-0.0479 (0.292)	-0.0683 (0.134)	-0.0218 (0.635)	-0.0506 (0.264)	
Economic Freedom	0.00700** (0.023)	0.00661** (0.028)	0.00230 (0.430)	0.000651 (0.824)	0.00650** (0.037)	0.000510 (0.862)	
GDP Growth	0.0367*** (0.000)	0.0310*** (0.000)	0.0327*** (0.000)	0.0149** (0.010)	0.0308*** (0.000)	0.0321*** (0.000)	
d(High Development)	-0.480*** (0.000)	-0.302*** (0.000)	-0.419*** (0.000)	-0.365*** (0.000)	-0.589*** (0.000)	-0.350*** (0.000)	
Wald Tests	0.0196** (0.007)	-0.00661*** (0.000)					
Pseudo R <sup>2</sup>	0.0691	0.0682	0.0663	0.0695	0.0673	0.0673	
Observations	4693	4693	4693	4693	4693	4693	
Differential marginal probability effect of d(High Quality Audit) for ShareLoan <type>	0.00131 (0.188)	-0.00016 (0.476)	-0.00117 (0.515)	-0.00156 (0.975)	0.00689*** (0.002)	-0.00134** (0.042)	

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*. Marginal effects predict the highest category of lending corruption "major obstacle". Wald tests are only reported if coefficients significant.

Table 8. Bank foreign ownership structure and corruption in lending (ordered probit model)

Dependent variable: Bank lending corruption				
<type> =	Bank	Institutional	Industrial	
ShareLoan <type>	-0.00291*** (-3.51)	-0.00608 (-1.29)	-0.00158 (-0.71)	
Foreign Loan Prop. <type>	-0.000628* (-1.74)	-0.000726 (-0.97)	-0.000736** (-2.12)	
Log(Sales)	-0.0145*** (-4.22)	-0.00995*** (-2.87)	-0.0101*** (-3.08)	
d(Firm State-owned)	-0.355*** (-5.72)	-0.368*** (-5.95)	-0.373*** (-6.03)	
d(Firm Foreign-owned)	-0.0147 (-0.29)	-0.0212 (-0.41)	-0.0212 (-0.41)	
d(Exporter)	-0.182*** (-4.58)	-0.194*** (-4.86)	-0.200*** (-5.05)	
Log(Number Competitors)	0.0546 (0.88)	0.0388 (0.63)	0.0287 (0.47)	
General Financing Obstacle	0.281*** (15.97)	0.284*** (16.03)	0.285*** (16.11)	
d(High Supervisory Strength)	0.404*** (8.87)	0.393*** (8.68)	0.372*** (8.54)	
d(High Quality Audit)	-0.0553 (-1.23)	-0.0511 (-1.10)	-0.00901 (-0.19)	
Economic Freedom	0.00468 (1.57)	0.00274 (0.94)	0.00410 (1.38)	
GDP Growth	0.0309*** (6.26)	0.0331*** (6.55)	0.0309*** (5.94)	
d(High Development)	-0.419*** (-7.80)	-0.450*** (-8.56)	-0.483*** (-8.90)	
Pseudo R <sup>2</sup>	0.0681	0.0663	0.0666	
Observations	4693	4693	4693	

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*.

## Appendix

Table A1. Distribution of banks by country

Country	Full sample of banks in Bankscope	Our sample of banks	Percent of total loans <sup>a</sup>	Percent of total asset <sup>a</sup>
ALBANIA	7	6	98.97	98.48
ARGENTINA	93	34	67.50	64.43
ARMENIA	7	4	50.55	61.80
AZERBAIJAN	10	7	91.26	88.39
BELARUS	11	7	7.69	11.80
BOLIVIA	12	6	77.53	77.63
BOSNIA-HERZEGOVIA	17	12	79.99	79.15
BOTSWANA	6	6	100	100
BRAZIL	134	65	86.81	81.84
BULGARIA	19	18	97.76	98.24
CAMBODIA	1	1	100	100
CANADA	59	27	31.15	35.33
CHILE	24	12	80.22	78.31
CROATIA	34	26	90.90	92.00
CZECH REPUBLIC	27	20	75.28	80.38
EGYPT	41	39	97.25	96.94
ESTONIA	4	4	100	100
FRANCE	455	214	56.28	61.07
GERMANY	2050	226	52.68	51.49
GHANA	18	13	98.84	96.80
GUATEMALA	32	4	19.43	19.92
HONDURAS	13	5	37.80	39.43
HUNGARY	20	15	80.91	83.64
INDIA	65	44	78.53	81.06
ITALY	728	251	53.90	52.36
KAZAKHSTAN	17	12	94.93	92.92
KENYA	41	27	87.33	86.20
LITHUANIA	7	6	99.06	98.78
MALAYSIA	71	43	60.22	63.56
MEXICO	48	20	75.94	78.57
MOLDOVA REP. OF	9	8	98.80	94.97
NAMIBIA	6	5	88.21	87.90
NIGERIA	63	48	80.48	82.40
PANAMA	44	9	44.74	38.94
PERU	18	10	74.10	74.79
PHILIPPINES	36	24	87.99	87.25
POLAND	39	27	83.63	83.48
PORTUGAL	43	27	73.74	70.35
ROMANIA	23	20	95.73	92.68
RUSSIAN FEDERATION	74	48	90.80	81.10
SINGAPORE	50	36	78.77	81.48
SLOVAKIA	10	8	95.31	92.92
SLOVENIA	15	11	83.31	80.64
SOUTH AFRICA	60	37	86.19	88.89
SPAIN	136	62	55.32	58.58
SWEDEN	40	25	82.34	83.56
THAILAND	25	16	79.64	78.17
TRINIDAD AND TOBAGO	9	7	76.85	80.52
TURKEY	44	24	89.26	88.82
UNITED KINGDOM	190	102	75.30	79.87
VENEZUELA	65	9	59.18	58.49
<b>Total</b>	<b>5070</b>	<b>1737</b>	<b>Median=80.48</b>	<b>Median=81.7</b>

<sup>a</sup> Percent of total loans (total assets) represents total loans (total assets) of banks in our sample divided by total loans (total assets) of banks of the full sample of banks provided by BvD Bankscope for the year 1999.

Table A2. Correlation matrix

**Panel A. Correlation between firm-level variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
<i>Lending Corruption</i>	(1)	1.00						
<i>Log(Sales)</i>	(2)	-0.15*	1.00					
<i>d(Firm State-owned)</i>	(3)	-0.06*	-0.22*	1.00				
<i>d(Firm Foreign-owned)</i>	(4)	-0.09*	0.26*	-0.05*	1.00			
<i>d(Exporter)</i>	(5)	-0.12*	0.12*	0.09*	0.26*	1.00		
<i>Log(Number Competitors)</i>	(6)	0.10*	-0.41*	-0.02	-0.12*	-0.06*	1.00	
<i>General Financing Obstacle</i>	(7)	0.25*	-0.21*	0.04*	-0.15*	-0.04*	0.10*	1.00

**Panel B. Correlation between country-level ownership variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
<i>Lending Corruption</i>	(1)	1.00						
<i>ShareLoan State</i>	(2)	0.11*	1.00					
<i>ShareLoan Industrial</i>	(3)	-0.04*	-0.27*	1.00				
<i>ShareLoan Family</i>	(4)	-0.03*	0.07*	0.02	1.00			
<i>ShareLoan Bank</i>	(5)	0.14*	-0.13*	-0.26*	-0.09*	1.00		
<i>ShareLoan Institutional</i>	(6)	0.03	-0.05*	-0.07*	-0.05*	-0.12*	1.00	
<i>ShareLoan Widely</i>	(7)	-0.05*	-0.14*	-0.21*	-0.14*	-0.14*	-0.17*	1.00

**Panel C. Correlation between other country-level variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
<i>Lending Corruption</i>	(1)	1.00						
<i>Quality Audit</i>	(2)	-0.01	1.00					
<i>Supervisory Strength</i>	(3)	0.08*	0.25*	1.00				
<i>Economic Freedom</i>	(4)	-0.13*	-0.02	-0.10*	1.00			
<i>GDP Growth</i>	(5)	0.05*	-0.17*	-0.19*	-0.18*	1.00		
<i>Inflation</i>	(6)	-0.04*	-0.02	0.18*	0.51*	0.23*	1.00	
<i>d(High Development)</i>	(7)	-0.19*	0.14	-0.16*	0.48*	0.12*	0.31*	1.00

Bank lending corruption is the response to the question "Is corruption of bank officials an obstacle for the operation and growth of your business?" (1-no obstacle, 2-minor obstacle, 3-moderate obstacle, 4-major obstacle). Detailed variable definitions and sources are given in Table 1. \*\*\*, \*\*, \* indicate significance at the 1%, 5% and 10% levels, respectively.

Table A3. State-owned banks, corruption by public officials and corruption in lending (ordered probit model)

Dependent variable: Lending corruption

	Developed countries	Developing countries
ShareLoan State	0.0573*** (0.000)	0.00868*** (0.000)
ShareLoan State × d(Low Official Corruption)	-0.221** (0.011)	-0.0217*** (0.000)
Log(Sales)	-0.0191** (0.033)	-0.00503 (0.205)
d(Firm State-owned)	-0.680*** (0.000)	-0.330*** (0.000)
d(Firm Foreign-owned)	0.0328 (0.752)	-0.0793 (0.195)
d(Exporter)	-0.107 (0.226)	-0.222*** (0.000)
Log(Number Competitors)	0.0352 (0.801)	-0.0231 (0.738)
General Financing Obstacle	0.409*** (0.000)	0.258*** (0.000)
d(High Supervisory Strength)	-0.112 (0.511)	0.482*** (0.000)
d(High Quality Audit)	0.0624 (0.664)	-0.0744 (0.187)
Economic Freedom	-0.0132 (0.148)	0.00506 (0.186)
GDP Growth	-0.0880** (0.043)	0.0350*** (0.000)
d(Low Official Corruption)	0.00278 (0.989)	-0.0448 (0.469)
Wald Tests	-0.164** (0.0543)	-0.0130*** (0.0000)
Pseudo R <sup>2</sup>	0.107	0.0593
Observations	1218	3475

Detailed variable definitions and sources are given in Table 1. P-values are in parentheses, with  $p < 0.1$  \*,  $p < 0.05$  \*\*,  $p < 0.01$  \*\*\*.