



Corruption in bank lending: The role of timely loan loss recognition [☆]



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ABSTRACT

Building on the recent literature on corruption in bank lending, we examine the effect of country-level timely loan loss recognition by banks on lending corruption using a unique World Bank dataset that covers more than 3,600 firms across 44 countries. We find evidence consistent with timely loan loss recognition constraining lending corruption because it increases the likelihood of problem loans being uncovered earlier. In further analysis, we find timely loan loss recognition to be less associated with reduced corruption in countries where there is significant government ownership in the banking system and deposit insurance schemes. This evidence is consistent with timely loan loss recognition being less of a deterrent to lending corruption when banks are less disciplined by their capital providers.

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1. Introduction

Banks provide a significant portion of firm financing and play an important role in economic development. Lending corruption is one of the major reasons for problem loans in many countries (Adams, 1991; Lardy, 1998; Udell, 1989). Loans involving corruption are typically lower quality loans that may not have been otherwise approved and are therefore more likely to go bad. These loans are approved because the loan officer, while enjoying private benefits from the corruption, does not believe she will bear the full cost of the potentially bad loan. Hence, corruption in lending can be regarded as a classic agency problem in which the agent (loan officer) extracts private benefits at the expense of the principal (e.g., investors and depositors).

Lending corruption as a prevalent phenomenon reduces the banking system's efficiency in distributing scarce capital. Prior studies have examined various institutional factors—bank supervisory policies, competition among banks, information sharing about borrowers, and the media—that could help mitigate such corruption (Barth et al., 2009; Beck et al., 2006; Houston et al., 2011). But while these papers generally offer evidence that external monitoring, and more information in general, deter lending corruption, no study has examined specifically how the recognition of bad loans in a country can do so.

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Our paper focuses directly on the timeliness of loan loss recognition as an important mechanism constraining lending corruption. The stewardship role of accounting predicts that one important outcome of accounting is its ex-ante effect of curtailing bad corporate practices (Watts and Zimmerman, 1979; Holthausen and Watts, 2001). In the context of bank lending, loan loss recognition is an important accrual process through which banks recognize future expected loan losses in the current period. Banks make reserves to capture expected losses. Making these reserves immediately reduces bank profits and regulatory capital, which, in turn, can alert the board, managers, and external stakeholders to problems the bank is facing (Bushman, 2014).¹ As part of the typical internal control process to ensure proper independence, the accounting for loans (in particular, recording reserves for loan losses) is handled by bank accountants, not lending officers. Bank examiners and auditors also pay close attention to this separation of duties (Dahl et al., 1998). More timely loan loss recognition thus serves as an early warning mechanism for problem loans, including those that arise from lending corruption. As a result, the corrupt bank personnel have less time or opportunity to conceal and/or escape with the gains from corruption. In anticipation of the sequence of events that could be triggered by earlier loan loss recognition, loan officers are more likely to refrain from lending corruption at loan origination.

To measure corruption, we follow prior studies (Barth et al., 2009; Beck et al., 2006; Houston et al., 2011) that have examined issues related to corruption in bank lending by utilizing the World Bank's World Business Environment Survey (WBES).² In particular, the survey includes the question: "Is the corruption of banking officials an obstacle for the operation and growth of your business?" We rely on the response by firms (borrowers or potential borrowers) to measure the degree of bank lending corruption. To measure the timeliness of loan loss recognition within a country, we follow Beatty and Liao (2011) and construct the ratio of loan loss reserves to non-performing loans. To better reflect the predictive power of loan loss reserves, we use as the denominator, next year's non-performing loans, which capture the current year's non-performing loans and the next year's changes in non-performing loans.³ The ratio is then averaged for each country to measure the timeliness of loan loss recognition in anticipating loan losses in a country's bank reporting environment.

The merging of the data on banking corruption, the timeliness of loan loss recognition, and other variables results in a sample of 3,611 firms from 44 countries. Controlling for a large array of bank-, firm-, and country-level characteristics (e.g., corporate governance, information environment, and financing obstacles), we document that more timely loan loss recognition is incrementally associated with less lending corruption. These results are robust to alternative measures of the timeliness of loan loss recognition, alternative sets of control variables, various analyses that check the sensitivity of the results to data limitations, and an instrumental variable probit regression.

Next, given that timely loan loss recognition is useful to the extent that monitors use it to discipline banks, we examine how the strength of market discipline affects the association between timely loan loss recognition and lending corruption. In particular, we focus on two major capital providers for banks: government, and depositors. We argue that government ownership increases the likelihood that a bank will be bailed out in the event that it is in trouble due to problem loans, thus mitigating equity investors' incentives to monitor the bank (Borisova and Megginson, 2011; Li et al., 2009; Guedhami et al., 2009; Wang et al., 2008). We also argue that deposit insurance reduces depositors' incentives to monitor banks and to withdraw their deposits when it is revealed that their bank is suffering from significant loan losses (Billet et al., 1998; Demircug-Kunt and Huizinga, 2004; Goldberg and Hudgins, 2002; Greenbaum and Thakor, 2007). In line with these arguments, we find evidence that more timely loan loss recognition is less negatively associated with lending corruption in banking systems with more government ownership and with deposit insurance. Collectively, the results further enhance our confidence in interpreting the main effect, as it is more difficult to conceive an alternative story that explains both our primary results and interaction effects (Rajan and Zingales, 1998; Christensen et al., 2013).

We contribute to the literature in three interrelated ways. First, we extend the lending corruption literature (e.g., Barth et al., 2009; Beck et al., 2006; Houston et al., 2011) by focusing on loan loss recognition timeliness as a specific accounting mechanism that is closely tied to bank lending practice. In particular, loans arising from lending corruption are typically bad loans, and their early revelation has the potential to constrain corruption ex ante. As noted in Shleifer and Vishny (1993), Mauro (1995), and many other studies, corruption plays an important role in resource allocation, especially in less developed countries, and is costly to economic development. A better understanding of the mechanisms that curtail corruption could lead to changes (e.g., improvements to loan loss accounting) that facilitate economic development.

Second, we contribute to the literature on the real effects of more timely loan loss recognition (e.g., Beatty and Liao, 2011; Bushman and Williams, 2012). Beatty and Liao (2011) show that more timely loan loss recognition is linked to a greater willingness to lend during a financial crisis because the earlier recognition of credit loss means less credit loss has to be recognized during recessionary periods when regulatory capital declines and external financial frictions increase. Bushman and Williams (2012) find that more timely loan loss provisioning reduces excessive risk taking. Our study suggests that the disciplining effect of more timely loan recognition on lending corruption is another reason to expect this recognition to induce greater lending efficiency in the banking industry.

¹ The importance of accruing for loan losses can be seen from the numerous banking studies that have examined the implications of loan loss recognition. See the survey by Beatty and Liao (2014) and discussion by Bushman (2014).

² As noted by Houston et al. (2011) and other studies, the relative lack of papers on lending corruption is not surprising given the difficulty of measuring lending corruption. The recent literature relies on the survey by the World Bank to gauge lending corruption.

³ Beatty and Liao (2011) argue that the ratio of loan loss reserves to current non-performing loans captures banks' tendency to recognize not only incurred losses but also the expected risk in their performing loans. They use current non-performing loans as the denominator. All our results are robust to this alternative specification and the other measures of the timeliness of loan loss recognition that we discuss later.

Finally, our findings that more timely loan loss recognition is associated with less lending corruption can inform standard setters. Recently, there has been debate over whether the incurred or expected loss model is the more appropriate loan loss recognition model. The Financial Accounting Standards Board (FASB) and the International Accounting Standard Board (IASB) appear to be moving toward the expected loss model, which is intended to require more timely recognition credit losses (FASB, 2012; IASB, 2014). While we are not able to directly evaluate these models, to the extent that the expected loss model results in more timely loan loss recognition, our paper provides some support for the beneficial effects of adopting it.

The remainder of the paper is organized as follows. Section 2 presents our hypotheses. Section 3 introduces the data and measures. Section 4 covers the empirical analyses on lending corruption and the timeliness of loan loss recognition. Section 5 details some additional analyses, and Section 6 concludes.

2. Hypotheses development

2.1. Lending corruption and the timeliness of loan loss recognition

Corruption plays a role in the lending process all over the world (e.g., Barth et al., 2009; Beck et al., 2006; Tanzi, 1998). For example, in September of 2014, the Indian government fired the chairman of the state-run Syndicate Bank for taking bribes for loans.⁴ In August 2013, India's Central Bureau of Investigation (CBI) arrested the chairman of Syndicate Bank over allegations he was seeking bribes to favor debtors.⁵ The CBI recovered 5 million rupees that a New Delhi-based company had allegedly paid, via middlemen, to the bank's head for a loan extension. In December 2012, the former head of one of China's largest banks, the Postal Savings Bank of China, was arrested for corruption offences, including making illegal loans and bribery.⁶ This high profile arrest followed a 2010 case in which a former vice president of the China Development Bank was given a suspended death sentence for receiving bribes in exchange for helping companies get loans.⁷ Chen et al. (2013) present evidence consistent with lending corruption being a problem in China.

While headline-grabbing news tends to relate to corruption by top bank officials, it is important to note that lending corruption also occurs at lower levels. Loan officers can engage in arrangements for kickbacks from clients in various forms. For example, they can ask for bribes to approve a loan or collude with clients to obtain bogus loans and subsequently share in the proceeds. Udell (1989) notes that evaluations of many failed banks reveal kickbacks to loan officers. In a less extreme case of corruption, the loan officer may see the borrower as a possible future employer and be more lenient in granting a loan.

Given the potentially harmful consequences of lending corruption, such as bank crises and the inefficient allocation of capital (Beck et al., 2006), it is important to have mechanisms in place to curtail corrupt lending practices. Beck et al. (2006) find that more private monitoring reduces lending corruption. In contrast, they generally document that more supervisory power increases lending corruption. Barth et al. (2009) show that greater competition among banks and information sharing by private bureaus mitigates lending corruption. Houston et al. (2011) find that state ownership of the media and media concentration are associated with more lending corruption. While some of these papers have considered the role of information in general in curtailing corruption, they do not examine specific types of information that could have an effect on lending corruption (Barth et al., 2009; Beck et al., 2006; Houston et al., 2011). More importantly, they typically do not focus on how banks' accounting for loan losses could influence lending corruption ex ante.⁸ In this paper, we argue that an important accrual process for bank loans, early loan loss recognition, could play a stewardship role in deterring banking corruption.⁹

To illustrate the role of timely loan loss recognition in deterring lending corruption, we use a corrupt bank lending setting, similar to Barth et al. (2009). Barth et al. (2009) depict corrupt bank lending as a private negotiation between the bribe taker (the lending officer) and the bribe payer (the borrowing firm). The bribe increases the lending officer's income. As noted by Barth et al. (2009, p. 365), "Bribery, of course, could be detected and thus punished by the bank manager and/or regulators, in which case the loan officer will be penalized (e.g., demoted, fined, and/or even face more stringent legal sanctions)." The lending officer thus has to weigh the benefit of more income against the cost of being caught and penalized.

⁴ <http://timesofindia.indiatimes.com/business/india-business/Govt-sacks-suspended-Syndicate-Bank-chief/articleshow/43223687.cms>.

⁵ <http://www.channelnewsasia.com/news/business/international/india-probes-bank-loan-to/1305934.html>.

⁶ http://www.chinadaily.com.cn/china/2014-08/14/content_18307135.htm.

⁷ http://www.chinadaily.com.cn/bizchina/2010-04/16/content_9738250.htm.

⁸ For example, Beck et al. (2006) examine the role of private monitoring based on the notion that more monitoring reduces lending corruption. While their private monitoring index includes accounting-related indicators such as whether the bank provides consolidated accounts, there is no component specific to loan loss recognition. Further, there appears to be an unexpected result that more regulatory supervisory power is associated with more lending corruption in most of their specifications, inconsistent with the idea that more regulatory supervisory power means better monitoring.

⁹ The timeliness of loan loss recognition is distinct from the concept of financial reporting accuracy because the regulatory standards do not prescribe how timely the loss recognition must be. In particular, they do not state the amount of loan loss provisions in the current period for each dollar of anticipated increase in non-performing loans or charge-offs in the future period(s) (Beatty and Liao, 2011; Bushman and Williams, 2012). However, there is significant interest in making improvements to the model for loan loss recognition, as evidenced by recent developments with regard to the appropriate loan loss recognition model (FASB, 2012; IASB, 2014). It is thus important to develop a better understanding of the possible economic consequences of specific accounting mechanisms.

Not only does she have to consider the likelihood of being caught, she also has to consider when it may happen, because being caught early limits her opportunities to obtain more bribes, as well as the chance to leave the bank before the bad loans are revealed.¹⁰

Loan loss reserves/provisions, as an important indicator of expected loan losses, are estimated and recorded by accountants or reviewers rather than loan officers (e.g., Udell, 1989; Beatty and Liao, 2011; Bushman and William, 2012; Ng and Roychowdhury, 2014). The separation of duties between transaction generation and accounting is a key principle in internal controls and a prevalent practice in banking (e.g., Trenerry, 1999; Pickett, 2001). Further, external auditors and bank supervisors have the authority to ensure adequate independence between loan origination and the recognition of loan losses (Gaston and Song 2014).

More timely loan loss recognition results in an earlier negative impact on profitability and bank regulatory capital, which, in turn, is likely to trigger earlier scrutiny of the bank by various stakeholders, including internal and external monitors. This early scrutiny increases the likelihood of earlier discovery and penalization for corrupt lending, which limits officers' ability to benefit from corrupt lending over an extended period and/or prevents them from escaping with their ill-gotten gains. Thus, we argue that more timely loan loss recognition will discourage lending corruption *ex ante* because lending officers will expect a lower payoff from engaging in corruption. Hence our main hypothesis, stated in alternative form:

H1. The timeliness of loan loss recognition is negatively associated with corruption in bank lending.

2.2. The role of market discipline

We focus on the interaction between market discipline and timely loan loss recognition because Beck et al. (2006) find that strategies intended to enhance stakeholders' private monitoring of banks are more successful in constraining lending corruption than are strategies that empower supervisory agencies. Two key sources of capital for banks are equity funding and deposits. To the extent that timely loan loss recognition reveals loan losses earlier, such as from lending corruption, it can adversely affect banks. When timely loan loss recognition indicates a riskier loan portfolio, capital providers might withdraw capital or at least be unwilling to provide more of it.

In this section, we focus on how mitigated market discipline by capital providers could affect the relation between timely loan loss recognition and lending corruption. The general intuition is that when banks are more concerned about market discipline, the early revelation of losses due to timely loan loss recognition deters loan officers from lending corruption.

2.2.1. Government ownership in the banking system

Shleifer and Vishny (1993) find the structure of government institutions to be an important determinant of corruption. Governments are less likely to allow a firm in which they hold a greater ownership stake to fail. Many studies in the literature compare state-owned enterprises (SOEs) to non-SOEs and find that SOEs have a lower cost of debt (Borisova and Megginson, 2011) and higher leverage (Li et al., 2009), are less likely to be audited by one of the Big Four auditors (Guedhami et al., 2009; Wang et al., 2008), and experience a less pronounced impact of audit quality on earnings management and cost of capital (Chen et al., 2011b).¹¹ Also, Calomiris et al. (2008) find a negative market reaction to unexpected decreases in the level of government ownership of SOEs. All of these results are consistent with market participants believing that governments implicitly guarantee SOEs.¹²

Hence, to the extent that more government ownership reduces the likelihood that banks will be allowed to fail, it will weaken market discipline for bad behavior like corruption and excessive risk taking (Caprio and Klingebiel, 1996; Dam and Koetter, 2012; Stern and Feldman, 2004). So even when banks have to accrue loan losses in anticipation of loans turning bad – accrued losses that lower earnings and reduce regulatory capital – banks are likely to receive support/bailouts from the government to stay afloat, even if the economically optimal decision is to let the bank fail. For example, the government might pump in additional capital or make it easier/cheaper for banks to borrow from the central bank. As a result, when loan officers anticipate that any negative consequences will be mitigated by government support, they are more likely to engage in corrupt behavior, even if there is more timely reporting of the losses.

The increased probability of a bank surviving due to governmental support is important to a corrupt bank manager for a number of reasons. First, it increases the likelihood that the manager can avoid losing his job and continue to benefit from past and future corrupt behavior. Second, it reduces the likelihood of an extensive investigation (e.g., brought about by public pressure) into the problems that led to the bank failure, investigations that may uncover corruption. Note that the above argument does not require the bank manager to expect his corrupt behavior to be uncovered. All the anticipated government support has to do is to increase the net present value of his gains from his corrupt and non-corrupt actions (e.g., wages) because of the lack of market discipline over the negative economic consequences of his corrupt behavior.

¹⁰ Using our bank sample from BankScope, we regress loan charge-offs scaled by total loans on the country mean of lending corruption, controlling for earnings before loan loss provisions, the capital ratio, log of total assets, and all the country-level variables in our primary specification (Eq. (1)). The coefficient on country mean lending corruption is 0.002 (p-value < 0.01), consistent with lending corruption leading to more problem loans.

¹¹ Chaney et al. (2011) find that politically connected firms have poorer accounting quality than other firms do because they do not feel pressure to respond to market forces for higher quality accounting.

¹² Note that the literature does not suggest that these results are from superior operations. In fact, SOEs are found to have a lower Tobin's Q (Wei et al., 2005) and less investment efficiency than do other firms (Chen et al., 2011a).

Government ownership can also increase the likelihood that bad loans or the underlying lending corruption will be covered up, even if the reported loan losses result in an investigation that reveals the corruption. Specifically, it is unclear that punishment will be meted out against the wrongdoers because of bureaucracy, political protection/patronage, or a cover-up, any of which may be more prevalent when a government has a significant stake in a firm (Dinç, 2005). Gerschekron (1962, p. 20) notes, “there is no doubt that the government as an *agens movens* of industrialization discharged its role in a far less than perfectly efficient manner. Incompetence and corruption of bureaucracy were great.” The lack of punishment further increases the net present value of the gains from corruption.

Houston et al. (2011) provide some initial evidence that government bank ownership moderates the effect of the information environment on lending corruption. Arguing that state ownership of the media weakens its ability to expose and deter corruption, they first document that state ownership of the media is positively associated with lending corruption. They then provide further evidence that this positive association is stronger in countries with a state-controlled banking sector. Similar to Houston et al. (2011), we argue that more timely loan loss recognition is less likely to have a deterrent effect in a state-controlled banking system that discourages following up on the discovery of lending corruption. Our next hypothesis, stated in the alternative form, is:

H2a. The negative association between timely loan loss recognition and corruption in bank lending is weaker in countries where the government holds a more significant stake in the banking system.

2.2.2. The role of deposit insurance

Deposit insurance exists because of the concern that market discipline by uninsured depositors may lead to bank instability. Depositors may over-discipline banks by withdrawing funds from solvent banks, fearing their money is not safe. Furthermore, some argue that a contagion effect exists among banks because of shared systematic risk in their asset portfolios (Greenbaum and Thakor, 2007). Thus, when one bank fails, depositors assume the failure is because of systematic risks that are applicable to other banks, which can lead to a bank panic. In the US, deposit insurance was originally offered through private clearing house arrangements established by bank syndicates. However, such private arrangements could not eliminate the threat of bank runs because the diversification they provided was limited by the size of the group of member banks and there was no assurance about the complete integrity of the arrangements (Greenbaum and Thakor, 2007). Therefore, the federal government began to provide deposit insurance in 1933. While the actual insurance schemes vary, many countries now provide some form of federal deposit insurance in the hope of promoting greater bank stability (Demirguc-Kunt and Huizinga, 2004).

Despite its potential benefits, deposit insurance has introduced a new source of moral hazard. Merton (1977) shows that it can be viewed as a put option on bank assets and those banks that have it can increase their value by increasing risk.¹³ Depositors' concern about bank performance is decreasing in deposit insurance. Specifically, when depositors are protected by deposit insurance, they are less concerned about whether corrupt lending results in bad loans since, should the loans fail, the depositors do not bear the cost of the losses. Hence, deposit insurance may decrease market discipline for banks.

While it has been suggested that outside stakeholders cannot properly discern the risks undertaken by bank managers, evidence exists to the contrary (Flannery and Sorescu, 1996). In fact, prior literature finds that deposit insurance decreases market discipline on risk taking for banks (Billet et al., 1998; Demirguc-Kunt and Huizinga, 2004; Goldberg and Hudgins, 2002; Greenbaum and Thakor, 2007).¹⁴ Maechler and McDill (2006) find evidence suggesting that the depositor discipline constrains managerial risk taking. In an international study, Demirguc-Kunt and Detragiache (2002) find that deposit insurance increases the likelihood of a bank crisis and that this effect is stronger when the scheme is run by the government rather than the private sector. Berger and Turk-Ariss (2015) find significant depositor discipline prior to the recent crisis in 2008–2009 in both the US and the EU. However, this discipline declined during the crisis except for small US banks, consistent with depositors responding to actions taken by the government to protect depositors at the beginning of the crisis.

Hence, when depositors do not exert market discipline on banks because they are protected by deposit insurance, loan officers are less likely to be concerned about being punished after loan losses are revealed. In particular, if reported loan losses result in an actual or possible bank run because depositors fear the loss of their deposits, the board of directors, top management, and/or regulators are more likely to step in and investigate the problems at the bank. This could lead to staff turnover and even criminal prosecution in the event that corruption is uncovered. Hence our final hypothesis, stated in alternative form:

H2b. The negative association between timely loan loss recognition and corruption in bank lending is weaker in banking systems with deposit insurance.

¹³ Even in the US, where deposit insurance premiums have been related to risk since the 1980s, there is a limited number of risk categories and the premiums are only weakly related to risk for most banks (Greenbaum and Thakor, 2007).

¹⁴ Although earlier models of deposit insurance often find it to be an optimal policy, for example, Diamond and Dybvig (1983), they also acknowledge that it is a significant source of moral hazard (Demirguc-Kunt and Detragiache, 2002).

3. Data and research design

The dependent and independent variables of interest in our study are lending corruption and loan loss recognition timeliness, respectively.

3.1. Measure of lending corruption

We obtain our data on lending corruption from the World Business Environment Survey (WBES) published in 2000. The WBES data are from firm-level surveys conducted across an assortment of industries in 80 different countries, primarily in emerging markets and developing economies. The survey's purpose was to assess the environment for business development and growth. The survey was completed by managers, accountants, directors, and other employees in face-to-face interviews. It was conducted by independent contractors and firm identities were kept confidential to ensure unbiased responses. One feature of the WBES data is that only 20% of the firms surveyed had more than 500 employees (Batra et al., 2003). Thus, the composition of the data (because it was taken largely from developing economies and includes small and medium sized firms) allows us to examine lending corruption in a setting where we would expect it to be more prevalent.

The WBES data have been used in a number of previously published academic articles. Barth et al. (2009) and Beck et al. (2006) present several arguments for the validity of the survey results that also apply to our setting. First, if the same firm were to respond differently to the survey questions in different economic environments, it would simply make our measure more noisy and bias against our finding results. Second, a wide range of prior work shows this survey data on financing obstacles is generally correlated with firm growth, institutions, corruption, property rights, information sharing, and investment flow efficiency (Acemoglu and Johnson, 2005; Ayyagari et al., 2008; Beck et al., 2005; Djankov et al., 2003; Hellman et al., 2000). If the survey did not actually capture what it attempts to identify, it is improbable that there would be so many significant correlations with the outcome variables that one would expect to be associated with financing obstacles.

Our measure of lending corruption (*Lendingcorruption*) is taken from firms' responses (current or potential borrowers) to the WBES question: "Is the corruption of banking officials an obstacle for the operation and growth of your business?" The possible firm responses were 1 – no obstacle, 2 – a minor obstacle, 3 – a moderate obstacle, 4 – a major obstacle. Thus, the variable is increasing in the perceived severity of lending corruption. Beck et al. (2006, p. 2136–2137) provide an extensive justification for this measure. Hence, we believe it to be a reasonable proxy for capturing lending corruption from the perspective of borrowing firms. An advantage of asking borrowing firms, as opposed to banks, about their perception of lending corruption in a study of how banks' accounting for loans affects lending corruption is that there is likely to be less bias in the responses. One possible limitation of our study is that we only have *Lendingcorruption* for the year 2000. Unfortunately, subsequent iterations of the WBES do not ask about lending corruption as a firm obstacle. However, corruption in the lending process is likely to vary little over short periods of time.

3.2. Measure of timely loan loss recognition

We obtain annual data on banks from BankScope. BankScope updates their database every year and provides a maximum of 16 years of data for each bank. We use the 2009 version of the database.¹⁵ Using annual data spanning 1995–2006, we estimate the timeliness of the loan loss recognition (*LLR timeliness*) of the banking system in each country using two steps. First, for each observation within the sample, we compute the loan loss reserves at time t as a percentage of the non-performing loans at time $t+1$. For each bank, the percentage represents the extent to which the loan loss reserves made at time t take into account the current levels of and future changes in non-performing loans. Note that non-performing loans at time $t+1$ equals non-performing loans at time t plus the changes in non-performing loans at time $t+1$. This computation is a slight modification of one of Beatty and Liao's (2011) measures of timeliness in loss accounting, loan loss reserves at time t as a percentage of non-performing loans at time t .¹⁶ We introduce this modification to better capture the spirit of Beatty and Liao (2011) and Bushman and Williams (2012), in that more timeliness in the loan loss accrual process includes the anticipation of changes in non-performing loans. As we later show in Table 8, our results are robust to the computation of loan loss recognition timeliness without this modification, as well as to other potential measures of loan loss recognition.

Next, we average the percentage for all observations across banks in each country. This measure captures the extent to which the banks in a country are currently accruing losses (and thus making loan loss reserves) related to future bad loans. Stated differently, it captures the extent to which the country's banking system is more timely in recognizing losses. Table 1 presents *LLR timeliness* and the number of banks used to calculate it for each country in our sample.

¹⁵ We do not need a more recent version of BankScope for our analyses because, as mentioned earlier, lending corruption is measured as of the year 2000. Using the 2009 version allows us to have more historical bank information because BankScope limits historical data to a maximum of 16 years. Nevertheless, we find that all our results are robust to using the version downloaded in 2014.

¹⁶ The correlation between our measure and the measure based on Beatty and Liao (2011) is 0.89 ($p < 0.001$).

Table 1

Estimation of loan loss recognition timeliness.

This table presents information related to the estimation of the timeliness of loan loss recognition, *LLR timeliness*, from 1996–2005 using bank data from BankScope. We report *LLR timeliness* and the number of bank-years for each country. *LLR timeliness* is computed as the average of the bank-year ratio of loan loss reserves to next year's non-performing loans for each country. It is then assigned to each World Business Environment Survey (WBES) firm in our sample.

Country	<i>LLR timeliness</i>	# Bank-years	Country	<i>LLR timeliness</i>	# Bank-years
Argentina	1.418	117	Malaysia	0.832	385
Azerbaijan	0.650	13	Mexico	3.071	241
Bolivia	0.852	79	Pakistan	0.677	131
Bosnia	1.619	16	Panama	2.154	42
Botswana	2.071	23	Peru	1.683	151
Brazil	0.938	331	Philippines	0.516	87
Canada	2.310	167	Poland	0.356	78
Chile	2.012	276	Portugal	1.198	195
Colombia	1.807	101	Russia	4.698	99
Costa Rica	0.454	158	Senegal	0.321	20
Croatia	1.092	45	Slovakia	0.985	15
Czech Rep	0.686	37	Slovenia	0.848	12
Ecuador	1.625	113	South Africa	0.872	53
El Salvador	1.164	104	Spain	1.932	379
Germany	0.674	31	Thailand	0.944	101
Ghana	0.855	17	Turkey	0.950	135
Honduras	0.927	67	UK	2.444	215
Hungary	0.500	23	US	2.288	47,183
India	0.627	243	Ukraine	3.734	54
Italy	2.047	2,189	Uruguay	3.842	91
Kenya	0.921	142	Venezuela	2.342	194
Lithuania	0.938	15	Zimbabwe	5.130	19

3.3. Research design

To test **H1**, we use the regression specification in column 5 of **Table 8** from **Barth et al. (2009)** as our baseline specification because it contains their most comprehensive specification and includes a large array of macroeconomic and institutional indices (e.g., official supervisory power and private monitoring) not included in their primary tests. We add *LLR timeliness* to their specification and estimate the following ordered probit regression:¹⁷

$$\text{Lendingcorruption} = \alpha + \beta_1 \text{LLRTimelines} + \text{Controls} + \epsilon_t \quad (1)$$

where *Lending corruption* is the firm-level response to how much of an obstacle lending corruption is. *LLR timeliness* is a country-level measure calculated as described in **Section 3.2**.

Controls refer to the set of independent variables in **Barth et al.'s (2009)** regression specification. We include controls to capture the general information environment (*Public registry*, *Private bureau*, and *Firm auditing*) and bank ownership (*Private bank ownership* and *Foreign bank ownership*). We also include a number of controls for firm respondent characteristics (*Government*, *Foreign*, *Competitor*, *Firm size*, and *Exporter*). Moreover, we control for individual firms' perception of their legal environments (*Fair court* and *Law enforcement*). We further include overall financing obstacles (*General financial obstacle*) to control for overall complaints about the financial sector. This variable is based on the firm's response to the question "How problematic is financing for the operation and growth of your business?" (1–no obstacle, 2–a minor obstacle, 3–a moderate obstacle, 4–a major obstacle).

We further control for different aspects of the banking sector (*Creditor rights*, *Official supervisory power*, and *Private monitoring index*) and more general country-level characteristics (*GDP per capita*, *Inflation*, *Government effectiveness*, *Rule of law*, *Voice and accountability*, *Democracy*, and *Openness*). The source for each variable used in our study is listed in **Appendix A**. After dropping observations missing the necessary control variables, our final sample is composed of 3,611 firms from 44 countries.

3.4. Summary statistics

Table 2 shows the distribution of the firms in our sample by country. The sample is primarily comprised of developing countries, which is where we expect to find greater variation in lending corruption.¹⁸ We observe a large variation in the mean *Lending corruption* across countries, ranging from 3.308 (Thailand) to 1.045 (UK).

¹⁷ All our results are robust to using the other regression specifications in **Barth et al. (2009)** as our baseline specification. We also estimate the regression specification using an ordinary least squares regression instead of an ordered probit regression and obtain consistent results.

¹⁸ The WBES does not sample many firms in more developed countries such as the United States and Canada. Thus, our sample includes a fewer number of observations from these countries, despite there (generally) being more banks available in them for calculating *LLR timeliness*.

Table 2

Lending corruption and sample size by country.

This table presents information about *Lending corruption* and the number of firms (borrowers or potential borrowers) for each of the 44 countries in our sample of 3,611 firms from the World Bank's World Business Environment Survey (WBES). *Lending corruption* is the firm response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)."

<i>Lending corruption</i> Country	(mean)	# Firms	<i>Lending corruption</i> Country	(mean)	# Firms
Argentina	1.518	85	Malaysia	1.746	59
Azerbaijan	2.944	90	Mexico	2.011	88
Bolivia	1.651	86	Pakistan	2.446	74
Bosnia	1.714	42	Panama	1.407	81
Botswana	1.178	45	Peru	2.195	87
Brazil	1.291	79	Philippines	2.200	90
Canada	1.071	84	Poland	1.390	164
Chile	1.224	85	Portugal	1.453	75
Colombia	1.591	88	Russia	1.914	314
Costa Rica	1.778	81	Senegal	1.647	17
Croatia	1.827	98	Slovakia	2.040	75
Czech Rep	1.904	73	Slovenia	1.243	115
Ecuador	2.663	86	South Africa	1.127	71
El Salvador	1.728	81	Spain	1.263	76
Germany	1.516	62	Thailand	3.308	13
Ghana	1.800	25	Turkey	2.349	126
Honduras	2.051	39	UK	1.045	66
Hungary	1.528	72	US	1.481	79
India	1.554	130	Ukraine	1.957	139
Italy	1.175	57	Uruguay	1.137	73
Kenya	1.455	44	Venezuela	1.550	80
Lithuania	2.300	60	Zimbabwe	1.526	57

Table 3 displays the descriptive statistics of the variables used in this study. For our sample, *Lending corruption* averages 1.723, compared to 1.776 in Barth et al. (2009), consistent with the firms in our sample reporting, on average, lending corruption as a minor obstacle. Nevertheless, we observe considerable variation in lending corruption, with a standard deviation of 1.032.

4. Empirical results

4.1. Main results

Table 4, Panel A presents the results of our analyses of the association between timely loan loss recognition and bank lending corruption. Column 1 (column 2) presents the results without (with) *LLR timeliness*. In column 2, which is the main regression specification for this paper, we find that the coefficient on *LLR timeliness* is -0.188 (z -stat= 6.05).¹⁹ Moving on to some of the control variables with significant coefficients, we observe a negative coefficient on *Private bureau*, indicating that a better information environment deters lending corruption. The coefficient on *Firm auditing* is negative, which suggests that borrowing firms subjected to external audits are less likely to engage in lending corruption. *Government* and *Law enforcement* enter negatively, in line with Barth et al.'s (2009) findings that borrowers affiliated with the government and those that perceive a better legal environment experience less lending corruption. The coefficient on *Exporter* is significantly negative, consistent with exporting firms having more access to external financing and thus more bargaining power. *General financing obstacle* has a significant positive coefficient, suggesting that firms that face difficulties in financing also consider lending corruption to be a problem. The results for the control variables are similar to those in Barth et al. (2009).

Panel B examines the significance of the economic impact of loan loss recognition timeliness on lending corruption. For a change in loan loss recognition timeliness, we report changes in the probability that a firm would rate lending corruption as no obstacle, a minor obstacle, a moderate obstacle, or a major obstacle for operations and growth. A one standard deviation increase in *LLR timeliness* is associated with a 3.5% decrease (a 9.6% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle) to growth. A change in *LLR timeliness* from the minimum to the maximum is associated with a 12.5% decrease (34.4% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle). Given that 11.0% (60.0%) of our sample reports corruption as a major obstacle (no obstacle) to growth, the economic effect of loan loss recognition timeliness appears to be economically significant.

¹⁹ In untabulated analysis, we create an indicator for high timeliness ($>$ median) and one for low timeliness ($<$ median) for *LLR timeliness*. By interacting these two variables with *LLR timeliness*, we find that the results are driven by the high timeliness variation.

Table 3

Descriptive statistics.

Panel A of this table presents descriptive statistics for the 3,611 firms (from 44 countries) used to examine the relation between lending corruption and the systematic timeliness of loan loss recognition. *Lending corruption* is the firm response to the question “Is the corruption of bank officials an obstacle for the operation and growth of your business (1–no obstacle, 2–minor obstacle, 3–a moderate obstacle, 4–major obstacle).” *LLR timeliness* is computed as the average ratio of loan loss reserves to next year's non-performing loans for each country and then assigned to each firm in our sample. *Public registry* is an indicator variable that takes the value of one if a public credit registry operates in the country by the end of 1999 and zero otherwise. *Private bureau* is an indicator variable equal to one if a private credit bureau is operating in the country by the end of 1999 and zero otherwise. *Firm auditing* is an indicator equal to one if the firm provides audited annual financials to its shareholders. *Private bank ownership* is the percentage of the banking system's assets in banks that are more than 50% owned by private investors. *Foreign bank ownership* is the percentage of the banking system's assets in banks that are more than 50% owned by foreign investors. *Government* is an indicator variable equal to one if any governmental agency or body has ownership in the firm and zero otherwise. *Foreign* is an indicator variable equal to one if any foreign company or individual has ownership in the firm and zero otherwise. *Competitor* captures the number of competitors, as perceived by the manager. *Fair court* captures the enforceability of court decisions. *Law enforcement* measures the impartiality of court decisions. *General financing obstacle* captures how difficult financing is for the operation and growth of the firm. *Firm size* is the natural logarithm of firm sales in US dollars. *Exporter* is an indicator variable equal to one if the firm is an exporter and zero otherwise. *Creditor rights* is an index capturing the power of secured lenders in bankruptcy laws and regulations. *Official supervisory power* is the principal component of 14 indicator variables: (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 with 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? (7–9) Can the supervisory agency suspend the directors' decision to distribute: (a) Dividends? (b) Bonuses? (c) Management fees? (10) Can the supervisory agency legally declare—such that this declaration supersedes the rights of bank shareholders—that a bank is insolvent? (11) Does the Banking Law give authority to the supervisory agency to intervene, that is, to suspend some or all ownership rights of a problem bank? (12–14) 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? *Private monitoring index* is the principal component of nine indicator variables that measure (1) whether bank officials are legally liable for the accuracy of disclosed information; (2–5) whether banks disclose to the public information such as consolidated accounts, off-balance-sheet items, accrued unpaid interest of non-performing loans, or risk management procedures; (6) whether banks must be audited by certified international auditors; (7) whether the largest ten banks are rated by international and domestic rating agencies; (8) whether subordinated debt is allowable as a part of capital; and (9) whether there is no explicit deposit insurance system and no insurance was paid the last time a bank failed. *Control of corruption* captures how well corruption is controlled within the country. *GDP per capita* is the logarithm of gross national product per capita in 1999. *Inflation* is the three year average percentage inflation, GDP deflator. *Government effectiveness* captures the quality of public services, civil service (and its independence from political influences), policy formation and implementation, and the government's commitment to these policies. *Rule of law* captures the extent to which agents have confidence in and follow the rules of society, particularly contract enforcement, police, the courts, and the probability of crime. *Voice and accountability* measures the extent to which people are able to select their government officials as well as different freedoms such as expression, association, and press. *Democracy* is an indicator equal to one if the firm's country was democratic during all years between 1950 and 2000. *Openness* captures imports as a share of GDP in 2000. Panel B presents the Spearman correlation table. * denotes significance levels at 10%.

Panel A: Summary statistics.

Variable	Mean	Std	p25	p50	p75
<i>Lending corruption</i>	1.723	1.032	1.000	1.000	2.000
<i>LLR timeliness</i>	1.764	1.338	0.832	1.164	2.288
<i>Public registry</i>	0.459	0.498	0.000	0.000	1.000
<i>Private bureau</i>	0.504	0.500	0.000	1.000	1.000
<i>Firm auditing</i>	0.659	0.474	0.000	1.000	1.000
<i>Private bank ownership</i>	47.670	28.047	17.430	55.700	67.200
<i>Foreign bank ownership</i>	32.900	28.645	8.800	20.600	46.800
<i>Government</i>	0.111	0.315	0.000	0.000	0.000
<i>Foreign</i>	0.189	0.392	0.000	0.000	0.000
<i>Competitor</i>	2.286	0.720	2.000	2.000	3.000
<i>Fair court</i>	2.386	1.418	1.000	2.000	4.000
<i>Law enforcement</i>	2.363	1.410	1.000	2.000	3.000
<i>General financing obstacle</i>	2.773	1.108	2.000	3.000	4.000
<i>Firm size</i>	10.265	7.908	1.609	13.122	16.811
<i>Exporter</i>	0.392	0.488	0.000	0.000	1.000
<i>Creditor rights</i>	1.822	1.101	1.000	2.000	3.000
<i>Official supervisory power</i>	−0.032	1.638	−0.667	0.024	1.407
<i>Private monitoring index</i>	0.098	1.076	0.067	0.148	0.716
<i>GDP per capita</i>	8.026	1.167	7.193	8.148	8.642
<i>Inflation</i>	12.496	17.744	2.848	6.274	12.759

Government effectiveness	0.205	0.825	-0.530	0.120	0.710
Rule of law	0.034	0.855	-0.740	-0.070	0.540
Voice and accountability	0.290	0.738	-0.430	0.400	0.960
Democracy	0.199	0.399	0.000	0.000	0.000
Openness	36.534	19.599	24.034	32.180	45.766
Government bank ownership	19.431	19.996	3.800	12.100	32.000

Panel B: Spearman correlation table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Lending corruption	1.00															
(2) LLR timeliness	-0.07*	1.00														
(3) Public registry	0.01	-0.15*	1.00													
(4) Private bureau	-0.19*	0.03*	0.17*	1.00												
(5) Firm auditing	-0.18*	-0.02	0.04*	0.24*	1.00											
(6) Private bank ownership	-0.03*	0.29*	0.17*	0.20*	0.05*	1.00										
(7) Foreign bank ownership	-0.09*	-0.09*	-0.07*	0.11*	0.09*	-0.67*	1.00									
(8) Government	-0.04*	-0.08*	-0.08*	-0.20*	0.06*	-0.10*	0.04*	1.00								
(9) Foreign	-0.09*	-0.06*	0.07*	0.18*	0.25*	0.02	0.02	-0.05*	1.00							
(10) Competitor	0.05*	-0.10*	-0.34*	-0.48*	-0.15*	-0.21*	-0.02	0.08*	-0.12*	1.00						
(11) Fair court	-0.11*	-0.19*	-0.07*	0.06*	0.10*	-0.02	-0.05*	0.08*	0.05*	0.05*	1.00					
(12) Law enforcement	-0.18*	-0.07*	0.04*	0.09*	0.08*	0.00	0.01	0.05*	0.03*	0.00	0.47*	1.00				
(13) General financing obstacle	0.26*	0.06*	-0.03*	-0.19*	-0.12*	-0.06*	0.01	0.04*	-0.15*	0.11*	-0.13*	-0.11*	1.00			
(14) Firm size	-0.14*	0.05*	0.34*	0.66*	0.35*	0.31*	-0.03*	-0.17*	0.26*	-0.52*	0.09*	0.09*	-0.20*	1.00		
(15) Exporter	-0.11*	-0.13*	0.00	0.02	0.22*	-0.04*	0.10*	0.07*	0.22*	-0.01	0.13*	0.07*	-0.03*	0.14*	1.00	
(16) Creditor rights	-0.10*	-0.05*	0.00	-0.11*	0.00	0.01	0.07*	0.09*	0.00	0.10*	0.13*	0.12*	-0.06*	-0.05*	0.14*	1.00
(17) Official supervisory power	0.12*	0.13*	0.05*	0.11*	0.02	0.00	0.13*	-0.06*	-0.01	-0.07*	0.01	0.01	0.08*	0.06*	-0.02	-0.18*
(18) Private monitoring index	-0.03*	0.36*	-0.14*	0.06*	0.07*	0.15*	-0.02	-0.11*	0.00	-0.12*	-0.14*	-0.09*	0.10*	0.07*	-0.07*	-0.21*
(19) GDP per capita	-0.22*	0.07*	0.24*	0.37*	0.03	-0.04*	0.21*	0.03*	0.02	-0.23*	0.05*	0.14*	-0.20*	0.23*	0.04*	0.04*
(20) Inflation	0.09*	0.11*	-0.22*	-0.34*	-0.08*	-0.10*	-0.04*	0.06*	-0.09*	0.26*	-0.06*	-0.06*	0.15*	-0.40*	-0.05*	-0.24*
(21) Government effectiveness	-0.25*	-0.23*	0.15*	0.49*	0.06*	-0.08*	0.21*	0.01	0.08*	-0.16*	0.22*	0.23*	-0.26*	0.26*	0.10*	0.08*
(22) Rule of law	-0.25*	-0.27*	0.20*	0.41*	0.09*	-0.07*	0.16*	0.02	0.09*	-0.14*	0.25*	0.25*	-0.27*	0.27*	0.13*	0.10*
(23) Voice and accountability	-0.26*	-0.28*	0.12*	0.44*	0.10*	-0.15*	0.26*	-0.01	0.09*	-0.16*	0.15*	0.16*	-0.26*	0.26*	0.08*	0.03
(24) Democracy	-0.12*	-0.03*	-0.18*	0.31*	0.10*	0.10*	-0.25*	-0.07*	0.08*	-0.13*	0.19*	0.08*	-0.14*	0.29*	0.08*	-0.02
(25) Openness	0.02	-0.23*	-0.12*	-0.06*	-0.10*	-0.06*	0.29*	0.12*	-0.07*	0.12*	0.06*	0.04*	-0.01	-0.21*	0.04*	0.38*
(26) Government bank ownership	0.11*	-0.16*	0.03*	-0.37*	-0.12*	-0.32*	-0.34*	0.06*	-0.04*	0.21*	0.03	-0.01	0.05*	-0.29*	-0.08*	-0.20*
	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)							
(18) Private monitoring index	0.10*	1.00														
(19) GDP per capita	-0.16*	-0.35*	1.00													
(20) Inflation	0.20*	0.21*	-0.34*	1.00												
(21) Government effectiveness	-0.12*	-0.37*	0.82*	-0.35*	1.00											
(22) Rule of law	-0.09*	-0.36*	0.79*	-0.44*	0.96*	1.00										
(23) Voice and accountability	-0.14*	-0.23*	0.74*	-0.46*	0.84*	0.87*	1.00									
(24) Democracy	-0.16*	-0.09*	0.30*	-0.22*	0.41*	0.44*	0.43*	1.00								
(25) Openness	0.15*	-0.11*	0.07*	-0.10*	0.20*	0.18*	0.23*	-0.21*	1.00							
(26) Government bank ownership	-0.02	-0.04*	-0.26*	0.26*	-0.26*	-0.21*	-0.20*	-0.08*	-0.33*							

Table 4

Lending corruption and the timeliness of loan loss recognition.

This table presents regression results that examine the relation between the timeliness of loan loss recognition and lending corruption using ordered probit regressions. Panel A presents the coefficients of the regression. Panel B presents analyses of the economic significance of various coefficients. In Panel C, we examine whether our evidence of a negative association between lending corruption and the timeliness of loan loss recognition is robust to the use of alternative measures of the timeliness of loan loss recognition. *Lending corruption* is the firm response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)." *LLR timeliness* is computed as the average ratio of loan loss reserves to next year's non-performing loans for each country and then assigned to each firm in our sample. The z-statistics are presented beneath the coefficients within parentheses. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Panel A: Primary test (ordered probit).

	Dependent variable = <i>Lending corruption</i>	
	(1)	(2)
<i>LLR timeliness</i>		– 0.188*** (6.05)
<i>Public registry</i>	0.119 (1.11)	– 0.079 (0.75)
<i>Private bureau</i>	– 0.322** (2.25)	– 0.334** (2.50)
<i>Firm auditing</i>	– 0.225*** (3.28)	– 0.254*** (3.80)
<i>Private bank ownership</i>	– 0.007* (1.92)	– 0.005** (1.97)
<i>Foreign bank ownership</i>	– 0.007* (1.68)	– 0.006** (2.41)
<i>Government</i>	– 0.173* (1.75)	– 0.203** (2.17)
<i>Foreign</i>	– 0.038 (0.60)	– 0.047 (0.74)
<i>Competitor</i>	– 0.045 (1.09)	– 0.040 (1.03)
<i>Fair court</i>	0.004 (0.21)	– 0.010 (0.58)
<i>Law enforcement</i>	– 0.122*** (5.70)	– 0.118*** (5.54)
<i>General financing obstacle</i>	0.231*** (10.58)	0.234*** (10.93)
<i>Firm size</i>	0.004 (0.47)	0.003 (0.39)
<i>Exporter</i>	– 0.123* (1.95)	– 0.149** (2.46)
<i>Creditor rights</i>	– 0.107*** (2.48)	– 0.101*** (2.74)
<i>Official supervisory power</i>	0.071**	0.098***

Table 4 (continued)

	Dependent variable = <i>Lending corruption</i>	
	(1)	(2)
	(2.00)	(3.28)
<i>Private monitoring index</i>	−0.103 (1.43)	−0.068 (1.25)
<i>GDP per capita</i>	−0.007 (0.10)	0.131* (1.71)
<i>Inflation</i>	−0.004 (0.71)	−0.003 (0.99)
<i>Government effectiveness</i>	0.288 (1.07)	0.109 (0.53)
<i>Rule of law</i>	−0.369 (1.39)	−0.377* (1.82)
<i>Voice and accountability</i>	−0.220*** (2.06)	−0.264*** (2.94)
<i>Democracy</i>	0.082 (0.64)	0.150 (1.20)
<i>Openness</i>	0.007*** (2.99)	0.006** (2.51)
Industry FE	Yes	Yes
Observations	3611	3611
Number of Countries	44	44
Pseudo R-squared	0.099	0.100

Panel B: Economic magnitude of the various predictors of lending corruption

		<i>Lending corruption</i> =			
		1 (59.98%) no obstacle	2 (18.72%) a minor obstacle	3 (10.33%) a moderate obstacle	4 (10.97%) a major obstacle
<i>LLR timeliness</i>	1 standard dev. Increase	0.096	−0.032	−0.029	−0.035
	Change from minimum to maximum	0.344	−0.114	−0.105	−0.125
<i>Private bureau</i>	Change from 0 to 1	0.127	−0.042	−0.039	−0.046
<i>Firm auditing</i>	Change from 0 to 1	0.098	−0.031	−0.030	−0.037
<i>Private bank ownership</i>	1 standard dev. Increase	0.049	−0.016	−0.015	−0.018
<i>Foreign bank ownership</i>	1 standard dev. Increase	0.070	−0.023	−0.021	−0.025
<i>Government</i>	Change from 0 to 1	0.075	−0.027	−0.023	−0.025
<i>Law enforcement</i>	1 standard dev. Increase	0.063	−0.021	−0.019	−0.023
<i>General financing obstacle</i>	1 standard dev. Increase	−0.099	0.033	0.030	0.036
<i>Exporter</i>	Change from 0 to 1	0.056	−0.019	−0.017	−0.020
<i>Creditor rights</i>	1 standard dev. Increase	0.043	−0.014	−0.013	−0.015
<i>Official supervisory power</i>	1 standard dev. Increase	−0.061	0.020	0.019	0.022
<i>GDP per capita</i>	1 standard dev. Increase	−0.058	0.019	0.018	0.021
<i>Rule of law</i>	1 standard dev. Increase	0.123	−0.041	−0.037	−0.045
<i>Voice and accountability</i>	1 standard dev. Increase	0.074	−0.025	−0.023	−0.027
<i>Openness</i>	1 standard dev. Increase	−0.041	0.014	0.012	0.015

To provide some comparison, Panel B also reports the effects of changes in the other statistically significant variables documented in Panel A. Having audited financial statements (a private bureau) leads to a 3.7% (4.6%) decrease in the probability that a firm will rate lending corruption as a major obstacle and a 9.8% (12.7%) increase in a firm rating lending corruption as no obstacle to growth. Finally, government firm ownership is associated with a 2.5% decrease in the

Table 5

The role of government ownership on the relation between lending corruption and the timeliness of loan loss recognition.

This table presents the results of the analyses of the effect of government ownership of the banking sector on the relation between lending corruption and the timeliness of loan loss recognition (H2a). *Lending corruption* is the firm response to the question “Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle).” *LLR timeliness* is computed as the average ratio of loan loss reserves to next year’s non-performing loans for each country and then assigned to each firm in our sample. *Government bank ownership* indicates the fraction of the banking system’s assets in the banks that are 50% or more owned by the government. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Dependent variable = <i>Lending corruption</i>	
	ordered probit (1)	OLS (2)
<i>LLR timeliness</i>	−0.286*** (5.27)	−0.219*** (4.47)
<i>Government bank ownership</i>	0.004 (1.12)	0.006** (2.05)
<i>LLR timeliness</i> × <i>Government bank ownership</i>	0.002* (1.92)	0.002** (2.20)
Controls	Yes	Yes
Industry FE	Yes	Yes
Observations	3611	3611
Number of Countries	44	44
Pseudo or Adj. R-squared	0.105	0.191

probability that a firm will rate lending corruption as a major obstacle and a 7.5% increase in a firm rating lending corruption as no obstacle to growth. Loan loss recognition timeliness seems important, relative to the other variables. This might not be surprising in light of the close conceptual link between loan loss recognition and lending corruption.

4.2. The role of market discipline in the relation between loan loss recognition timeliness and lending corruption

In this section, we examine our second hypothesis about how market discipline could affect the relation between the timeliness of loan loss recognition and lending corruption. In particular, we focus on two important institutional features of banking systems in many countries: government ownership of the banking system and deposit insurance. In H2a, we argue that even if corruption is revealed earlier due to more timely loan loss recognition, greater government ownership in the banking system reduces market discipline by bank investors because of the implicit government backing. It also reduces the likelihood of punishment being meted out to corrupt bank officers. Hence, we hypothesize that more timely loan loss recognition reduces corruption in bank lending less in countries where the government holds a more significant stake in the banking system. In H2b, we argue that deposit insurance reduces the likelihood of bank runs (a form of market discipline) when loan problems are revealed earlier. We hypothesize that more timely loan loss recognition reduces corruption in bank lending less in banking systems that have deposit insurance.

To examine the role of these institutional features, we modify Eq. (1) and interact *LLR timeliness* with a proxy for the institutional features being examined (*Institution*):

$$Lendingcorruption = \alpha + \beta_1 LLRtimelines + \beta_2 Institution + \beta_3 LLPtimelines \times Institution + Controls + \epsilon_t \quad (2)$$

where *Institution* is *Government bank ownership* in Section 4.2.1 and *Deposit insurance* in Section 4.2.2. Because of the difficulties involved with the interpretation of the coefficients on interaction terms in non-linear models, we estimate the interaction specification using both an ordered probit and an ordinary least squares (OLS) model (Angrist and Pischke, 2009).²⁰

4.2.1. Government ownership of the banking system (H2a)

Table 5 presents the results of the analyses of the effect of government bank ownership (*Government bank ownership*) on the relation between lending corruption and the timeliness of loan loss recognition.²¹ The coefficient of interest is on *LLR timeliness* × *Government bank ownership*. In the first column with the ordered probit regression specification, the coefficient is 0.002 (z-stat = 1.92). In the second column with the OLS regression specification, the coefficient is 0.002 (t-stat = 2.20). Hence, there is statistically significant evidence that in banking systems with higher government ownership, the association between more timely loan loss recognition and lending corruption is mitigated, consistent with H2a. To examine the economic magnitude of government bank ownership in moderating the relation between lending corruption and loan loss recognition timeliness, we consider the impact of increasing government ownership of the banking system by 10%. We find that this reduces the effect of loan loss recognition timeliness on lending corruption by 9% (=0.002*10/0.219).

²⁰ All our results are robust to the use of the predicted value of *LLR timeliness* in column 2 of Table 11 instead of *LLR timeliness* per se.

²¹ We exclude the *Private bank ownership* variable, because the sum of *Private bank ownership*, *Foreign bank ownership*, and *Government bank ownership* is equal to one.

Table 6

The role of deposit insurance on the relation between lending corruption and the timeliness of loan loss recognition.

This table presents the results of the analyses of the effect of deposit insurance on the relation between lending corruption and the timeliness of loan loss recognition (H2b). *Lending corruption* is the firm response to the question “Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle).” *LLR timeliness* is computed as the average ratio of loan loss reserves to next year’s non-performing loans for each country and then assigned to each firm in our sample. *Deposit insurance* is an indicator variable equal to one if the firm’s country has a deposit insurance scheme or if depositors were fully compensated the last time a bank failed, zero otherwise. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Dependent variable= <i>Lending corruption</i>	
	<i>ordered probit</i> (1)	<i>OLS</i> (2)
<i>LLR timeliness</i>	−0.236*** (5.81)	−0.187*** (5.27)
<i>Deposit Insurance</i>	−0.350* (1.79)	−0.376** (2.57)
<i>LLR timeliness</i> × <i>Deposit insurance</i>	0.266* (1.78)	0.221** (2.19)
Controls	Yes	Yes
Industry FE	Yes	Yes
Observations	3611	3611
Number of Countries	44	44
Pseudo or Adj. R-squared	0.105	0.191

4.2.2. Deposit insurance (H2b)

Table 6 presents the results of the effect of deposit insurance (*Deposit insurance*) on the relation between lending corruption and the timeliness of loan loss recognition.^{22, 23} The coefficient of interest is on *LLR timeliness* × *Deposit insurance*. In the first column with the ordered probit regression, the coefficient is 0.266 (*z*-stat=1.78). In the second column with the OLS regression specification, the coefficient is 0.221 (*t*-stat=2.19). Hence, there is statistically significant evidence that in banking systems with deposit insurance, the association between more timely loan loss recognition and lending corruption is mitigated, consistent with H2b. To compare the economic magnitude of the moderating impact of deposit insurance, we consider the difference in the effect of timely loan loss recognition under two regimes, one with and one without deposit insurance. In column 2, in contrast with the significant negative effect of *LLR timeliness* (−0.187 with *t*-stat=−5.27), we find that the sum of the coefficients on *LLR timeliness* and *LLR timeliness* × *Deposit insurance* is insignificant. One inference from this finding is that deposit insurance protection has eliminated depositors’ incentive to monitor the bank via timely information about loan losses.

4.3. Additional analysis

4.3.1. Private monitoring

An interesting result in our earlier analyses is that private monitoring does not have a significant association with lending corruption, a result similar to that from Barth et al. (2009) but different from Beck et al. (2006). Private monitoring is a composite construct made of different components (see the definition of *Private monitoring index* in the appendix). In untabulated tests, we replace *Private monitoring index* with its components. *LLR timeliness* continues to load in this specification. The only component of *Private monitoring index* that has a statistically significant coefficient is *NPL interest*, which loads negatively. *NPL Interest* is an indicator variable equal to one if income statements do not contain accrued but unpaid interest for non-performing loans, zero otherwise.²⁴ This result suggests that lending corruption is curtailed by accounting rules that do not allow the unpaid interest of non-performing loans to be included as earnings.

As a further analysis, we examine whether there is any substitution between *LLR timeliness* and *NPL interest* because the above results suggest that they are both accounting-based disciplinary mechanisms that curtail lending corruption. Table 7 presents the results. The statistically significant interaction term between *NPL interest* and *LLR timeliness*, −1.143 (*z*-stat=5.71), suggests that when the income statement does not accrue unpaid interest for non-performing loans, more timely loan loss recognition exerts a smaller effect on lending corruption. Hence, there appears to be a substitution effect between loan loss recognition timeliness and the accrual of unpaid interest in reducing lending corruption.

An important follow-up question, given the evidence of a substitution effect, is whether more timely loan loss recognition reduces lending corruption in both subsamples of firms with *NPL interest* equaling zero and one. We use the results to compute the effect for the subsample where *NPL interest* is equal to one. The Chi-square statistic for the sum of *LLR timeliness*

²² We exclude the variable *Private monitoring index* since *Deposit insurance* is one component of the index.

²³ The countries in our sample without deposit insurance are Botswana, Pakistan, Panama, Russia, Senegal, South Africa, Uruguay, and Zimbabwe.

²⁴ Within our sample, 84.1% of the observations have a value of 1 for *NPL Interest*.

Table 7

The role of other private monitoring mechanisms on the relation between lending corruption and the timeliness of loan loss recognition.

This table presents results from the analyses of the effect of other private monitoring mechanisms on the relation between lending corruption and the timeliness of loan loss recognition using ordered probit regressions. *Lending corruption* is the firm response to the question “Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle).” *LLR timeliness* is computed as the average ratio of loan loss reserves to next year’s non-performing loans for each country and then assigned to each firm in our sample. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Dependent variable = <i>Lending corruption</i>
<i>LLR timeliness</i>	– 0.859*** (6.43)
<i>NPL interest</i>	– 1.143*** (5.71)
<i>NPL interest</i> × <i>LLR timeliness</i>	0.684*** (4.77)
Controls	Yes
Industry FE	Yes
Observations	3611
Number of Countries	44
Pseudo R-squared	0.110

and the interaction term between *NPL interest* and *LLP timeliness* is 42.26 ($p < 0.01$), indicating that *LLR timeliness* is associated with less lending corruption in the subsample where *NPL interest* is equal to one. Second, we run the regression separately for the subsample where *NPL interest* is equal to one. *LLR timeliness* continues to be statistically significant in this subsample (z -stat=5.36). A one standard deviation increase in *LLR timeliness* is associated with a 3.1% decrease (an 8.6% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle) to growth. Hence, while there is a substitution effect, as discussed earlier, it is present in the larger subsample of firms with income statements that do not accrue unpaid interest for non-performing loans.

4.3.2. Alternative measures of the timeliness of loan loss recognition

Table 8 presents the results of the analyses that examine the robustness of our results to alternative measures of the timeliness of loan loss recognition. The first measure is the ratio of loan loss reserves to non-performing loans, with both the numerator and denominator measured at time t (Beatty and Liao, 2011). Second, when computing the average for a country, we weight each bank’s loan loss reserve timeliness by the size of its loans, because one might argue that larger banks, and thus larger banks’ loan loss recognition timeliness, are relatively more important to the country. Our third measure is *LLR timeliness*, estimated from 1995–1999. We estimate this proxy to help reduce concerns about the simultaneous determination of *LLR timeliness* and *Lending corruption* or reverse causality.²⁵

For our fourth measure, we estimate loan loss recognition timeliness by country, following Bushman and Williams (2012). First, we estimate the following regression for each country:

$$LLP_{jt} = \gamma_0 + \gamma_1 Ebllp_{jt} + \gamma_2 \Delta NPL_{t+1j} + \gamma_3 \Delta NPL_{tj} + \gamma_4 \Delta NPL_{t-1j} + \gamma_5 \Delta NPL_{t-2j} + \gamma_6 CAP_{t-1j} + \gamma_7 Size_{t-1j} + \gamma_8 \% \Delta GDP_{jt} + \epsilon_{jt}, \quad (3)$$

where LLP_{jt} is the loan loss provision scaled by lagged total loans for bank j in year t . $Ebllp_{jt}$ is earnings before loan loss provisions and taxes for period t scaled by lagged total loans. ΔNPL_{t+1j} is the change in non-performing loans over the period $t+1$ scaled by lagged total assets. Loan loss recognition timeliness is measured as γ_2 if the coefficient is statistically different from zero and zero otherwise. This coefficient captures how loan loss provisions predict future changes in loan portfolio performance while controlling for current and past deteriorations in the loan portfolio.

The country-level values of the four alternative measures are shown in Appendix B. The results for each measure are tabulated in Table 8. The coefficients with the alternative proxies are –0.136 (z -stat=5.65) in column 1, –0.278 (z -stat=3.68) in column 2, –0.106 (z -stat=3.55) in column 3, and –0.838 (z -stat=2.92) in column 4. A one standard deviation increase in Bushman and Williams (2012) measure (column 4) is associated with a 2% decrease (a 6% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle) to growth. Hence, our conclusion that more timely loan loss recognition is associated with less lending corruption remains robust to the use of alternative proxies for timely loss recognition.²⁶

²⁵ Over this period, there are fewer countries for which we can compute *LLR timeliness* because BankScope’s coverage is thinner.

²⁶ We also reexamine our other results using Bushman and Williams’s (2012) measure because it has been used in other cross-country studies. With this measure, all of the results are significant at the 10% level at least, except for two cases in Table 10, Panel B (the tests related to uneven representation across countries). In columns (2) and (4), we observe negative coefficients with z -statistics equal to 1.44 and 1.58, respectively.

4.3.3. Additional control variables

While we rely on [Barth et al. \(2009\)](#) to derive our baseline regression specification, we examine whether our earlier evidence of a negative association between lending corruption and the timeliness of loan loss recognition is robust to variations in the control variables.

In [Table 9](#), Panel A, we include additional characteristics of the banking system within a country. Using the data from BankScope, we calculate the means of non-performing loans, capital ratios, earnings before loan loss recognition, the proportion of loans with a maturity of more than five years, and the proportion of commercial and industrial loans for each country over 1995–2006 (the same period for which we estimate *LLR timeliness*). Note that *LLR timeliness* is a characteristic of the banking system within a country. We continue to find that *LLR timeliness* is significantly associated with lower *Lending corruption* when controlling for these variables separately and simultaneously.

In Panel B, we assess the sensitivity of our results to controlling for country-level variables related to corporate governance environment. In column 1, we include income smoothing, which likely pertains to the quality of banks' internal control, estimated following [Bushman and Williams \(2012\)](#). We do not find a significant coefficient on income smoothing (0.030, p-value = 0.15). In columns 2 and 3, we control for the two well-known indices constructed in [Djankov et al. \(2006\)](#) that capture the quality of law in mitigating self-dealing activities. Columns 4 and 5 present results controlling for the proportion of banks audited by Big 4 auditors and the proportion adopting US GAAP/IFRS, two variables that capture the general reporting environment. Our results are robust to including these variables separately or all of them simultaneously.

In Panel C, we follow the prior lending corruption literature and test whether the effect of our loan loss recognition timeliness can be subsumed by other mechanisms that have been shown to reduce lending corruption. We include bank concentration and entry barriers from [Barth et al. \(2009\)](#) and state ownership of media for press, television, and radio stations from [Houston et al. \(2011\)](#). Taking the lowest coefficient (column 4) as an example, a one standard deviation increase in *LLR timeliness* is associated with a 2.1% decrease (a 6.3% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle) to growth. The results suggest that the effect of timely loan loss recognition is not driven by any of the mechanisms documented in the existing literature, highlighting our contribution: the identification of an important accounting property that helps mitigate lending corruption.

4.3.4. Tests to examine the sensitivity of results to data limitations

Similar to other papers that have examined the determinants of lending corruption, our study is constrained by the fact that the identity of each survey respondent is confidential. In the case of our study, it would be better if we could match each survey respondent to the loan loss recognition timeliness of the bank(s) with which the respondent has dealings. However, data limitations prevent us from doing so. Hence, our study, similar to prior studies, has to match each respondent to country-level constructs (e.g., supervisory power and private monitoring in [Beck et al. \(2006\)](#), competition and information sharing in [Barth et al. \(2009\)](#), and media ownership in [Houston et al. \(2011\)](#)). This is likely to introduce noise because one might argue that the interaction between each bank and its specific customers could vary within each country.

In [Table 10](#), we test the robustness of our results to the above data limitations. First, we aggregate all of our firm-specific variables to the country level by taking the mean, and then estimate Eq. (1) at the country level in Panel A, column 1. This approach treats each country equally and mitigates concerns related to the uneven representation across countries. [Fig. 1](#) shows the plot of the country means of *Lending corruption* against *LLR timeliness*. In column 2, Thailand, Azerbaijan, and Ecuador are dropped for being outliers. In column 3, we follow [Song et al. \(2010\)](#) by deleting observations (Thailand and Lithuania) that have a studentized residual greater than 2 after running the regression in column 1. We observe that timely loan loss recognition is negatively associated with lending corruption in each of these three specifications.

Table 8

Alternative measures of timeliness of loan loss recognition.

This table presents regression results that examine the relation between the timeliness of loan loss recognition and lending corruption using ordered probit regressions. In this table, we examine whether our evidence of a negative association between lending corruption and the timeliness of loan loss recognition is robust to the use of alternative measures of the timeliness of loan loss recognition. *Lending corruption* is the firm response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)." *LLR timeliness* is computed as the average ratio of loan loss reserves to next year's non-performing loans for each country and then assigned to each firm in our sample. The z-statistics are presented beneath the coefficients within parentheses. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Dependent variable = <i>Lending corruption</i>			
	Country average of ALL_t/NPL_t	Country average of ALL_t/NPL_{t+1} , weighted by total loans	Country average of ALL_t/NPL_{t+1} , Estimated 1995–1999	The coefficient on ΔNPL_{t+1} (Bushman and Williams 2012)
	(1)	(2)	(3)	(4)
Alternative Measures of <i>LLR timeliness</i>	–0.136*** (5.65)	–0.278*** (3.68)	–0.106*** (3.55)	–0.838*** (2.92)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	3611	3611	2246	3611
Number of Countries	44	44	27	44
Pseudo R-squared	0.105	0.102	0.121	0.097

Table 9

Robustness to addition of control variables.

This table presents three sets of robustness analyses using ordered probit regressions. In Panel A, we examine whether the evidence is robust to the inclusion of additional bank characteristics (aggregated at the country level) as control variables using BankScope data. *Non-performing Loans* is non-performing loans scaled by lagged total loans outstanding. *Capital Ratio* is the book value of equity scaled by total assets. *Earnings Before LLP* is earnings before taxes and loan loss provisions scaled by lagged total loans. *Proportion of long-term loans* is loans with a maturity of more than five years scaled by total loans. *Proportion of C&I loans* is commercial and industrial loans scaled by total loans. In Panel B, we control for variables related to corporate governance and the financial reporting process. *Income smoothing* is computed following [Bushman and Williams \(2012\)](#) for each country and then assigned to each firm in our sample. We regress loan loss provisions at time t on earnings before loan loss provisions; changes in non-performing loans at time $t+1$, t , $t-1$, and $t-2$; lagged capital ratio; lagged bank size; and the percentage change in GDP per capita for each country. *Income smoothing* is the coefficient on earnings before loan loss provisions if statistically significant, zero otherwise. *Anti-director Rights Index* and *Anti-self-dealing Index* are obtained from La Porta's website, constructed in [Djankov et al. \(2006\)](#). *Proportion of Big4 Auditors* is the fraction of banks audited by the Big 4 auditors. *Proportion of US GAAP/IFRS* is the fraction of banks using US GAAP or IFRS. Finally, in Panel C, we control for bank competition and media ownership. *Bank Concentration* is the fraction of total assets held by the five largest banks in the industry. *Entry Barrier* is developed by [Barth et al. \(2006\)](#), based on eight questions about whether various types of legal submission are required to obtain a banking license. *Press State Ownership* is the market share of state-owned newspapers out of the aggregate market share of the five largest daily newspapers by circulation. *TV State Ownership* is the market share of taste-owned television stations out of the aggregate market share of the five largest television stations by viewership. *State-owned Radio* is an indicator equal to one if the top radio station is state owned and zero otherwise. The dependent variable in each regression is *Lending corruption*, which is the firm response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)." *LLR timeliness* is computed as the average ratio of loan loss reserves to next year's non-performing loans for each country and then assigned to each firm in our sample. The z-statistics are presented beneath the coefficients within parentheses. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Panel A: Controlling for additional bank variables (at the country level)

	<i>Non-performing Loans</i> (1)	<i>Capital Ratio</i> (2)	<i>Earnings Before LLP</i> (3)	<i>Proportion of Long-term Loans</i> (4)	<i>Proportion of C&I Loans</i> (5)	<i>All of (1)-(5)</i> (6)
<i>LLR timeliness</i>	-0.188*** (6.08)	-0.189*** (6.05)	-0.192*** (5.66)	-0.188*** (6.17)	-0.188*** (5.95)	-0.194*** (5.54)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3611	3611	3611	3611	3611	3611
Number of Countries	44	44	44	44	44	44
Pseudo R-squared	0.105	0.105	0.105	0.105	0.105	0.105

Panel B: Controlling for additional country variables

	<i>Income Smoothing</i> (1)	<i>Anti-director Rights Index</i> (2)	<i>Anti-self-dealing Index</i> (3)	<i>Proportion of Big4 Auditors</i> (4)	<i>Proportion of US GAAP/IFRS</i> (5)	<i>All of (1)-(5)</i> (6)
<i>LLR timeliness</i>	-0.189*** (6.04)	-0.178*** (6.14)	-0.178*** (6.57)	-0.191*** (5.15)	-0.210*** (6.36)	-0.211*** (6.51)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3611	3182	3182	3611	3611	3182
Number of Countries	44	37	37	44	44	37
Pseudo R-squared	0.105	0.101	0.101	0.105	0.106	0.102

Panel C: Controlling for bank competition and media ownership

	<i>Bank Concentration</i> (1)	<i>Entry Barrier</i> (2)	<i>Press State Ownership</i> (3)	<i>TV State Ownership</i> (4)	<i>State-owned Radio</i> (5)	<i>All of (1)-(5)</i> (6)
<i>LLR timeliness</i>	-0.178*** (6.25)	-0.196*** (6.60)	-0.192*** (5.21)	-0.125*** (2.79)	-0.133*** (3.70)	-0.175*** (3.72)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3530	3611	3042	3042	2952	2952
Number of Countries	43	44	36	36	35	35
Pseudo R-squared	0.11	0.106	0.114	0.114	0.1	0.105

In Panel B, we continue to explore issues related to uneven representation across countries to assess the generalizability of our results. In column 1, we exclude the top 10 countries with the largest numbers of firms (see [Table 2](#)).²⁷ In column 2, we estimate

²⁷ The number of observations drops to 33 because two countries are tied for tenth with the same number of firms. So, in this test, we actually drop 11 countries.

Table 10

Robustness analyses for data limitations.

This table presents three sets of robustness analyses. In Panel A, we examine whether the evidence is robust to country-level ordinary least squares regressions. All the firm-level variables are averaged at the country level. Column 1 presents the results using 44 countries. In column 2, Thailand, Azerbaijan, and Ecuador are dropped as outliers. In column 3, we follow Song et al. (2010) by deleting observations (Thailand and Lithuania) that have studentized residuals greater than two after running the regression in column 1. In Panel B, we run ordered probit regressions to determine whether the evidence is robust to the uneven representation of borrowing firms across countries. Finally, in Panel C, we run ordered probit regressions to determine whether the evidence is robust to potential measurement errors in estimating *LLR timeliness* and in matching borrowers (from WBES) to banks (from BankScope). The dependent variable in each regression is *Lending corruption*, which is the firm response to the question "Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)." *LLR timeliness* is computed as the average ratio of loan loss reserves to next year's non-performing loans for each country and then assigned to each firm in our sample. The *t/z*-statistics are presented beneath the coefficients within parentheses. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels.

Panel A: Country-level regression.

	Dependent variable = <i>Lending corruption</i> (country mean)		
	(1)	(2)	(3)
<i>LLR timeliness</i>	−0.188*** (2.99)	−0.153** (2.80)	−0.188*** (4.35)
Controls	Yes	Yes	Yes
Observations	44	41	42
Adj. R-squared	0.658	0.639	0.789

Panel B: Tests related to uneven representation across countries

	Excluding # Firms Top 10 Countries (1)	Weighted ordered probit by 1/# Firms (2)	Excluding GDP/# Firms Top 10 Countries (3)	Weighted ordered probit by 1/(GDP/# Firms) (4)
<i>LLR timeliness</i>	−0.258*** (4.39)	−0.193*** (5.42)	−0.168*** (5.94)	−0.174*** (4.17)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	2169	3611	2877	3611
Number of Countries	33	44	34	44
Pseudo R-squared	0.124	0.119	0.098	0.139

Panel C: Tests related to potential errors in estimating *LLR timeliness* and in matching borrowing firms to banks

	Excluding 10 Countries with Fewest # Banks (1)	Weighted ordered probit by # Banks (2)	Excluding 10 Countries with Most # Banks (3)	Weighted ordered probit by 1/# Banks (4)	Excluding 10 Countries Highest # Banks/# Firms (5)	Weighted ordered probit by 1/(# Banks/# Firms) (6)
<i>LLR timeliness</i>	−0.189*** (5.55)	−0.169** (2.54)	−0.178*** (5.50)	−0.156*** (4.07)	−0.176*** (5.64)	−0.165*** (5.11)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3013	3611	2817	3611	2965	3611
Number of Countries	34	44	34	44	34	44
Pseudo R-squared	0.099	0.148	0.104	0.138	0.102	0.135

an ordered probit model weighted by the inverse of the number of firms per country. Our results are robust to these two approaches. Then we calculate the ratio of the country's GDP in 2000 to the number of firms in that country, to capture how disproportionately a country is represented in the survey relative to the size of its economy. We exclude the top 10 countries with the highest ratios in column 3 and estimate an ordered probit model weighted by the inverse of this ratio per country in column 4. We continue to find a negative association between timely loan loss recognition and lending corruption.

In Panel C, we test whether our results are sensitive to potential errors in estimating *LLR timeliness* or to matching borrowing firms in the WBES to banks in BankScope. The estimation of *LLR timeliness* for countries with fewer bank observations likely suffers from greater measurement error. Thus, we exclude the 10 countries with the fewest bank-year observations in column 1, and estimate an ordered probit model weighted by the number of bank-years per country in column 2. Borrowers' responses to the survey may not reflect an average bank's lending practices in a country with a large number of bank-year observations or a large number relative to the number of borrowing firms. To account for this potential matching error, we exclude the 10 countries with the largest numbers of

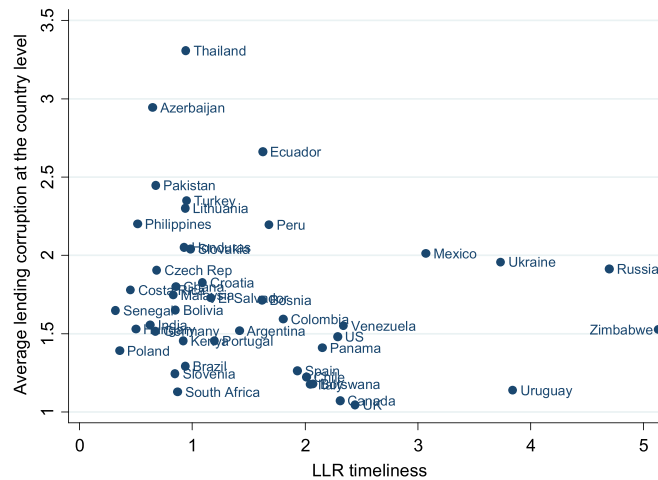


Fig. 1. Average bank lending corruption and LLR timeliness.

bank-year observations (the highest ratios of the bank-year sample size to the firm sample size) in column 3 (5), and estimate an ordered probit model weighted by the inverse of the number of bank-years per country (the ratio of the bank-year sample size to the firm sample size) in column 4 (6). The magnitude of the coefficients on *LLR timeliness* declines slightly, but we continue to observe a statistically significant negative association between lending corruption and timely loan loss recognition. Taking the lowest coefficient (column 4) as an example, a one standard deviation increase in *LLR timeliness* is associated with a 3.1% decrease (an 8.2% increase) in the probability that a firm would rate lending corruption as a major obstacle (no obstacle) to growth.

4.3.5. Instrumental variable regression

We now rely on the standard instrumental variable (IV) approach to examine whether timely loan loss recognition has an effect on lending corruption. While we have included an extensive array of control variables, to the extent that we have not controlled for institutional features (e.g., culture) that affect both loan loss recognition timeliness and lending corruption, there could be correlated omitted variables. In addition, to the extent that managers can influence loan loss provisioning due to a weak separation of duties, one might argue that loan officers in a banking system with more lending corruption delay loan loss recognition to hide the losses that arise from corrupt lending. In the case of our study, a good instrument is one that is a significant determinant of timely loan loss recognition without (arguably) having a direct effect on lending corruption (Larcker and Rusticus, 2010).

Some countries allow banks to deduct their loan loss provisions for tax purposes, thereby creating an incentive for banks in those countries to provide timely loan loss recognition (Nichols et al., 2009). To proxy for tax incentives that would encourage earlier loan loss recognition, we argue that a bank's tax incentives for providing timely loss provisioning increase with both the deductibility of the provisions and the corporate tax rate. Neither factor is likely to be under the bank's direct influence, which supports the validity of the instrument. A review of the literature on lending corruption indicates that no paper has considered that tax deductibility and tax rates could have a direct effect on lending corruption, increasing the likelihood that the instrument satisfies the exclusion condition (Adams and Ferreira, 2009).²⁸

To construct the instrument, we use *Tax deductible*, which is the average corporate tax rate if specific loan loss provisions are tax deductible for a particular country, zero otherwise. We use specific provisions because general provisions are usually determined at the portfolio level, based on past average loan losses and forecasts of macroeconomic conditions. As such, they are less related to individual loans. In contrast, specific provisions are tied to individual loans and better reveal bad loans due to lending corruption. The higher *Tax deductible* is, the greater banks' incentive to record timely loan loss recognition for tax purposes.²⁹ To implement the instrumental variables approach, we use an IV probit regression specification.

In column 1 of Table 11, we first estimate a probit model where the dependent variable is an indicator equal to zero if a firm's response is "no obstacle" to the question of whether lending corruption is an obstacle and one if the firm's response is a "minor", "moderate", or "major" obstacle. The coefficient on *LLR timeliness* is significantly negative. Columns 2 and 3 present the results of the IV probit regressions. In the first stage, we have *LLR timeliness* as the dependent variable and *Tax deductible* as an instrument. As expected, *Tax deductible* has a positive and significant coefficient. The second stage regression examines the effect of timely loan

²⁸ Desai et al. (2007) suggest that tax rates and corruption could be connected via corporate governance. They do not directly examine the tax deductibility of loan loss reserves or lending corruption. To the extent that there is a direct effect of tax rates on lending corruption, our instrument might not satisfy the exclusion restriction assumption. As a result, our finding needs to be interpreted with caution.

²⁹ The information on whether loan loss provisions are deductible is gathered from Barth et al. (2006) and Laurin and Majnoni (2003). We exclude observations from the United States from this analysis to avoid concerns about size-based tax deductibility. We also remove Pakistan, where private commercial banks cannot deduct loan loss provisions from taxable income while nationalized banks can. Finally, we remove Brazil, Kenya, Poland, and the Czech Republic, where deductibility depends on borrowers' and loans' status, which could be directly related to lending corruption (Barth et al., 2006; Laurin and Majnoni, 2003). We obtain the average corporate tax rate from the KPMG Tax Rate Survey (1995–2006). If the tax rate is missing for a year, we impute the rate from the year closest to it.

Table 11

Instrumental variable analysis.

This table presents the results of probit and IV probit regressions used to examine the effect of loan loss recognition timeliness on lending corruption. The dependent variable in columns (1) and (3) is equal to one if the firm response to the question “Is the corruption of bank officials an obstacle for the operation and growth of your business (1-no obstacle, 2-minor obstacle, 3-a moderate obstacle, 4-major obstacle)” is equal to 2, 3, or 4 and zero if the response is equal to 1. The dependent variable in Column (2) is *LLR timeliness*, which is the average ratio of loan loss reserves to next year’s non-performing loans for each country and then assigned to each firm in our sample. The instrumental variable used in the first stage is *Tax deductible*, the average corporate tax rate across 1995–2006 if the loan loss provisions (for specific purposes) are tax deductible for a particular country, zero otherwise. For missing corporate tax rates, we chose the rate from the year closest to it. We delete countries where deductibility depends on banks’ or loans’ status. This status might be directly correlated with lending corruption and thus compromise the exclusion restriction for a valid instrumental variable. The results of the tests of the validity of the IV approach are reported at the bottom of the table. The control variables are as previously defined. Standard errors are clustered by country. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Probit	IV probit	
	(1)	1st stage (2)	2nd stage (3)
<i>LLR timeliness</i>			–0.233***
–0.182*** (2.64)		(6.53)	
<i>Tax deductible</i>		0.048*** (3.30)	
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	3098	3098	3098
Number of Countries	38	38	38
Pseudo R-squared	0.161		
Tests of weak instrument: Partial F-statistic		10.37***	
Test of no endogeneity: Chi-squared			3.20*

loss recognition using the instrumented *LLR timeliness*. The coefficient on this variable is negative and statistically significant at the 1% level in the second stage, consistent with more timely loan loss recognition reducing lending corruption.³⁰ We caution that the analysis in this section relies on the validity of tax deductibility as an instrument. We acknowledge the difficulty of finding a good instrument, especially for cross-country studies, and note that the analysis in this section is intended to simply provide some supplementary evidence about the effect of loan loss recognition timeliness on lending corruption.

4.3.6. Additional robustness analyses

In additional analysis, we estimate our primary tests separately within subsamples of firms that actually receive financing and those that do not. Our results hold for both subsamples and are slightly stronger for firms without bank financing. We also examine these tests after winsorizing *LLR timeliness* at the top and bottom 5% levels and after omitting one country at a time; in both cases, our inferences are not affected. Dropping the ten countries with the lowest GDP per capita or estimating an ordered probit weighted by GDP per capita does not alter our inferences, suggesting that our finding is not merely a developing country phenomenon. Finally, our results are robust to dropping countries with less than 25 bank-years.

5. Conclusion

It is important to control corruption, which is widespread throughout the world and which has existed throughout history (Klitgaard, 1988). Corruption imposes a steep cost on society and can become normalized in organizations due to reinforcing processes such as institutionalization, rationalization, and socialization (Ashforth and Anand, 2003). Without proper constraints, individuals (and groups of individuals) will be tempted to engage in corruption, and such behavior can become so embedded within an organization that it is more or less taken for granted and perpetuated. Financial reporting is expected to hold an important stewardship role in reducing agency problems.

³⁰ The partial R-squared for the first stage is 0.11. The test of endogeneity indicates that there is evidence (Chi-squared statistics=3.20) for rejecting the null hypothesis that *LLR timeliness* and *Lending corruption* are exogenous. This result provides support for using the instrumental variables approach. The partial F-statistic is statistically significant (F-stat=10.37), indicating that *Tax deductible* is a powerful instrument.

The prior literature examining controls on lending corruption has considered information in general while largely ignoring loan loss information specifically. Given the emerging literature on the importance of timely loan loss recognition (e.g., Beatty and Liao, 2011; Bushman and Williams, 2012) and accounting regulators' debate about timely loan loss recognition, we examine whether early loan loss recognition is associated with lending corruption in an important and powerful setting. Our key result is that lending corruption is lower when loan loss recognition is more timely.

The presence of an early warning mechanism such as timely loan loss recognition is likely to be useful to the extent that there are parties who will use the information to discipline the banks. Hence, we examine the effect of timely loss recognition on lending corruption conditional on the extent to which stakeholders have incentives to use relevant information to monitor the banks. Specifically, we consider the market discipline imposed on banks by equity investors and depositors. We expect that investors will monitor banks less when a significant portion of the banking system is owned by the government because of the implicit government support. We also expect depositors to do the same in the presence of deposit insurance. We find evidence consistent with these predictions.

To conclude, an important takeaway from our paper is that more timely loan loss recognition, by acting as an early warning system, may have the important ex-ante effect of constraining lending corruption. Future research could investigate whether more timely loan loss recognition by lenders actually leads to firms' greater investment efficiency and affects economic growth.

Appendix A

See Table A1.

Table A1
Variable definitions.

Variable	Definition (data items in parentheses)	Original source
<i>Lending corruption</i>	Firm response to the question (corr), "Is the corruption of bank officials an obstacle for the operation and growth of your business?" (1—no obstacle, 2—minor obstacle, 3—a moderate obstacle, 4—major obstacle.)	World Business Economic Survey (WBES) (2000)
<i>LLR timeliness</i>	<i>LLR timeliness</i> is computed as the average ratio of loan loss reserves (data2070) to next-year, non-performing loans (data2170) for each country and then assigned to each firm in our sample.	Our calculations using Bankscope
<i>Public registry</i>	Indicator variable equal to one if a public credit registry operates in the country by the end of 1999 and zero otherwise.	Djankov, McLiesh, and Shleifer (2007)
<i>Private bureau</i>	Indicator variable equal to one if a private credit bureau is operating in the country by the end of 1999 and zero otherwise.	Djankov, McLiesh, and Shleifer (2007)
<i>Firm auditing</i>	Indicator variable (afs_yn) equal to one if the firm provides its shareholders with annual financial statements that have been reviewed by an external auditor, zero otherwise.	WBES (2000)
<i>Private bank ownership</i>	The fraction of the banking system's assets in the banks that are 50% or more owned by private investors (question 3.8).	Barth, Caprio, and Levine (2006)
<i>Foreign bank ownership</i>	The fraction of the banking system's assets in the banks that are 50% or more owned by foreign investors (question 3.8).	Barth, Caprio, and Levine (2006)
<i>Government</i>	Indicator variable (gvt_yn) equal to one if any government agency or state body has a financial stake in the ownership of the firm and zero otherwise.	WBES (2000)
<i>Foreign</i>	Indicator variable (frk_yn) equal to one if any foreign company has a financial stake in the ownership of the firm and zero otherwise.	WBES (2000)
<i>Competitor</i>	Number of competitors, as perceived by the company manager (ncmpcat).	WBES (2000)
<i>Fair court</i>	A firm-level survey indicator (fi_crt) measuring the enforceability of a court decision, increasing in fairness. 'In resolving a business dispute, do you believe your country's court system to be fair and impartial?' (0—never, 1—seldom, 2—sometimes, 3—frequently, 4—usually, 5—always. A higher value indicates better court quality.)	WBES (2000)
<i>Law enforcement</i>	A firm-level survey indicator (enf_crt) measuring the fairness and impartiality of a court decision, increasing in fairness. 'In resolving a business dispute, do you believe your country's court system to be decision enforced?' (0—never, 1—seldom, 2—sometimes, 3—frequently, 4—usually, 5—always. A higher value indicates better law enforcement.)	WBES (2000)
<i>General financing obstacle</i>	A firm-level survey response (gcf) to "how problematic is financing for the operation and growth of your business?" (1—no obstacle, 2—a minor obstacle, 3—a moderate obstacle, 4—a major obstacle.)	WBES (2000)
<i>Firm size</i>	Natural log of firm sales in US dollars (vsal).	WBES (2000)
<i>Exporter</i>	Indicator variable (exp_yn) equal to one if the firm is an exporter and zero otherwise.	WBES (2000)
<i>Creditor rights</i>	An index that measures the power of secured lenders in bankruptcy defined in laws and regulations, ranging from zero to four, increasing in creditor rights.	Djankov et al. (2007)

Table A1 (continued)

Variable	Definition (data items in parentheses)	Original source
Official supervisory power	The principal component of 14 indicator variables: (1) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank (question 5.5)? (2) Are auditors required by law to communicate directly with the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse (question 5.6)? (3) Can supervisors take legal action against external auditors for negligence (5.7)? (4) Can the supervisory authority force a bank to change its internal organizational structure (question 6.1)? (5) Are off-balance-sheet items disclosed to supervisors (question 10.4)? (6) Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses (question 11.2)? (7–9) Can the supervisory agency suspend the directors' decision to distribute: (a) Dividends (question 11.3.1)? (b) Bonuses (question 11.3.2)? (c) Management fees (question 11.3.3)? (10) Can the supervisory agency legally declare—such that this declaration supersedes the rights of bank shareholders—that a bank is insolvent (question 11.6)? (11) Does the Banking Law give authority to the supervisory agency to intervene, that is, to suspend some or all ownership rights of a problem bank (question 11.7)? (12–14) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: (a) Supersede shareholder rights (question 11.9.1)? (b) Remove and replace management (question 11.9.2)? (c) Remove and replace directors (question 11.9.3)?	Barth et al. (2006)
Private monitoring index	The principal component of nine indicator variables that measure (1) whether bank officials are legally liable for the accuracy of disclosed information (question 10.6); (2–5) whether banks disclose to the public information such as consolidated accounts (question 10.3), off-balance-sheet items (question 10.4.1), accrued unpaid interest of non-performing loans (question 10.1.1), or risk management procedures (question 10.5); (6) whether banks must be audited by certified international auditors (questions 5.1 and 5.3); (7) whether the largest ten banks are rated by international and domestic rating agencies (question 10.7.1); (8) whether subordinated debt is allowable as a part of capital (question 3.5); and (9) whether there is no explicit deposit insurance system (question 8.1) and no insurance was paid the last time a bank failed (question 8.4).	Barth et al. (2006)
GDP per capita	Natural log of gross national product per capita in 1999.	World Bank website
Inflation	Three year average inflation (1998–2000), GDP deflator.	World Bank website
Government effectiveness	Measuring 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, increasing in the quality of public and civil service.	Kaufmann et al. (2006)
Rule of law	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, increasing in the rule of law.	Kaufmann et al. (2006)
Voice and accountability	The extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, association, and media, increasing in political rights.	Kaufmann et al. (2006)
Democracy	Indicator variable equal to one if the country was democratic during all years between 1950 and 2000.	Treisman (2000)
Openness	Imports as a share of GDP in 2000.	World Bank (2000)
Tax deductible	The average corporate tax rate across 1995–2006 if the loan loss provisions (for specific purposes) are tax deductible (question 9.8.1) for a particular country and zero otherwise. For missing corporate tax rates, we chose the rate from the year closest to it. We delete countries where deductibility depends on banks' or loans' status. This status might be directly correlated with lending corruption and thus compromise the exclusion restriction for a valid instrumental variable.	Barth et al. (2006)/Laurin and Majnoni (2003)/KPMG Tax Rate Survey 1995–2006
Government bank ownership	The fraction of the banking system's assets in the banks that are 50% or more owned by the government (question 3.8).	Barth et al. (2006)
Deposit insurance	Indicates whether there is a deposit insurance scheme (question 8.1) or, if not, whether depositors were fully compensated the last time a bank failed (question 8.4).	Barth et al. (2006)
Industry Categories	We use the variable <i>actdummy</i> in WBES (2000): 1—manufacturing, 2—service, 3—other, 4—agriculture, 5—construction. If <i>actdummy</i> is missing, we use the other variable <i>sector</i> in WBES (2000): 1—manufacturing, 2—service.	WBES (2000)
NPL interest	Indicator variable equal to one if income statements do not contain accrued but unpaid interest for non-performing loans, zero otherwise.	Barth et al. (2006)

Appendix B

See Table B1.

Table B1
Alternative measures of LLR timeliness and the instrumental variable.

Country	(1)	(2)	(3)	(4)	(5)	Country	(1)	(2)	(3)	(4)	(5)
Argentina	0.876	1.420		−0.078	0.000	Malaysia	0.679	0.600	0.679	−0.018	28.500
Azerbaijan	0.820	0.586		0.000	0.000	Mexico	3.155	2.158	1.299	0.000	30.667
Bolivia	0.710	0.835	0.297	0.000	25.000	Pakistan	0.737	0.763	0.367	0.059	
Bosnia	1.876	1.665		0.000	10.000	Panama	1.935	1.593	2.167	0.000	0.000
Botswana	2.168	2.424		0.000	25.000	Peru	1.491	2.173	0.797	−0.096	29.750
Brazil	0.968	0.640		0.029		Philippines	0.567	0.547	0.433	0.053	0.000
Canada	1.757	2.042	1.084	0.075	41.267	Poland	0.430	0.388	0.343	0.068	
Chile	2.162	1.562	1.760	0.000	15.708	Portugal	1.193	1.294	1.266	0.000	34.558
Colombia	1.695	1.542	0.816	−0.056	35.000	Russia	6.604	2.738		0.154	43.000
Costa Rica	0.453	0.632		0.034	31.500	Senegal	0.479	0.326		−0.074	34.667
Croatia	1.313	1.512		0.068	20.107	Slovakia	1.021	0.776		0.000	25.833
Czech Rep	0.677	0.853	0.425	0.000		Slovenia	3.636	0.800		0.721	25.000
Ecuador	1.403	1.848	0.327	0.072	30.604	South Africa	0.802	0.793	0.651	0.000	37.725
El Salvador	1.150	1.055	0.746	0.079	25.000	Spain	1.827	1.573	1.791	0.027	35.000
Germany	0.708	0.728	1.314	0.000	47.269	Thailand	0.902	0.742		0.041	30.000
Ghana	0.740	1.102		−0.153	31.667	Turkey	1.006	0.807	1.150	0.000	35.250
Honduras	0.804	0.882		0.000	0.000	UK	1.283	1.848	1.360	0.018	30.750
Hungary	0.702	0.460	0.817	−0.087	0.000	US	2.470	2.670	3.052	0.010	
India	0.570	0.630		−0.216	35.969	Ukraine	4.499	2.295	6.100	0.000	29.167
Italy	1.914	2.175	2.016	−0.038	42.821	Uruguay	2.472	1.766	1.064	0.051	30.167
Kenya	0.939	0.697	0.661	0.000		Venezuela	2.235	2.593	1.270	0.058	0.000
Lithuania	1.276	0.707		0.000	15.000	Zimbabwe	5.933	3.622		0.000	30.900

This table presents the four alternative measures of *LLR timeliness* and our instrumental variable for each of the 44 countries in our sample. Column 1 is *LLR timeliness* estimated as the average ratio of loan loss reserves to non-performing loans for each country (Beatty and Liao 2011). Column 2 is *LLR timeliness* estimated as the average ratio of loan loss reserves to next-year, non-performing loans, weighted by the total loans outstanding, for each country. Column 3 is *LLR timeliness* estimated as the average ratio of loan loss reserves to next-year, non-performing loans for each country from 1995–1999. Column 4 is *LLR timeliness* computed following Bushman and Williams (2012) for each country and then assigned to each firm in our sample. We regress loan loss provisions at time t on earnings before loan loss provisions; changes in non-performing loans at time $t+1$, t , $t-1$, and $t-2$; lagged capital ratio; lagged bank size; and the percentage change in GDP per capita for each country. *LLR timeliness* is the coefficient on the change in non-performing loans at time $t+1$ if statistically significant, zero otherwise. Column 5 is our instrumental variable, which is the average corporate tax rate across 1995–2006 if the loan loss provisions (for specific purposes) are tax deductible for a particular country and zero otherwise. For missing corporate tax rates, we chose the rate from the year closest to it. We delete countries where deductibility depends on banks' or loans' status. This status might be directly correlated with lending corruption and thus compromise the exclusion restriction for a valid instrumental variable.

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