

# Does Legal Enforcement Matter for Financial Risks?

## The Case of Strategic Default in China\*

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# Does Legal Enforcement Matter for Financial Risks? The Case of Strategic Default in China

## **Abstract**

Using a unique sample of Chinese bank loans over the period 2007-2012, we analyze the repayment decisions of borrowing firms whose cash holdings are high enough to cover the maturing loans. We find that at the firm level weak legal enforcement increases the likelihood for these firms to default on its loan obligations. The impact of legal enforcement becomes stronger when firms face tighter financing constraints, or when credit supply becomes more scarce. Our results highlight the role of legal enforcement in determining financial risks and show that market imperfection strengthens the impact of legal enforcement on financial risks.

**JEL classification:** D22, G32, K22.

**Keywords:** legal enforcement, market imperfection, financial risks, strategic default.

# 1 Introduction

Traditional finance theories usually do not afford a role for the legal enforcement of contracts in financial risks with the assumption of perfect financial markets. For instance, with a frictionless market, firms can raise more capital as long as their equity values are above zero, and hence the risk of default is thought to depend on firm characteristics and market conditions, without concerning the enforcement of debt contracts. However, when market frictions are significant such that it is difficult for solvent firms to raise more capital from banks or financial markets, it is conceivable that without strong legal enforcement of debt contracts, firms could choose to default on their payments if the alternatives are more costly.

Indeed, the literature has documented a significant impact of legal environments on financial market development and asset prices across countries (La Porta et al. 1997; Rajan and Zingales 1998). Other papers have found that creditor rights matter for firm-level corporate decisions (La Porta et al. 1999; Acharya, Amihud and Litov 2011) and contract terms (Benjamin and Megginson 2003; Qian and Strahan 2007; Bae and Goyal 2009). However, in these existing studies, the effects of the content of the law and of the enforcement of the law are not clearly delineated, since they are often entangled across different countries. Enforcement of the law is crucial as a country can have all the right legal protections on the books, but without adequate enforcement, these documents become worthless. Yet it is a great challenge to separately identify the role of legal enforcement in determining financial risks and understand how this role is affected by the market environment a firm operates in.

In this paper, we investigate the impact of legal enforcement of contracts on financial risks and identify one channel through which such a significant relationship could materialize, i.e., market friction in the form of poor accessibility to capital. We focus on a well-defined situation for firms to engage in strategic default in China, i.e., when a firm has sufficient cash holdings while failing to repay a matured loan. This situation is difficult to observe in a

strong legal environment for contract enforcement, and it offers a unique setting to allow for a clear identification of the effect of legal enforcement of contract obligations as the content of the law is the same within the country. Specifically, we address two important questions related to borrowers' repayment decisions: (1) Does weak enforcement of contracts increase the chance of *solvent* firms defaulting on their loan obligations? (2) How does market friction play a role in the effect of legal enforcement?

The notion of “strategic default” stands in contrast to that of “liquidity default.” A liquidity default arises if a firm is unable to raise funds to repay its debt, whereas a strategic default occurs if the firm is unwilling to repay its matured debt, even while it is solvent (Hart and Moore 1994, 1998). Despite a clear difference in theory, it is difficult to identify strategic defaults among all defaults clearly in empirical inquiries, because in order to make a judgement on whether a firm is able to meet its financial obligations, we need information that is comprehensive enough to cover all of the borrower's outstanding debt, and in the meanwhile rich enough to tell us when each debt becomes due. Information from only a single creditor cannot support such an identification.

We exploit the unique features of our proprietary database, obtained from China's bank supervising body, the China Banking Regulatory Commission (CBRC), to investigate borrowers' strategic behavior in making bank loan repayments. Spanning from October 2006 to December 2012, the database covers key information on loans extended by the 19 largest banks in China to firms with annual credit lines exceeding 50 million RMB. These banks are highly representative of the lenders in the Chinese loan market, as they account for over 80% of the market share of all commercial loans. Since our database covers the majority of bank debt at the firm level, we are able to observe each borrower's total obligations to these banks during the sample period. Moreover, the database contains a variety of details on each loan transaction, including the size, issue date, maturity date, and repayment date of each loan. Given that China's capital market remains centered on bank debt, it is arguably appropriate

to infer whether a borrower is solvent or not based on a comparison of its cash holdings with its total bank debt that is coming due. We concentrate on the sample of publicly listed firms as borrowers in order to obtain more detailed information on their firm-level characteristics and financial variables.

To fix ideas, we first develop a simple model of strategic interaction between lenders and borrowers to illustrate that in a legal environment with weak judicial enforcement, a borrower may readily choose to default on her repayment obligation in a non-renegotiable loan contract. In the model, the lender has to bear most of the cost of enforcing the contract through legal proceedings, which varies with the efficiency of the judicial system, and the borrower has to weigh between defaulting on the expiring loan or repaying the loan and borrowing from a more expensive source due to market friction. This analysis allows us to deliver predictions about how legal enforcement affects the probability of strategic default of a solvent firm, and about how market frictions a solvent firm faces can impact the effect of legal enforcement on its default probability.

The unique availability of a large-scale bank loan database in China allows us to test directly these predictions. The cross-region variation of legal enforcement, the firm-level heterogeneity in financing constraints, and the changes in macro credit conditions and industry regulations provide a rich setting for us to explore the impact of legal enforcement on the likelihood for a solvent firm to default on its loan repayment obligations. We construct three proxies to capture the strength of legal enforcement in three distinct aspects. The number of lawyers per 10,000 inhabitants, which was originally proposed by Hasan, Song and Wachtel (2014), reflects the popularity of legal professionals as a career choice. An increased presence of legal professionals in a province represents a higher level of legal services. The number of legal facilities (including courts and law firms) per 10,000 square kilometers reflects the physical proximity to legal authorities and institutions. A larger value of this proxy indicates that a bank or a firm can find legal assistance at a lower cost. The

search volume of words related to bankruptcy law per 10,000 network users, which serves as a revealed attention measure (Da, Engelberg and Gao 2011), reflects the development of legal and rights awareness in a particular region. A higher value of this proxy indicates that more attention is drawn to bankruptcy-related matters.

By analyzing borrowing firms' financial characteristics one quarter prior to the maturity date, we find that on average, the ratio of firms' cash holdings over the total amount of matured loans is quite high, with the mean and median equal to 4.77 and 3.61, respectively. In more than half of loan defaults, borrowers have sufficient cash flows to meet their loan obligations. This fact suggests that loan defaults in China are mainly the outcome of strategic actions rather than liquidity constraints.

The regression analysis based on a clean subsample consisting of solvent firms produces a strong link between the strength of legal enforcement and default probability. To preclude the effect of liquidity constraint, we constrain the analysis to the firm-quarter observations in which the firm's cash holdings prior to the maturity date are high enough to cover the maturing loans. After controlling for firms' total debt outstanding at maturity date and other relevant firm-level and region-level fundamentals, we find that firms' propensity to default is significantly negatively related to the strength of legal enforcement. Switching from the region with the strongest enforcement power to that with the weakest enforcement power more than doubles the likelihood of default (i.e. the likelihood of default decreases from 0.025 to 0.060 accordingly).

In order to investigate how market frictions affect the role of legal enforcement in determining the likelihood of default for a solvent firm, we conduct analysis to examine the effect of the interaction between proxies for market friction and legal enforcement. The results from these tests show that the impact of legal enforcement becomes more profound if firms face severer financing constraints, if credit conditions become tightening, or if the development of the corresponding industry is limited. These findings suggest that market imperfection

could be a channel through which legal enforcement becomes important for firms' default probability.

Our work makes important contributions to the literature in three aspects. First, it provides direct evidence on the existence of strategic default in the credit market. Strategic default has received increasing attention from academia and a handful of papers have explored its impact on the pricing of stocks and bonds (Davydenko and Strebulaev 2007; Garlappi et al. 2008; Favara, et al. 2012). In the banking setting, the importance of strategic default has been long recognized by theorists (Hart and Moore 1994, 1998; Bolton and Scharfstein 1990, 1996). However, to our best knowledge, little direct evidence has been presented to demonstrate the manifestation of strategic default in the loan market. Schiantarelli, Strahan and Stacchini (2015) document that firms in Italy default more against banks with high levels of past losses and such selective defaults are more likely where judicial enforcement is weaker. In their paper, firms' incentive to default comes from banks' financial distress. In contrast, in our study, banks' financial health is not of concern, and we focus the repayment behavior of firms with sufficient cash to cover their obligations.

Second, this study enhances our understanding of the role of legal enforcement in firms' decisions that affect financial risks banks face. Different from the prior studies, such as Jappelli et al. (2005), that investigate the effects of judicial enforcement from an ex ante perspective and on an aggregate level, we focus on the ex post outcome by examining how the likelihood of default of individual firms depends on the strength of legal enforcement. We also identify market imperfection in its various manifestations as a channel responsible for the association between legal enforcement and default risk.

Third, we add to the debate about whether the law-finance-growth nexus developed by La Porta et al. (1997; 1998) applies to China, the largest developing economy in the world. La Porta et al. (2004) rank China among the worst countries in terms of political freedom and property rights protection, and Allen et al. (2005) treat China as a counter-example to

the existing theory on law, finance, and growth, noting that alternative financing channels and governance mechanisms based on reputation and relationships support the fast growth of China's private sector. More recently, using an annual survey of unlisted high-tech firms from 2001 to 2005, Ang et al. (2014) show that effective enforcement of intellectual property rights at the provincial level in China is critical in encouraging firms' financing and investing in R&D. Our study offers fresh evidence that legal enforcement can exert profound influence on debtors' cash and investment policies and affect firms' risk profiles.

The remainder of this paper is organized as follows. Section 2 develops a theoretical framework to provide a contextual intuition for hypotheses, and Section 3 describes the institutional background of China's legal environment and banking sector. Sample and variables are described in Section 4. The empirical results are reported in Section 5 and robustness tests are conducted in Section 6. Section 7 concludes.

## **2 Theoretical Framework and Hypothesis Development**

### **2.1 Motivation**

Commitment to contractual obligations plays a crucial role in enabling efficient production and exchange in an economy, and this role is particularly essential in credit markets. However, due to potential conflicts of interest and changes in business conditions, fulfilling the commitment to the original contractual terms may pose a major challenge to the obligor, and the resolution of contractual disputes usually depends on the balance of power of each party in this interaction. On the one hand, the relative power of the contractual parties can be based upon pure economic factors. For instance, Hart and Moore (1994; 1998) show that the inability of creditors to liquidate the collateralized asset at a fair price due to the inalienability of the human capital attached to the asset encourages borrowers to threaten to default in order to gain favorable conditions in the renegotiation of debt contracts in



the event of financial distress. This insight has yielded important implications for optimal capital structure and dividend policy (Fan and Sundaresan, 2000) and for equity risk and cross-sectional return patterns (Garlappi, Shu and Yan (2008) and Garlappi and Yan (2011)).

On the other hand, the balance of power of contractual parties can also be shaped by the legal environment that determines the strength of the protection of creditor rights. In absence of the feasibility of renegotiation, inferior creditor protection or weak contract enforcement exposes creditors to the risk of not recovering their claims even when borrowers are solvent. Djankov et al. (2008) show that debt enforcement varies a great deal across countries, depending on their per capita income levels, legal origins, and the development of their legal institutions and procedures. Different levels of creditor protection across countries have effects on firm performance and economic growth, debt contract terms (Qian and Stranhan, 2007; Davydenko and Franks, 2008; Bae and Goyal, 2009), and firm level activities such as investment (McLean et al, 2012) and innovation (Brown et al, 2013).

While these studies have shed light on the impact and consequences of creditor protection, they have not been able to separately identify the effects of the content of the law and of the enforcement of the law, respectively. While it is relatively easy to write a good law, to enforce the law is an entirely different matter as it requires a sufficiently competent system of legal institutions, which is generally lacking in emerging countries. Even within the same country, where the content of the law should be uniform, there can be wide variations in the development of legal institutions across regions. Indeed, Jappelli et al. (2005) develop a model of opportunistic borrowers and inefficient court systems and show that improving court efficiency can reduce credit constraints and increase bank lending, while its impact on aggregate default risk is ambiguous as more firms with poor credit quality may be able to receive loans, thus increasing the overall default probability. They find supporting evidence in a panel data from Italy, establishing the important role of legal enforcement in credit markets.

Our purpose here is to investigate how legal enforcement affects the fulfilment of contract commitments, or in other words, borrowers' repayment behavior, and hence the default risk faced by banks. Different from the previous research focusing on banks' responses to poorer creditor protection in setting up the terms of loan contracts while taking firms' incentive to default as given, we address more fundamental questions: Does poor legal enforcement really lead borrowers to default more? How does the effect of legal enforcement vary with firm-level characteristics? We first use a simple model to capture the intuition in the effect of legal enforcement on the default risk of borrowers and formulate relevant hypotheses. In the model, knowing the difficulty banks have with liquidating the collateral with a weak enforcement mechanism, a solvent firm may prefer to withhold the repayment of a matured loan. Similar to Hart and Moore (1994), the firm's strategy to default is not driven by financial insolvency, and its failure to repay the loan does not necessarily lead to bankruptcy. In contrast to their model where legal institutions play no role, however, the key driving force in our study is legal enforcement.

The relationship between law development and contract failure is the key to understand the nexus of law and finance. Classic finance theories, motivated by the Coase theorem (Coase 1960), often presume that financial markets can function well without considering the role of legal environment. In a frictionless market, all creditors have perfect information about a borrower and they all offer credit at the same and fair terms. Solvent firms can gain no additional benefit from strategic default in the absence of renegotiation. Yet, in the presence of market imperfections that are usually caused by conflicts of interest and informational asymmetry, La Porta et al. (1997, 1998) and the line of research following them reveal a strong connection between legal environment and financial market development. According to Stigler (1967), the basic form of market imperfection is the "inability to borrow – cheaply." If a firm encounters difficulty to get new financing at a price no more expensive than the expiring bank loans, it may choose to delay the contractual repayment in the

presence of low penalties with weak legal enforcement of its debt contract. We further explore the effect of the interaction between legal enforcement and market imperfection on the risk of default in the credit market.

## 2.2 A Model

In this subsection, we develop a simple model to characterize the game played by a bank and a solvent borrower at loan maturity, and derive analytically the probability of strategic default and its comparative statics that would lead to testable hypotheses.

**Timeline.** The model comprises two periods delineated by three time points. At time 0, a firm who plans to operate for two periods enters the market. It receives a loan from a bank to finance its project. Both the loan and the first project expire at time 1. Through this project, the firm builds core competencies, accumulates cash reserves and gains an opportunity to operate a continuing project. The continuing project succeeds with probability  $p$  and returns a cash flow of  $w$  given its success at time 2. Then, the firm liquidates. We will focus on the repayment game played by the bank and the firm at time 1.

**Tension between repayment and investment.** Denote the principal plus interest of the first-period loan by  $l$ , the amount of cash generated by the first project by  $b$ , and the size of investment needed to initiate the second project by  $I$ . The firm's repayment decision at time 1 depends on the level of its cash holding. If  $b \geq l + I$ , the firm's cash holding is adequate to meet both the loan repayment and the new investment need. Then the optimal strategy for the firm is to repay  $l$  to the bank and self-finance the second project. The firm's incentive to default appears only if  $b < l + I$ , a situation in which the firm may be tempted to invest its cash to the new project rather than repay the matured loan. To simplify matters, we make the following assumption throughout.

**Assumption 1.**  $l < b \leq I$ .

Assumption 1 lies within the situation  $b < l + I$ , but it excludes the case  $I < b < l + I$ , in which the firm may invest  $I$  to the new project and repay  $b - I$  to the bank, resulting in a partial default. Adding this case to our discussion only brings technical complexity without additional insights.

**Financing sources.** Two financing sources are available in the market. One is a loan from the original bank, and the other is funding from an alternative source. Their interest rates are denoted by  $r$  and  $\delta$ , respectively. The movement of interest rates in the banking system in China is under control, rendering banks very little autonomy in pricing. Accordingly, we assume that  $r$  is fixed exogenously and cannot be renegotiated. We assume that funding from other sources is always more expensive than loans from the original bank, i.e.,  $\delta > r$ . Thus, the firm in need of financial support always tries first to apply for a loan from the original bank, and turns to borrowing from another source only when the loan request is rejected.

Both the bank and the firm are risk-neutral, and the mixed use of bank loans and other funds is ruled out in the firm's borrowing decision. Indeed, binary decisions are a natural outcome of risk neutrality. For the bank, both the expected net income and the opportunity cost of a loan are linear in the size of the loan. Thus, the decision on whether or not to extend a loan to the firm (i.e., whether or not the net income exceeds the opportunity cost) is independent of the loan size. Therefore, banks only face a binary choice between approving and rejecting the firm's loan request. For the firm, risk neutrality implies that its expected profit on the second project is linear in the size of the outstanding debt. The firm has no incentive to split its debt given that size is not an issue in banks' lending policies. As a result, the firm only needs to make a binary decision between repaying the first loan and defaulting on it.

**Liquidation processes.** Liquidation can happen when a loan comes due and the borrower fails to repay it. As in Jappelli et al. (2005), we assume that the first-period loan is secured

with an illiquid collateral  $vl$ , where  $0 < v < 1$  is the collateral-loan ratio. In case the firm does not repay the matured loan, the bank can resort to a judicial court to initiate the liquidation procedure. To highlight the effect of weak enforcement of creditor rights, we assume that the bank has to bear the total legal cost of liquidation as it pushes through the proceeding afforded in the law, and the firm incurs no additional penalty other than losing the collateral. The pecuniary cost and the proceeding time of liquidation are usually substitutes of sorts when the legal system is inefficient. To capture this feature in its simplest way, we assume that two specific processes of liquidation are available:

- Immediate liquidation. If the bank chooses to liquidate the firm immediately, it has to spend  $cl$  to cover the cost of legal service and judicial procedures to complete this process, where  $c \geq 0$ . The liquidation comes into force immediately and the bank either gets  $l$  if the firm's cash holding is enough or gets  $vl$  otherwise from liquidating the illiquid collateral.
- Delayed liquidation. The bank can also choose the option of delayed liquidation. Delayed liquidation takes more time but less pecuniary cost. By this option, the bank only spends  $\theta cl$  with  $\theta \in (0, 1)$  to get the process started but the legal procedure comes into force only in a delayed period. During this process, the bank can terminate the legal process if the delinquent loan gets repaid by the firm, but cannot get back the expenditure paid for the ongoing legal services.

## 2.3 Strategic Default in Equilibrium

At time 1, both the bank and the firm take a proper strategy to maximize their expected payoffs. There is no asymmetric information, so that both the firm and the bank are equally informed about the success probability  $p$  of the continuing project. To simplify the analysis, we assume that the firm never disputes the repayment at time 2 once the continuing

project succeeds. Under such simplification, strategic default can arise only at time 1 and the firm and the bank essentially play a one-shot game. We will show later that relaxing this assumption actually strengthens our qualitative results. Without loss of generality, we normalize the opportunity cost per capital of the bank such that the bank extends a loan if and only if it finds the expected net income to be positive.

If the credit quality of the continuing project is high enough such that

$$p(1+r) + (1-p)(v-c) \geq 1,$$

or equivalently,

$$p \geq \frac{1 - (v - c)}{1 + r - (v - c)} \equiv \bar{p}, \tag{1}$$

the bank will find the new project profitable and approve the firm's new loan request. In this case, the firm just repays the first-period loan and gets the new loan. If the continuing project is not good enough such that  $p < \bar{p}$ , then the firm may threaten to default on the matured loan if the bank refuses to extend it a new loan. To cope with such a threat, the bank can adopt one of the three measures as follows to maximize its expected payoff:

- Rollover. If the bank rolls over the matured loan, it avoids bearing the legal cost of liquidation and can recoup the loan with additional interests with probability  $p$ . However, if the firm fails in its continuing project, the bank has to liquidate the collateral at time 2 by incurring a legal cost. The expected payoff to the bank at time 2 is

$$\pi_{\text{RO}}^{\text{bank}} = p(1+r)l + (1-p)(v-c)l.$$

- Immediate liquidation. In this approach, the bank turns to a legal procedure at a cost of  $cl$  to force the firm to repay the loan immediately. Under Assumption 1, the firm

indeed has enough cash to cover the loan, and thus the bank gets

$$\pi_{\text{IL}}^{\text{bank}} = l - cl.$$

- Delayed liquidation. In this approach, the bank incurs a cost of  $\theta cl$  to get the liquidation process started, and by time 2, if the project is successful, the original loan is repaid with no liquidation, otherwise the liquidation completes at time 2 with the bank recovering  $vl$  from the collateral. The bank's expected payoff is then

$$\pi_{\text{DL}}^{\text{bank}} = p(1+r)l + (1-p)vl - \theta cl.$$

Both rollover and delayed liquidation policies allow the firm to carry out its continuing project, and the bank will give up liquidation once its outstanding loan gets repaid at time 2. The key difference is that with the rollover policy, the bank avoids paying for the legal procedure at time 1 but is exposed to a likelihood of bearing a higher legal cost at time 2. In contrast, with the delayed liquidation policy, the bank pays for the cost of legal proceedings at time 1 and does not need to pay more at time 2. Which policy the bank will favor depends on the success probability of the continuing project. If the continuing project succeeds at a high probability, the likelihood of bearing a high legal cost at time 2 will be smaller, and rollover will be more profitable. Otherwise, delayed liquidation becomes more profitable. For our purpose, we focus on the latter case, i.e., the credit quality of the continuing project is not high enough so that the bank always prefers delayed liquidation. To this effect, We make the following assumption.

**Assumption 2.**  $\bar{p} < 1 - \theta$ .

Under Assumption 2,  $\pi_{\text{DL}}^{\text{bank}} > \pi_{\text{RO}}^{\text{bank}}$  always holds true and the bank never rolls over the matured loan. As a result, the bank either liquidates the firm immediately if  $\pi_{\text{IL}}^{\text{bank}} > \pi_{\text{DL}}^{\text{bank}}$

or otherwise starts the liquidation process with delayed enforcement. Let

$$\underline{p}(c) = \frac{1 - (1 - \theta)c - v}{1 + r - v} \quad (2)$$

be the critical value of the success probability of the continuing project such that  $\pi_{\text{IL}}^{\text{bank}} = \pi_{\text{DL}}^{\text{bank}}$ , then the bank's strategy at time 1 can be summarized as follows.

**Lemma 1.** *Let  $\bar{p}$  and  $\underline{p}(c)$  be given by (1) and (2), respectively. Under Assumptions 1 and 2, the bank adopts the following strategy:*

- (i) *If  $p \geq \bar{p}$ , the bank extends a new loan to the firm;*
- (ii) *If  $p < \bar{p}$ , the bank does not finance the firm again. In this case, if the firm defaults on the loan repayment, the bank initiates delayed liquidation if  $p \geq \underline{p}(c)$  and immediate liquidation if  $p < \underline{p}(c)$ .*

Lemma 1 shows that due to the legal cost, the bank has to choose delayed liquidation if the credit quality of the continuing project is acceptable relative to a threshold. This threshold value is decreasing in  $c$ , capturing the key intuition that a higher legal cost makes the enforcement of repayment weaker, thereby creating room for the borrower to default.

We now turn to studying the firm's strategy. The firm chooses its strategy taking into account the bank's response. If the credit quality of the continuing project is high enough such that  $p \geq \bar{p}$ , the firm anticipates that it will get a new loan and hence repays the matured loan. If  $p < \bar{p}$ , the firm knows that it will not get a new loan for its continuing project from the bank. In this case, anticipating that it will be liquidated immediately if  $p < \underline{p}(c)$ , the firm finds strategic default feasible only if  $p \geq \underline{p}(c)$ . Knowing that in this case the bank will delay liquidation, the firm compares the following two strategies:

- Repay the matured loan immediately. Following this strategy, the firm gets its illiquid collateral released. However, it cannot get a new bank loan again and has to finance



its continuing project using an alternative source at a cost of  $\delta$ . The expected profit is

$$\pi_{\text{R}}^{\text{firm}} = p[w - (1 + \delta)(I - (b - l))],$$

where  $w$  is the cash generated by the continuing project that is assumed to be high enough to cover all its outstanding debt.

- Default on the matured loan. In this strategy, the firm does not repay the loan and thus borrows less from the alternative source. However, its collateral for the first-period loan will be liquidated once the continuing project fails. Accordingly, the expected profit equals

$$\pi_{\text{D}}^{\text{firm}} = p[w - (1 + \delta)(I - b) - (1 + r)l] - (1 - p)vl.$$

Among the two strategies, the firm chooses to default on the matured loan if and only if  $\pi_{\text{D}}^{\text{firm}} > \pi_{\text{R}}^{\text{firm}}$ . Denote

$$\underline{\delta}(p) = r + \left(\frac{1}{p} - 1\right)v \tag{3}$$

the critical interest rate of the alternative fund such that  $\pi_{\text{D}}^{\text{firm}} = \pi_{\text{R}}^{\text{firm}}$ . Then, the firm chooses to default strategically on the first-period loan if and only if  $\delta \geq \underline{\delta}(p)$ . The following lemma summarizes the firm's strategy at time 1.

**Lemma 2.** *Let  $\bar{p}$ ,  $\underline{p}(c)$  and  $\underline{\delta}(p)$  be given by (1), (2) and (3) respectively. Under Assumptions 1 and 2, the firm adopts the following strategy:*

- (i) *If  $p \geq \bar{p}$ , the firm repays the matured loan and gets a new loan from the same bank;*
- (ii) *If  $p < \bar{p}$ , the firm cannot get a new loan from the bank. Then the firm defaults on the matured loan and invests all its cash plus funds from an alternative source to the continuing*

project if  $p \geq \underline{p}(c)$  and  $\delta \geq \underline{\delta}(p)$ , otherwise, it repays the matured loan and borrows from the alternative source to finance its continuing project.

The above results are based on the assumption that the firm never disputes its debt contract at time 2. An alternative assumption is that the firm always claims that the project fails at time 2 and disputes the repayment unless being liquidated. This alternative assumption weakens the bank's incentive to approve the new loan request and to roll over, but strengthens its incentive to liquidate. Under this setting, it is easy to check that the bank approves the new loan request if and only if  $p \geq \bar{p}' = \min \left\{ 1, \frac{1+c-v}{1+r-v} \right\}$  and it never rolls over the matured loan. Both Lemma 1 and Lemma 2 remain true even without Assumption 2 if we reset  $\bar{p}$  as  $\bar{p}'$ .

To translate the bank and the firm's strategies in equilibrium into a probability of strategic default, we assume that there exists some uncertainty on the realizations of  $p$  and  $\delta$  prior to time 1. Denote the probability density of  $(\delta, p)$  by  $f(\delta, p)$  and the marginal cumulative distribution of  $\delta$  for given  $p$  by  $F(\delta, p) = \int_0^\delta f(s, p) ds$ . In light of Lemma 1 and Lemma 2, strategic default occurs if and only if  $\underline{p}(c) \leq p < \bar{p}$  and  $\delta \geq \underline{\delta}(p)$ . This condition characterizes the likelihood of strategic default in equilibrium.

**Proposition 1.** *At time 1, the likelihood of strategic default in equilibrium from an ex ante viewpoint equals*

$$PD = \int_{\underline{p}(c)}^{\bar{p}} \left( \int_{\underline{\delta}(p)}^{\infty} f(\delta, p) d\delta \right) dp = \int_{\underline{p}(c)}^{\bar{p}} [1 - F(\underline{\delta}(p), p)] dp. \quad (4)$$

## 2.4 Testable Hypotheses

Equation (4) offers an explicit formula of the probability of strategic default, which delivers two clear-cut comparative statics that may be transformed into testable hypotheses.

First, it can be seen from Equation (4) that the probability of strategic default is driven

by the legal cost  $c$  and the alternative financing cost  $\delta$ . In particular, strategic default never occurs in the case  $c = 0$  or  $\delta \equiv r$ . To examine the relationship between the likelihood of strategic default and the legal cost  $c$ , we take the partial derivative of  $PD$  with respect to  $c$  to obtain

$$\frac{\partial PD}{\partial c} = \left( \frac{1 - \theta}{1 + r - v} \right) [1 - F(\underline{\delta}(p(c)), \underline{p}(c))] > 0. \quad (5)$$

The positive sign of  $\frac{\partial PD}{\partial c}$  captures the intuition that a larger legal cost always leads to a higher likelihood of strategic default. As we use the legal cost  $c$  is incurred when the bank tries to enforce the contract obligations, so it is positively related to the level of legal enforcement regime. Therefore, we arrive at the following hypothesis.

**Hypothesis 1.** Other things being equal, the likelihood of strategic default is higher if the strengthen of legal enforcement is stronger.

Second, to investigate how the impact of legal enforcement varies with the market imperfection, which is represented by the cost of alternative financing sources, we consider two such funding sources for which the marginal cumulative distributions of  $\delta$  are  $F_1(\delta, p)$  and  $F_2(\delta, p)$ , respectively. Fund 1 is more expensive than fund 2 in the distribution sense, if  $F_1(\delta, p)$  dominates  $F_2(\delta, p)$  by first-order stochastic dominance for all  $p \in [0, \bar{p}]$ . By definition, this amounts to saying  $\delta_1 \geq \delta_2$  on almost all states or  $F_1(\delta, p) \leq F_2(\delta, p)$  for all  $\delta \geq r$ . In view of Equation (5),  $\frac{\partial PD}{\partial c}$  is larger under  $F_1$  than under  $F_2$  for any given  $c$ . This result indicates that the sensitivity of the likelihood of strategic default with respect to legal enforcement will become larger if the alternative source of funding becomes more expensive, which is the basic notion of a larger financial friction in the sense of Stigler (1967). We are thus led to the second hypothesis.

**Hypothesis 2.** The sensitivity of the likelihood of strategic default to legal enforcement is higher for firms who face more frictions in financing.

In the next few sections, we set out to test these hypotheses with the unique set of loan data from China, following a description of the China’s legal environment and capital markets.

## **3 China’s Legal Environment and Banking Sector**

### **3.1 Creditor Protection and Its Enforcement**

As in many other emerging economies, the protection of creditor rights in China is poor (La Porta et al. 1997) and the enforcement of bankruptcy laws is weak (Allen et al. 2005). It is generally accepted that bank debt is senior to that of other creditors and secured debt has the highest priority among all debt contracts (Diamond 1993; Welch 1997; Park 2000). However, China’s old Bankruptcy Law enacted in 1986 ranked employees’ claims above secured claims in the sequence of repayment, rendering banks little confidence in recovering outstanding loans.<sup>1</sup> China’s new Bankruptcy Law issued in 2007 gives secured claims priority over employee salaries, taxes, and general claims.<sup>2</sup> However, when banks try to enforce their rights to collateral, they may face a number of difficulties. The primary difficulty comes from local governments’ competing interest in sustaining social stability. This conflict of interest causes the Chinese court system to favor reorganization rather than liquidation as a distress resolution. Another difficulty is that the new law still misses many specific clauses on implementation and it needs more time for the new law to work and to set precedents (Ang, Cheng and Wu 2014). Finally, the length of time that claims for collateral can be tied up in courts is relatively long, and the legal expenses that banks incur when

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<sup>1</sup>According to the old Bankruptcy Law, workers’ claims refer to the claims arising from labor relationships before the bankruptcy, including the wages and salaries, social insurance fees, and indemnities legally payable for rescission of labor contracts (Li 2006).

<sup>2</sup>See Chapter 10, entitled “Bankruptcy Liquidation”, of the new Bankruptcy Law. In this chapter, Article 109 stipulates that “the right owners with secured rights against the specific property of the bankrupt person have the preemptive rights for repayment with such specific property.”

executing collateral claims are high. Due to the weak bankruptcy enforcement, borrowing firms in China face little liquidation threat and have greater bargaining power than their counterparts in developed markets.

## 3.2 The Banking Sector

Chinese banks were originally established to serve the financing needs of pillar industries in the national economy and to support social stability. The Chinese banking sector was notorious for huge volumes of non-performing loans and massive government intervention before 2004 (Bailey et al. 2011), but the situation has improved due to the reform process involving bank restructuring and financial liberalization (Firth et al. 2009; Chang et al. 2014). In this process, three policy banks were created in 1994 to take over policy loans, and other state-controlled banks were re-oriented towards operating on a commercial basis. The non-performing loans in state-controlled banks were cleaned up through disposals of bad loans and capital injections before 2005 and government intervention was limited through the establishment of the CBRC in 2003. As a government agency directly appointed by the State Council, the CBRC is responsible for the supervision and regulation of commercial banks. This development has weakened the political influence of governments on bank decisions.

The CBRC has taken a series of cautious steps to increase the competitiveness of China's banking industry. It has urged Chinese banks to establish statistical systems for customers with large credits since 2004, made the international five-tier loan classification system compulsory for all banks since 2005, limited the scope of related-party lending since 2006, required all banks to track the migration of loans in different categories since 2006, and since 2007 it has encouraged the major banks to meet international principles such as the Basel Accord. As responses to these measures, all of the top 17 commercial banks had established their internally unified rating systems by the end of 2008.<sup>3</sup> From then on, loan applications

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<sup>3</sup>China's banking sector is dominated by the 5 big state-owned commercial banks and the 12 joint-stock

have to pass the approval threshold pre-specified by the system. In addition to regulatory actions launched by the CBRC, other measures taken by the central government such as liberalization of interest rates, opening up to foreign competition and capital account liberalization also enhance commercialization of the banking sector (García-Herrero et al. 2006). All the 17 commercial banks went public in Shanghai or in Hong Kong during the period of 2004-2013 and some of them have invited foreign strategic shareholders.

Several recent studies confirm that some features of modern banking are emerging among Chinese banks after the reform. Ayyagari et al. (2010) analyze survey data collected by the World Bank in 2003 and find that, in China, firms with bank financing grow faster than similar firms with informal financing. Using data on loans to large industrial firms from one of the big five banks in China, Chang et al. (2014) document a substantial decline in loan defaults after the implementation of an internal credit rating system by the bank in 2004. They find that changes in firm-specific financial factors lead to changes in credit ratings. Qian et al. (2015) also find that Chinese banks' internal risk rating becomes a stronger predictor of loan interest rates and ex post outcomes after the banking reforms. These findings indicate that commercial principles have been adopted and applied by Chinese loan officers.

Like many other bank-based economies such as Germany and Japan, the banking sector is the most important part of the financial system in China. According to the Monetary Policy Report issued by People's Bank of China, bank loans are the primary source of external financing for industrial firms, accounting for 75% of all external funds raised by China's non-financial sector by the end of 2012. China's corporate bond market was relatively small until recently, and it is difficult for firms to access long-term financing from China's corporate bond market (Qian, Tian and Wirjanto 2009). As a result, bank debt constitutes the largest

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commercial banks, which account for more than 70% of the banking sector assets over the period 2006-2014. The 5 big state-owned banks refer to Agricultural Bank of China, Bank of China, China Construction Bank, Industrial and Commercial Bank of China, and Bank of Communications. The 12 joint-stock commercial banks include China Merchants' Bank, Pudong Development Bank, Everbright Bank, and so on.

portion of debt sources of Chinese listed firms, and our bank loan database is comprehensive enough to cover most of firms' outstanding debt. We are thus able to make a reliable judgment on whether a firm has enough cash to make debt payments based on our database.

### 3.3 Dimensions of Market Imperfection

As noted by Stigler (1967), the most pervasive imperfection in the capital market is the inability to borrow fund. Financing constraints are generally attributed to capital market imperfections, stemming from such factors as asymmetric information and incentive problems, or the underdevelopment of the market itself. In China, manifests of market imperfection include: (i) bank credit is the unique dominant financing source for most firms, and banks' lending policy is not yet fully commercially oriented, and is still under influence by political interventions and unpredictable regulatory policies; (ii) information asymmetry between firms and outside investors is severe; (iii) the stock market and the bond market are under-developed and their financing function is limited.

## 4 Data and Empirical Strategy

### 4.1 Sample

The primary data source for our empirical analysis is a proprietary database provided by the CBRC. To strengthen macro-prudential supervision, the CBRC has requested all the 19 major banks to report key information on loans extended to all large and medium-sized firms with an annual credit line exceeding 50 million RMB since 2004.<sup>4</sup> For the period from

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<sup>4</sup>In 2004, the CBRC promulgated three regulatory documents to implement the project. These documents were entitled "The CBRC notice on establishing statistical system for customers with large credits and defaulted retail borrowers" (YJBF [2004] 151), "The CBRC supplementary notice on statistical system for customers with large credits and defaulted retail borrowers" (YJBF [2004] 176) and "The CBRC notice on revising the statistical system for customers with large credits" (YJBF [2004] 246) respectively. The 19 banks include the two policy banks (China Development Bank and Import Export Bank), five largest state-owned

January 2004 to September 2006, the CBRC only kept record of defaulted loans. Beginning from October 2006, the CBRC expanded its coverage to include the information of all newly approved loans, especially those repaid on time. Our access to the CBRC database spans from January 2007 through to June 2013. The sample consists of over 7 million loan contracts, and covers over 150,000 distinct borrowers located in 31 provinces and autonomous regions and operating in all the 20 sectors.<sup>5</sup> The CBRC database is highly representative of China’s bank loan market, as the yearly amount of the recorded bank loans accounts for around 80% to 90% of the total bank credit in China. The database also provides detailed loan-level information, including loan amounts, guarantors, issuing date, maturity date, internal ratings, and the final repayment date. It also contains firm-level information such as the registration number, total assets, leverage, and registered locations, and bank-level information such as bank name and the location of the bank branch that takes charge of a particular loan. Given the collection of all the above information, we are able to observe the total amount of maturing loans for one borrower at a given time point and also the recovery outcome of a defaulted loan.

We use two filters to select eligible observations. First, to accurately evaluate the repayment decision on maturing loans, we exclude the loans whose maturity date is beyond March, 2013, since for these loans we do not clearly know whether they are repaid within the following three months or not. Second, in order to obtain more detailed information on firm-level characteristics, we choose to concentrate on publicly listed firms. To do this, we manually collect the organization code for each listed firm<sup>6</sup>. We obtain financial statement data, analyst coverage data, and institutional ownership data for our tests from the

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commercial banks (Agricultural Bank of China, Industrial and Commercial Bank of China, Bank of China, Construction Bank of China, Bank of Communications), and twelve joint-stock commercial banks (such as Huaxia Bank, China CITIC Bank and etc.). We focus on 17 commercial banks, i.e. five largest state-owned commercial banks and twelve joint-stock commercial banks, to preclude these two policy banks.

<sup>5</sup>Firm sector is based on one-digit Standard Industry Classification (SIC) codes published by National Bureau of Statistics of China (2010), which is broadly consistent with the international standard.

<sup>6</sup>Please refer to the website <http://www.nacao.org.cn/> for more information



China Stock Market and Accounting Research (CSMAR) database. Deleting observations with missing variables, we finally get 21,865 firm-quarter observations with maturing loans, which include 1,872 distinct listed firms and involve 374,510 loan contracts.

Besides the unique availability of a large-scale bank loan data, there are three other reasons to believe that the Chinese loan market is well suited for the purpose of our study. First, one notable feature of the evolution of the legal environment in China is that the institutional structures for law enforcement are still under development, resulting in a large regional variation in the local enforcement of the bankruptcy law. China traditionally lacked a well-developed legal system and its old Bankruptcy Law enacted in 1986 was creditor-unfriendly (La Porta et al. 2004; Allen et al. 2005). The China's new Bankruptcy Law issued in 2007 increases banks' priority in the debt liquidation. However, it misses many specific clauses on implementation (Fan, Huang and Zhu 2013) and thus needs more time to work and to set precedents (Ang, Cheng and Wu 2014).

Second, compared with cross country studies, taking China as a single-country setting has two advantages. One shortcoming of cross-country analysis is that it "does not allow researchers to separate the confounding effect of the existence of laws and the effectiveness of their enforcement" (Ang et al. 2014, p. 332). Our focus on China highlights the role of enforcement while precluding the influence of the existence of laws. Another shortcoming of cross country studies is that firms operating in different national environments can be affected by omitted unobservable country-level characteristics. The single country setting allows us to hold national characteristics constant (Jappelli et al. 2005; Lilienfeld-Toal et al. 2012; Ang et al. 2014; Berkowitz et al. 2015).

Third, although China has made remarkable efforts towards transforming policy-oriented banks into market-oriented ones since 2002, Chinese banks still lack enough practical experience and are not sophisticated at risk management (Okazaki 2007). Accordingly, compared with the counterparts in developed countries, Chinese banks may respond less adequately

to the weak legal environment at loan origination through contract design. This fact limits the ex ante planning of Chinese banks, but potentially amplifies adverse outcomes ex post.

## 4.2 Measuring Legal Enforcement

We manually construct three data sets to capture the variation in legal environment and judicial enforceability across regions. First, we follow Hasan, Song and Wachtel (2014) to manually collect the number of practicing lawyers and the total number of courts, law firms, accounting offices, and independent auditing offices for each province-year from several main sources. These sources include the annual issues of the Chinese Yearbook of Lawyers, the Law Yearbook of China and the Provincial Statistical Yearbooks from 2006 to 2013. Also, we supplement the missing values with data from web-based resources such as the China Lawyering. If the data are still missing, we linearly interpolate this value based on the nationwide growth in number. We use,  $\# \text{ Lawyers}/\text{Population}$ , the total number of lawyers per 10,000 people for a certain province and in a specific year, to proxy for legal enforcement. Prior studies consistently support that regions with more lawyers relative to the overall local population generally have better creditor protection and judicial enforceability (Hasan, Wachtel, and Zhou, 2009; Hasan, Song and Wachtel, 2014). An adequate number of lawyers in a locality implies that a good contracting system exists, where credit defaults or other behavior violating a contract can be effectively handled. We expect that legal agents in local areas with higher ratio of lawyers are more efficient at punishing opportunistic behavior.

Second, Guiso, Sapienza, and Zingales (2004) use the number of total branches (per million inhabitants) present in a region in 1936, the fraction of branches owned by local versus national banks, the number of savings banks, and the number of cooperative banks per million inhabitants. Inspired by their studies, our second identification strategy is similar. We manually search on the website of the Higher People’s Court of different provinces and autonomous regions to collect the total number of courts across different regions, including

the Supreme People’s Court, the people’s courts at various local levels, the military courts and other special people’s courts.<sup>7</sup> Our second measure, denoted by  $\# \text{ Law Facilities/Area}$ , is the total amount of courts at various levels and law firms scaled by overall area of certain a province to define the coverage. Both of the measures above can directly distinguish the extent of development in legal institutions and law enforceability from the supply side of legal environment.

Third, we follow Da, Engelberg and Gao (2011) to extract the search volume on specific keywords relevant with contract protection or bankruptcy, such as “bankrupt”, “bankruptcy laws”, “bankrupt liquidation”, “dispute over obligation”, “creditor protection law” and “ask for a lawyer”. We further scale the total amount of search volume of a province in given year by the total number of internet users.<sup>8</sup> This proxy obtains local netizens’ search volume index for the knowledge relevant with contract protection in different provinces. For each province year, we obtain the measure of *Baidu Search Intensity*, which is higher for regions where the law development or enforcement awareness is stronger.<sup>9</sup>

### 4.3 Proxying for Market Imperfection

Collateral plays an important role in bank lending (Berger and Udell, 1990). Brown, Fazzari, and Petersen (2009) point out that firms with high level of intangible assets always have the limited collateral to pledge for banking loans and similarly, Almeida and Campello (2007) show that firms’ asset tangibility can increase the availability of fund. A recent paper by

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<sup>7</sup>Taking Hubei Province for example, we get 148 courts at various levels from the website <http://www.hbfy.gov.cn/>.

<sup>8</sup>The information on number of internet users in different provinces can be manually collected from the Statistical Report on Internet Development in China released by China Internet Network Information Center (CNNIC)

<sup>9</sup>Prior studies also employ the National Economic Research Institute (NERI) Marketization Index of China’s provinces proposed by Fan, Wang, and Wu (2010) to construct province-level legal environment, e.g. Berkowitz, Lin, and Ma (2015). Our findings also keep robust if we use this NERI index to proxy for our legal enforcement. In this study, we do not use this measure as our first priority since the NERI index does capture many aspects of provincial variations other than legal environment.

Manova (2013) argues that firms' endowments of tangible assets that can serve as collateral in raising outside finance. To investigate the channel of market imperfections, we follow prior literature to use the share of intangible assets in total assets and expect that higher level of intangibility relates with greater market imperfections due to credit constraint. We use the degree of asset intangibility, *Intangibility*, defined as one minus the ratio of tangibility (Favara et al. 2012).

Previous research has established that firms with higher coverage of security analysts generally receive a higher level of publicity, which makes them receive greater attention and scrutiny from investors (Jensen and Meckling, 1976; Johnson et al., 2005). Gentry and Shen (2013) point out that analyst coverage can function as an external monitoring mechanism. Therefore, we also include the number of financial analysts covering the firm to measure the intensity of external monitoring, denoted by  $\#$  *Analysts*. The other is the average level of internal credit rating for all these maturing loan contracts, *Internal Rating*, and a higher score indicates lower credit quality.

Besides firm-level heterogeneity in the financing conditions, we also consider introducing several proxies from the perspective of macro environment credit conditions.  $M2/GDP$ , the ratio of broad money (M2) to GDP, generally characterizes the growth of the real size of the financial sector in absolute terms. A higher M2/GDP ratio implies a larger financial sector and therefore greater financial intermediary development (Caldern and Liu, 2003). Levine and Zervos (1993) also argues that  $M2/GDP$  indicates the ratio of liquid liabilities to GDP. Thus, we expect that the larger this ratio means better liquidity conditions in terms of broad money supply.<sup>10</sup> Regarding that  $M2/GDP$  only captures the time-series variations but ignores the provincial level differences, our second measure is the ratio of total amount of outstanding loans granted to each province at the end of a given year to local GDP (*Regional Loan/Local GDP*).

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<sup>10</sup>We also use the annual average of year-over-year growth rate of M2, *M2 Growth*, to proxy for the monetary liquidity conditions and the effect is similar to  $M2/GDP$

## 4.4 Dependent and Control Variables

The primary dependent variable is a dummy, *Default*, indicating whether a firm chooses to default. Following prior studies, default in our paper refers to the failure to pay back maturing loans over 90 or more days past due.<sup>11</sup> Similar to us, Jiménez and Saurina (2004) point out that default on payment is considered to have occurred when the debt balance remains unpaid three months after the date of maturity. Also, Doblaz-Madrid and Minetti (2013) define default as a dummy variable that takes the value of one if the contract had at least one serious delinquency (90 or more days past due).

In the models of Hart and Moore (1989; 1994; 1998) and Bolton and Scharfstein (1990; 1996), there are two types of defaults: liquidity default and strategic default. In event of liquidity default, firms do not have the cash to make debt payments while in event of strategic default, firms lack willingness to pay back maturing debt on time and illegally occupy the maturing debt for other purposes. To strengthen the idea of strategic behavior in our study, we only investigate firms' decision when they are solvent in terms of cash flow.<sup>12</sup> Strategic defaults emerge when firms decide not to honor the debt contract even though they could (Favara, Schroth and Valta, 2012; Valta, 2016).

Based on an extensive review of the previous literature on the determinants of default, we control for the heterogeneity in firm-level characteristics. We first include several fundamental accounting variables.

*Assets* is measured as the total amount of book value of assets, and we take a natural log in our regressions. Firm size have two competitive forces driving strategic default, i.e. low information asymmetry probably decrease the likelihood of default while large bargaining

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<sup>11</sup>The Basel II criteria define a firm as being in default when its scheduled payments are delayed for more than three months. This international standard is employed by the CBRC office. See the CBRC file (No. 2007.54) "Guidelines on Loan Risk Classification."

<sup>12</sup>Insolvency is the state of being unable to pay the money owed, by a person or company, on time. There are two forms: cash-flow insolvency and balance-sheet insolvency. Cash-flow solvency always implies balance sheet solvency, which means that firms have the appropriate cash covering the maturing payment.

power potentially increase the likelihood of default. We use *Leverage*, calculated as total liability divided by total assets, to capture a firm’s capital ratio. We also introduce *ROA* to proxy for firm’s profitability. *ROA* is defined as the ratio of returns to total assets. Further, to measure a firm’s cash flow level, we follow Campbell et al. (2008) to include a liquidity indicator *Cash/Assets*, the ratio of a firm’s cash to its total assets. To capture the variance in firms’ capital investment expenditures, we control for the ratio of cash paid for investment in one quarter over the outstanding cash in the former quarter, denoted by *Cash for Investment/Cash*. We also account for firm’s growth opportunity by including the variable *Sales Growth*, which is the annual percentage increase in sales. Besides *Maturing Loan* and *Internal Rating*, we further include *Guaranteed*, measured as the ratio of maturing loans with credit guarantee over the total amount of maturing loans, to control for the effect of external party guarantee. We also include the institutional ownership, *Institutional Ratio*.

In order to eliminate the concern that the relationship between legal enforcement and strategic default likelihood is driven by other provincial-level characteristics, we introduce the regional annual GDP growth rate, denoted by *Regional GDP Growth*. Similar to a recent work by Li, Makaew, and Winton (2015), we follow Rajan and Zingales (1998) to define *Financial Development*, measured by the relative size of local capital market to regional GDP. Also, to account for the development of private sectors, we refer to National Bureau of Statistics of China and include *Private Sector Development* as another province-level control, measured by the ratio of the number of private industrial enterprises over the total industrial enterprises above designated size. Prior studies show that there exists a significant connection between corruptions in one economy and its legal development. Thus, we follow Ang, Bai, and Zhou (2016) to include the number of graft investigations on “Corruption Tigers” by China’s Central Commission for Discipline Inspection (CCDI) up to December 2014, denoted by *# Corruptions*.

## 4.5 Regression Specification

Before proceeding to the details of our empirical models, we note that all the following regressions will be carried out at the firm-quarter level. Our key dependent variable is *Strategic Default*, a dummy variable indicating whether a solvent firm defaults on the matured loan or not in a quarter. The basic specification for testing Hypothesis 1 is

$$\begin{aligned} & \textit{Strategic Default} \\ & = \alpha_1 \textit{Legal Enforcement} + \alpha_2 \textit{Contract Controls} + \alpha_3 \textit{Firm Controls} + \alpha_4 \textit{Region Controls} \\ & \quad + \alpha_5 \textit{Industry Controls} + \alpha_6 \textit{Year Fixed Effect} + \varepsilon, \end{aligned} \tag{6}$$

in which the main variable of interest is *Legal Enforcement*, and we control for firm-level and industry-level determinants of default. As our proxy for legal enforcement is at the regional level, we also control for other regional variables that are mainly related to local economic development.

To test how the effect of legal enforcement varies with the degree of market imperfection, we first use firm-level, macroeconomic level, industry level and a change in the credit policy to proxy for the variation of market imperfection. On firm level, we postulate that a lower degree of asset intangibility, an access to the bond market and a favorable internal rating in its credit history create advantages for firms to raise debt in various forms. Also, a higher degree of analysts coverage mitigates information asymmetry. We thus expect that the impact of legal enforcement on the likelihood of default would become smaller if the firm has a lower degree of intangibility, an access to the bond market, a better rating score and

a higher analyst coverage. These effects are tested using the following regression

$$\begin{aligned}
& \textit{Strategic Default} \\
& = \alpha_1 \textit{Legal Enforcement} + \alpha_2 \textit{Legal Enforcement} \times \textit{Firm-Level Degree of Friction} \\
& \quad + \alpha_3 \textit{Contract Controls} + \alpha_4 \textit{Firm Controls} + \alpha_5 \textit{Region Controls} \\
& \quad + \alpha_6 \textit{Industry Controls} + \alpha_7 \textit{Year Fixed Effect} + \varepsilon,
\end{aligned} \tag{7}$$

where the key variable of interest is the interaction term with coefficient  $\alpha_2$ .

As the availability or tightness of credit varies with macroeconomic conditions, a natural proxy for the degree of market imperfection is the the regional credit condition, measured by regional yearly growth of M2 over regional GDP. The analysis based on such proxies is conducted with

$$\begin{aligned}
& \textit{Strategic Default} \\
& = \alpha_1 \textit{Legal Enforcement} + \alpha_2 \textit{Legal Enforcement} \times \textit{Credit Condition} \\
& \quad + \alpha_3 \textit{Contract Controls} + \alpha_4 \textit{Firm Controls} + \alpha_5 \textit{Region Controls} \\
& \quad + \alpha_6 \textit{Industry Controls} + \alpha_7 \textit{Year Fixed Effect} + \varepsilon.
\end{aligned} \tag{8}$$

In addition to monetary policy, there is a unique regulatory restriction specific to China's banking system, that is, the regulation prohibiting commercial banks from expanding bank loans to the risky industry in order to make loans safe. The risky industry is identified according to Number 111 of the "2010 Manufacturing Industry Announcement" issued by China's Ministry of Industry and Information Technology. It includes a total of 19 industries that are judged to have over capacities. A firm being classified to the risky industry will face increasing difficulty in getting credit from banks or other financing sources. Using the risky



industry dummy as an indicator of market imperfection, we estimate

$$\begin{aligned}
& \textit{Strategic Default} \\
& = \alpha_1 \textit{Legal Enforcement} + \alpha_2 \textit{Legal Enforcement} \times \textit{Industry Restrictions} \\
& \quad + \alpha_3 \textit{Contract Controls} + \alpha_4 \textit{Firm Controls} + \alpha_5 \textit{Region Controls} \\
& \quad + \alpha_6 \textit{Industry Controls} + \alpha_7 \textit{Year Fixed Effect} + \varepsilon.
\end{aligned} \tag{9}$$

Finally, our sample covers the period of 2008 global financial crisis, which offers us more opportunities to look at how the effect of legal enforcement changes with market imperfection. The global financial crisis and the ensued recession depressed aggregate demand worldwide. China, whose growth heavily relied on exports to the rest of the world in the previous several years, was particularly affected. China responded with one of the largest and most timely fiscal stimulus packages (IMF, 2010) aimed at sustaining domestic economic activity. In particular, beginning in 2009, fiscal authorities implemented a two-year fiscal stimulus of 3.1 and 2.7 percentage points of gross domestic product (GDP) in 2009 and 2010, respectively, with 90 percent of the overall package composed of increased investment. The stimulus package presents an exogenous shock that increases loan availability, lessening the effects of market imperfection. The effect is tested within the following specification

$$\begin{aligned}
& \textit{Strategic Default} \\
& = \alpha_1 \textit{Legal Enforcement} + \alpha_2 \textit{Legal Enforcement} \times \textit{Stimulus Package} \\
& \quad + \alpha_3 \textit{Contract Controls} + \alpha_4 \textit{Firm Controls} + \alpha_5 \textit{Region Controls} \\
& \quad + \alpha_6 \textit{Industry Controls} + \alpha_7 \textit{Year Fixed Effect} + \varepsilon.
\end{aligned} \tag{10}$$

## 5 Empirical Results

### 5.1 Preliminary Analysis

Table 1 describes the distributions of the default frequency at the firm-quarter level over the period 2007-2013. Panel A shows that both the frequency of default and the frequency of strategic default decrease year by year. The most substantial decrease occurs in 2009, which corresponds exactly to the first phrase of the two-year fiscal stimulus implemented by the central government. We then calculate the ratio of the total cash holding one quarter prior to loan maturity over the total amount of matured loans, and call it the cash-loan ratio. Firms with cash-loan ratios larger than 1 is certainly solvent. In the last three columns of Table 1, we report the default rate of observations with the cash-loan ratio bigger than 1, 1.5 and 2, respectively. Despite a decreasing trend in the default frequency, strategic default always makes up the overwhelming proportion of default, and this proportion does not decline over time. From Panel B, we see that the majority of firms that have bank loans operate in the manufacturing industry, which is the pillar industry in China. For strategic default frequency, the variance across different industries is not large.

Insert Table 1 around here.
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Figure 1 depicts the distribution of the ratio of firms' cash holding one quarter prior to loan maturity over the amount of maturing loans for the 956 firm-quarter observations in default. It visualizes the striking feature of the corporate default in China's credit market. For around 60% of the firm-quarter observations in default, firms indeed have sufficient cash holdings to repay the maturing loans. The distribution of firms' cash over maturing loans has a thick tail, indicating that a significant portion of default events occur even when the firm's cash holding is five times more than the amount of the maturing loans. These facts demonstrate that most default events in China's credit market are not driven by borrowers'

liquidity constraint, but rather, have a strategic nature.

Insert Figure 1 around here.

Table 2 offers a simple investigation on the correlations of our proxies for legal enforcement, and their associations with the frequency of strategic default. From Panel A, we see that the proxies for legal enforcement are positively correlated with each other at reasonably high levels. The Pearson correlation coefficient between  $\# \text{ Lawyers/Population}$  and  $\# \text{ Law Facilities/Area}$  is around 70%. In Panel B, we sort the firm-quarter observations into different groups based on tertiles of the strength of legal enforcement, and report the frequency of default for each group. It produces a clear negative relationship between the strength of legal enforcement and the likelihood of strategic default. The default frequency decreases monotonically as the legal enforcement becomes stronger. The difference between the default frequencies of the groups with the first the last tertile of the strength of legal enforcement is statistically significant the 1% level. In Panel C, we further split the full sample into two subsamples according to the cash level relative to the size of maturing loans, and then for each subsample, we perform the same portfolio analysis as shown in Panel B. These facts point to a negative association between the degree of legal enforcement and the likelihood of default, and such association is stronger for firms with sufficient cash holdings. The mean value of the degree of legal enforcement measured by the average number of lawyers per 10,000 people in each province and the mean value of default rate for borrowers in each province are shown in Figure 1, which illustrate the negative relationship between legal enforcement and the probability of strategic default. For example, Zhejiang province has a high legal enforcement according to  $\# \text{ Lawyers/Population}$ , which is 1.836, but has a low default rate equal to 1.74%. On the contrary, Jiangxi province has a low legal enforcement with  $\# \text{ Lawyers/Population}$  equal to 0.816, but it has a high default rate that equals 7.983%.

Insert Table 2 and Figure 2 around here.

## 5.2 Descriptive Statistics

To explore whether legal enforcement plays a significant role in determining the default risk, we focus on firm-quarter observations satisfying two conditions. First, the firm should have maturing loans at a given quarter, so that our prediction of default risk is conducted one quarter ahead. Second, all observations are cash solvent, in the sense that the total amount of cash balance one quarter ahead must exceed the total amount of maturing loans. To show the cross-firm variation of each variable, we report its mean, median and percentile values in Panel A of Table 3. It is seen that all variables have a great deal of dispersion across sample observations. For example, one of our key independent variable, *# Lawyers/Population*, varies from 0.71 to 9.42, showing that the average level of legal environment in China is not high, especially compared to the counterparts in developed countries. Comparing its mean value and standard deviations, we can observe that the variance across different provinces are quite huge. Panel B of Table 3 reports the correlation coefficients between all variables. Our three regional proxies for legal enforcement are positively correlated with the regional level of financial development. However, the correlations for two of our proxies, *# Legal Facilities/Area* and *Baidu Search Intensity* are lower than 0.5. The variance inflation factor (VIF) is also fairly low, showing that multi-collinearity among independent variables is not an issue in the regression analysis.

Insert Table 3 around here.
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## 5.3 Legal Enforcement and Strategic Default

To test Hypothesis 1, Table 4 reports the results of regression analysis on the relationship between the likelihood of strategic default and the regional strength of legal enforcement shown in regression (6). In the first three columns, we conduct the univariate tests controlling for only industry and year fixed effects. The coefficients of the proxies for legal enforcement

are significantly different from zero and have the expected signs. To exclude the possibility that these correlations simply capture nonlegal effects, we then include firm-level and regional-level characteristics in turn as control variables. It confirms that after controlling for all relevant determinants, the coefficients of *# Lawyers/Population*, *# Law Facilities/Area* and *Baidu Search Intensity* are all negative and significantly different from zero mostly at the 1% level. These results consistently support that stronger legal enforcement reduces the likelihood of strategic default. Control variables have the expected sign, e.g., *Leverage* is positively related to the likelihood of default. The coefficients of *Log(Analysts)* in all columns are negative and significant, showing that firms with less information asymmetries are less likely to default.

Insert Table 4 around here.
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## 5.4 Impact of Market Imperfection

To test Hypothesis 2, we study the interaction terms introduced in regressions (7)-(10). Table 5 studies the impact of firm-level financing constraints on the role of legal enforcement in shaping firms' strategy in their cash allocation based on regression (7). If firms' incentive to default strategically appears mostly when they fail to get the new credit from banks, then the role of legal enforcement in mitigating strategic default should be stronger for firms that have more difficulties to obtain new bank loans. As a higher level of asset intangibility, a smaller coverage of analysts, a rating of lower quality, and no access to the bond market imply a smaller probability for banks to approve the firm's new loan request, the expected signs of the interaction terms involving *# Lawyers/Population* and *Intangibility* should be negative, involving *# Lawyers/Population* and *Log(# Analysts)* should be positive, involving *# Lawyers/Population* and *Internal Rating* should be negative, and involving *# Lawyers/Population* and *Bond Accessibility* should be negative. The results using the same

control variables as in regression (6) shown in Table 5 are consistent with our expectation with a high statistical significance.

Insert Table 5 around here.

Table 6 investigates how changes in macroeconomic conditions affect the association between legal enforcement and strategic default based on regression (8). Since it becomes easier/harder for firms to borrow from banks in times of credit boom/credit tightening, legal enforcement should play a more significant role in affecting the likelihood of strategic default in times of credit tightening. Using the regional M2 over GDP and the regional total loan supply over GDP as proxies for the credit conditions, we expect that these two variables enter the regression with a positive sign. From the results using the same control variables as in (6) in Table 6, we see that the coefficients of the interaction terms involving *# Lawyers/Population* and *M2/GDP* and terms involving *# Lawyers/Population* and *Local Loan/GDP* are both positive and significant, in support of our hypothesis.

Insert Table 6 around here.

Table 7 reports the empirical results on the regressions (9) and (10). During our sample period, the two-year fiscal stimulus implemented by the central government beginning with 2009 represents a natural shock that increases the credit supply. The sharp increase in credit supply decreases the lending threshold set by banks, making it easier for firms to get credit. Thus, this shock should decrease the likelihood of default and weakens the role of legal enforcement at the same time. In Table 7, results in columns (1) and (2) support this assertion. To limit the development of overcapacity industries, the central government has directed commercial banks to reduce their credit support to firms operating in overcapacity industries. The risky industry is identified according to Number 111 of the “2010 Manufacturing Industry Announcement” issued by the Ministry of Industry and Information Technology. The industry includes real estate, iron, steel, coke, ferroalloy, calcium

carbide, aluminum, copper smelting, lead smelting, zinc smelting, cement, glass, paper, alcohol, monosodium glutamate, citric acid, tanning, dyeing, and chemical fiber—a total of 19 industries. This announcement would increase the involved firms’ incentive to default and makes the legal enforcement a more important determinant on the likelihood of strategic default. Results in columns (3) and (4) are consistent with this expectation.

Insert Table 7 around here.

## 6 Robustness and Discussion

In this section, we conduct a host of robustness tests to address five concerns regarding our empirical results.

First, as we have shown in our theoretical model, the firms’ incentive to default strategically is aligned with banks’ incentive to use delayed liquidation. If legal enforcement becomes stronger, the efficiency of liquidation may become higher and thus the banks may choose to use immediate liquidation instead of delayed liquidation at a higher frequency. This corollary predicts a negative relationship between the degree of legal enforcement and the resolution time, measured by the number of months prior to the repayment of delinquent loans. In Table 8, we use an OLS regression linking the log of resolution time to legal enforcement, while controlling for other relevant factors. Both the univariate regression and the regressions with control variables support that a stronger legal enforcement can reduce the resolution time, thus weakening firms’ incentive to default.

Insert Table 8 around here.

Second, we define default by conforming strictly to the guidance proposed in Basel II Record, using three months delinquency. However, three months delinquency may be a loose criterion especially in an environment with weak legal enforcement. It is unclear whether

the default rate will decline sharply if we extend the period of delinquency. To address this concern, we refine default as being delinquent for at least 6 months or one year, and repeat the analysis conducted in Table 5 for the solvent sample in Table 9. We find that extending the delinquency period does not reduce the default rate much and all our main qualitative results prevail. These results confirm that our empirical findings do not hinge on the specific delinquency window chosen to define default.

Insert Table 9 around here.

Third, solvent firms in our main empirical analysis refers to firms whose cash-loan ratio is bigger than 1. However, firms usually have to retain a substantial part of cash holding for purpose of maintaining operation and the remaining cash may not be able to cover the matured loans. It is unclear whether firms in our sample really have enough cash to cover the matured loans when excluding operating cash that is not easily transferred to repayment. Table 10 tests the robustness of the relationship between the strength of legal enforcement and the likelihood of strategic default regarding the definitions of cash insolvency. We filter the sample by deleting the firm-quarter observations in which the ratio of cash holding over maturing loans is smaller than 1.5, 2, and 3 respectively, and repeat the analysis conducted in Table 5. We see no substantial changes regarding the qualitative insights.

Insert Table 10 around here.

Fourth, our regional proxy for legal enforcement is positively correlated to the regional level of financial development. To get a more clean proxy for legal enforcement, orthogonalize the regional number of lawyers per 10,000 people with other regional variables, take the residual as a new proxy for the regional legal enforcement, and repeat the analysis conducted in Table 5. The results are reported in Table 11, which tests the relationship between the strength of legal enforcement and the likelihood of strategic default using the new proxies of legal enforcement. The results are similar to what we have found before.



Insert Table 11 around here.

Finally, using cash solvency as a criterion to select solvent firms may reduce the sample of solvent firms. An alternative definition of solvent firms is based on their ability to repay. Firms are solvent if they have enough assets and all these assets can be liquidated for repayment purpose in law. We then test the robustness of the relationship between default and strength of legal enforcement using an alternative sample consisting firms whose total assets is adequate to cover the matured loan. We repeat the analysis conducted in Table 5 to this alternative sample and report the empirical results in Table 12. Again, the new findings are also consistent with our previous findings.

Insert Table 12 around here.

## 7 Conclusion

Using a unique sample of Chinese bank loans over the period 2007-2013, we analyze the repayment decisions of borrowing firms whose cash holdings are high enough to cover the maturing bank debt. We find that at the firm level weak legal enforcement increases the likelihood for these firms to default on its loan obligations. The impact of legal enforcement becomes stronger when firms face tighter financing constraints, when credit conditions become tightening, and when the availability of credit to the specific industry they are in is strictly regulated. Our findings highlight the role of legal enforcement in determining financial risks and show that market imperfection strengthens the impact of legal enforcement on financial risks.

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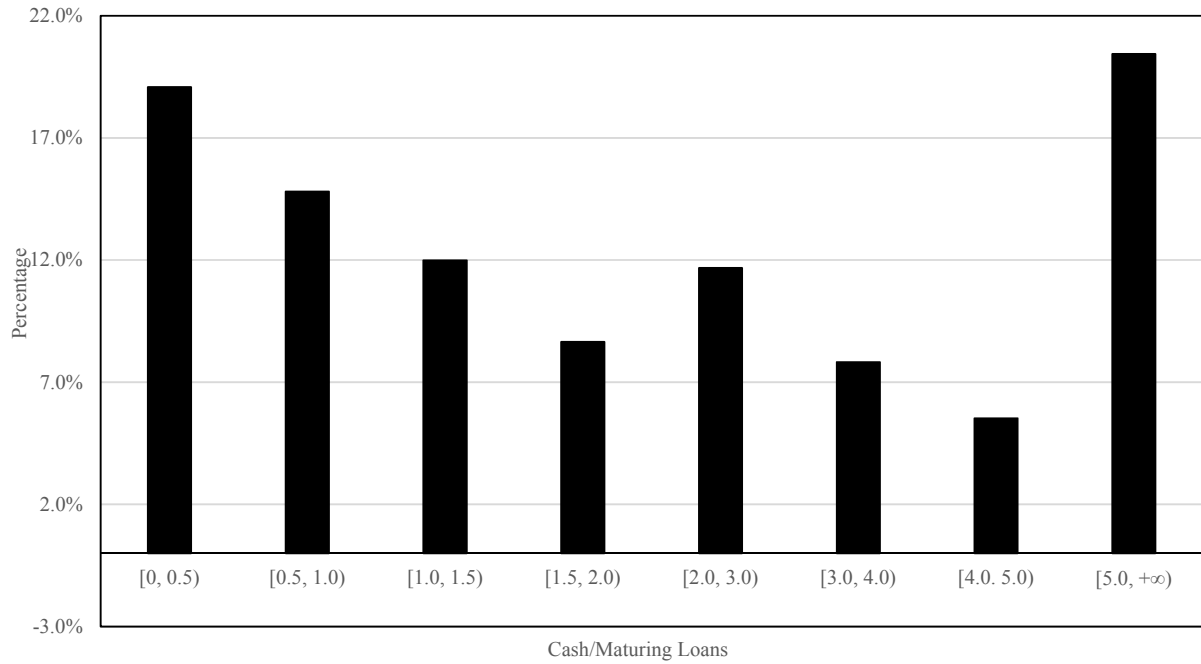
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**Figure 1: Distribution of Cash over Maturing Loans for Defaulted Firms**

This figure illustrates the distribution of the ratio of firms' cash holding one quarter prior to loan maturity over the amount of maturing loans for the 956 firm-quarter observations in default. The horizontal axis signifies the range of the ratio, while the vertical axis depicts the percentage of the default observations in which the ratio lies within specified range.



**Figure 2: Heat Map of Provincial Legal Environment and Strategic Default**



Panel A: The average number of lawyers per 10,000 people in each province during 2007 to 2013



Panel B: The average yearly frequency of default for solvent firms in each province during 2007 to 2013



**Table 1: Sample Distributions**

This table describes the distributions of the default frequency at the firm-quarter level over the period 2007-2013. Panel A shows the temporal distribution, where we group the firm-quarter observations at the yearly level and report the percentage of observations that are in default with different levels of cash holdings. Panel B shows the industrial distribution, where we group the overall observations by 20 one-digit industries and report the percentage of defaulted observations for each industry.

## Panel A: Temporal Distribution

Year	N	Frequency of Default			
		Overall	Cash/Maturing Loan>1	Cash/Maturing Loan>1.5	Cash/Maturing Loan>2
2007	1476	8.54%	5.83%	5.15%	4.47%
2008	3287	7.30%	4.50%	3.47%	2.92%
2009	3508	4.56%	2.77%	2.14%	1.74%
2010	3695	4.55%	3.03%	2.71%	2.33%
2011	4162	3.92%	2.81%	2.33%	1.99%
2012	4571	2.32%	1.42%	1.07%	0.85%
2013	1166	1.11%	0.77%	0.69%	0.43%

## Panel B: Major Industrial Distribution

Industry	N	Frequency of Default			
		Overall	Cash/Maturing Loan		
			>1	>1.5	>2
Agriculture	363	6.61%	2.48%	2.20%	1.65%
Mining	579	4.32%	3.11%	2.59%	2.25%
Manufacturing	14866	4.75%	3.07%	2.48%	2.07%
Utilities	997	5.02%	3.11%	2.01%	1.60%
Construction	596	3.69%	2.85%	2.85%	2.52%
Wholesale & Retail	1547	3.04%	2.13%	1.87%	1.55%
Transport & Storage	788	3.68%	2.54%	2.28%	1.78%
Accommodation & Catering	62	3.23%	3.23%	1.61%	1.61%
information Technology	426	3.76%	3.05%	2.82%	2.58%
Real Estate	907	3.31%	2.09%	1.76%	1.76%
Leasing	183	8.20%	3.83%	3.28%	3.28%
Scientific Research	20	0.00%	0.00%	0.00%	0.00%
Infrastructure & Public Facilities	167	1.20%	1.20%	1.20%	1.20%
Education	15	0.00%	0.00%	0.00%	0.00%
Health Care	1	0.00%	0.00%	0.00%	0.00%
Culture & Entertainment	72	0.00%	0.00%	0.00%	0.00%
Public Administration	266	3.01%	2.63%	2.26%	1.88%

**Table 2: Proxies for Enforcement and Their Relationships with Default**

We have three province-level proxies for the strength of regional legal enforcement: *# Lawyers/Population* is the number of lawyers per 10,000 residents, *# Legal Facilities/Area* is the number of legal facilities (including courts and law firms) per 10,000 square kilometers, and *Baidu Search Intensity* is the search volume of words related to bankruptcy law per 10,000 network users. Panel A reports the correlations between these proxies. In Panel B, we first split the full sample into two subsamples according to the cash level relative to the size of maturing loans, and then for each subsample, we perform the portfolio analysis on default frequency where we sort the firm-quarter observations into different groups based on tertiles of the strength of legal enforcement. The numbers in parentheses are *t*-statistics. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Correlations between Proxies for Enforcement

	# Lawyers/Population	# Legal Facilities/Area	Baidu Search Intensity
# Lawyers/Population	1.000		
# Legal Facilities/Area	0.706	1.000	
Baidu Search Intensity	0.490	0.392	1.000

Panel B: Default Frequency across Different Groups

	Firms with Sufficient Cash Coverage			Firms with Insufficient Cash Coverage		
	# Lawyers/Population	# Legal Facilities/Area	Baidu Search Intensity	# Lawyers/Population	# Legal Facilities/Area	Baidu Search Intensity
Low	0.060	0.053	0.048	0.118	0.134	0.118
Middle	0.039	0.042	0.030	0.107	0.088	0.082
High	0.025	0.028	0.026	0.071	0.084	0.072
Low-High	0.034	0.025	0.022	0.047	0.050	0.045
<i>T</i> -statistics	(8.84)	(5.71)	(5.96)	(3.30)	(2.99)	(3.19)

**Table 3: Summary Statistics and Correlation Matrix**

This table reports the summary statistics of the variables to be used in this study. The sample covers 18,322 firm-quarter observations, which satisfy two conditions: (1) the firm should have maturing loans at a given quarter; (2) the total amount of cash balance exceeds the total amount of maturing loans. For each variable, we report the mean, median, standard deviation, and various percentile values. All variables are winsorized at the 1st and 99th percentile values.

## Panel A: Summary Statistics

Variable	N	Mean	Median	Std. Dev.	Q1	Q3	P5	P95
Strategic Default	18,322	0.036	0.000	0.185	0.000	0.000	0.000	0.000
# Lawyers/Population	18,322	2.180	1.467	2.404	1.086	1.831	0.706	9.422
# Legal Facilities/Area	18,322	232.500	83.890	459.700	32.690	115.100	14.560	1574.000
Baidu Search Intensity	18,322	25.690	23.100	16.120	13.930	31.830	6.002	58.920
# Analysts	18,312	8.255	5.000	9.331	1.000	13.000	0.000	28.000
Institutional Ratio	18,269	0.317	0.295	0.226	0.119	0.487	0.009	0.713
Maturing Loan	18,322	0.200	0.080	0.407	0.030	0.200	0.008	0.766
Guaranteed	18,322	0.289	0.000	0.395	0.000	0.615	0.000	1.000
Internal Rating	18,322	1.044	1.000	0.203	1.000	1.000	1.000	1.286
Assets	18,312	7.692	2.864	14.416	1.458	6.615	0.724	86.209
Leverage	18,312	0.503	0.516	0.190	0.368	0.648	0.174	0.788
ROA	18,312	0.027	0.020	0.036	0.007	0.041	-0.011	0.087
Cash/Assets	18,312	0.186	0.151	0.127	0.100	0.232	0.049	0.454
Cash for Investment/Cash	18,013	0.501	0.244	0.816	0.089	0.589	0.013	1.802
Sales Growth	18,322	0.192	0.122	0.523	-0.031	0.298	-0.318	0.818
Regional GDP Growth	18,322	0.150	0.156	0.056	0.101	0.198	0.071	0.233
Financial Development	18,322	0.888	0.323	2.068	0.213	0.531	0.133	6.096
Private Sector Development	18,322	0.535	0.557	0.126	0.424	0.649	0.327	0.686
# Corruptions	18,322	3.106	3.135	0.692	2.485	3.611	2.197	4.127

Table 3—Continued

## Panel B: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Strategic Default	1	1.00																	
# Lawyers/Population	2	-0.05	1.00																
# Legal Facilities/Area	3	-0.04	0.70	1.00															
Baidu Search Intensity	4	-0.04	0.51	0.41	1.00														
Log(# Analysts)	5	-0.02	0.06	-0.05	0.07	1.00													
Institutional Ratio	6	-0.02	0.12	0.08	0.19	0.32	1.00												
Log(Maturing Loan)	7	0.08	0.08	0.06	0.10	0.25	0.23	1.00											
Guaranteed	8	0.01	-0.08	-0.05	-0.05	-0.16	-0.06	0.01	1.00										
Internal Rating	9	0.06	-0.03	0.00	0.01	-0.20	-0.06	-0.06	0.14	1.00									
Log(Assets)	10	0.05	0.16	0.12	0.13	0.40	0.34	0.63	-0.11	-0.08	1.00								
Leverage	11	0.07	0.00	0.01	0.05	-0.13	0.17	0.35	0.14	0.15	0.43	1.00							
ROA	12	-0.03	0.01	-0.01	-0.05	0.35	0.13	-0.04	-0.12	-0.13	-0.01	-0.34	1.00						
Cash/Assets	13	-0.04	0.01	0.00	-0.02	0.16	-0.14	-0.17	-0.02	-0.10	-0.25	-0.46	0.17	1.00					
Cash for Investment/Cash	14	0.00	-0.04	-0.04	-0.04	0.05	0.05	0.02	-0.05	-0.03	0.09	0.05	0.11	-0.30	1.00				
Sales Growth	15	0.00	-0.01	-0.01	0.09	0.04	0.03	-0.01	0.01	-0.01	0.00	0.05	-0.04	0.00	0.00	1.00			
Regional GDP Growth	16	0.07	-0.25	-0.28	-0.12	-0.03	-0.07	-0.08	0.04	0.05	-0.06	0.06	0.02	-0.03	0.00	-0.01	1.00		
Financial Development	17	-0.02	0.83	0.43	0.39	0.06	0.05	0.04	-0.06	-0.01	0.14	0.03	-0.01	-0.03	-0.03	0.01	-0.08	1.00	
Private Sector Development	18	0.01	-0.49	-0.37	-0.23	-0.03	-0.11	-0.04	0.14	0.01	-0.15	0.01	0.01	0.02	0.02	-0.01	0.13	-0.45	1.00
Log(# Corruptions)	19	0.04	-0.42	-0.40	-0.44	0.07	-0.02	-0.02	-0.04	-0.01	-0.02	-0.03	0.01	0.03	0.03	0.02	0.04	-0.31	-0.03

**Table 4: Relationship between Legal Enforcement and Strategic Default**

This table presents the results of the logistic regressions relating the likelihood of strategic default to legal enforcement based on the sample of solvent firms. The dependent variable is an indicator that takes the value of one if a firm with adequate cash chooses to default and zero otherwise. The independent variables of interests are the three proxies for legal enforcement, *# Lawyers/Population*, *# Legal Facilities/Area*, and *Baidu Search Intensity*. All variables are winsorized at the 1st and 99th percentile values. Industry and year fixed effects are included in all regressions. Robust *z*-statistics (clustered standard errors by firm) are reported in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Variable	Dependent Variable: Strategic Default								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
# Lawyers/Population	-0.145*** (-5.24)			-0.159*** (-5.65)			-0.175*** (-3.49)		
# Legal Facilities/Area		-0.001*** (-5.09)			-0.001*** (-5.75)			-0.001*** (-2.79)	
Baidu Search Intensity			-0.008** (-2.35)			-0.014*** (-3.66)			-0.015* (-1.65)
Log(# Analysts)				-0.107** (-2.16)	-0.123** (-2.49)	-0.102** (-2.06)	-0.118** (-2.38)	-0.120** (-2.41)	-0.108** (-2.19)
Institutional Ratio				-0.017 (-0.08)	0.018 (0.08)	-0.038 (-0.17)	-0.017 (-0.08)	-0.009 (-0.04)	-0.029 (-0.13)
Log(Maturing Loan)				0.420*** (8.84)	0.430*** (9.01)	0.422*** (8.88)	0.431*** (9.00)	0.435*** (9.09)	0.432*** (9.03)
Guaranteed				-0.191* (-1.66)	-0.188 (-1.64)	-0.183 (-1.60)	-0.151 (-1.31)	-0.146 (-1.27)	-0.144 (-1.25)
Internal Rating				0.869*** (6.23)	0.889*** (6.34)	0.880*** (6.30)	0.840*** (5.97)	0.866*** (6.16)	0.857*** (6.11)
Log(Assets)				-0.013 (-0.17)	-0.021 (-0.28)	-0.046 (-0.61)	-0.042 (-0.55)	-0.046 (-0.60)	-0.055 (-0.72)
Leverage				0.823*** (2.71)	0.818*** (2.70)	0.964*** (3.20)	0.891*** (2.94)	0.887*** (2.93)	0.930*** (3.08)
ROA				-1.639 (-1.18)	-1.621 (-1.17)	-1.596 (-1.15)	-1.305 (-0.95)	-1.345 (-0.98)	-1.319 (-0.96)
Cash/Assets				-0.644 (-1.34)	-0.636 (-1.32)	-0.770 (-1.60)	-0.621 (-1.30)	-0.637 (-1.33)	-0.679 (-1.42)
Cash for Investment/Cash				-0.010 (-0.17)	-0.001 (-0.02)	-0.004 (-0.07)	-0.010 (-0.17)	-0.005 (-0.08)	-0.008 (-0.14)
Sales Growth				0.012 (0.15)	0.013 (0.16)	0.022 (0.27)	0.004 (0.05)	0.005 (0.06)	0.005 (0.07)
Regional GDP Growth							2.773* (1.91)	3.244** (2.26)	5.411*** (4.03)
Financial Development							0.065* (1.72)	-0.026 (-0.91)	-0.036 (-1.24)
Private Sector Development							-0.603 (-1.43)	-0.588 (-1.37)	-0.585 (-1.28)
Log(# Corruptions)							0.246*** (3.35)	0.246*** (3.27)	0.255*** (2.96)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	18,225	18,225	18,225	17,873	17,873	17,873	17,873	17,873	17,873
Pseudo R-squared	0.040	0.039	0.034	0.084	0.084	0.078	0.089	0.088	0.087

**Table 5: Impact of Financing Constraints on The Role of Legal Enforcement**

This table presents the results of the logistic regressions relating the likelihood of strategic default to legal enforcement based on the sample of solvent firms, with special emphasis on the marginal effects of interaction terms. The dependent variable is an indicator that takes the value of one if a firm with adequate cash chooses to default and zero otherwise. The independent variables of interest is the proxy for legal enforcement, *# Lawyers/Population*, and its interactions with three firm-level characteristics, *Intangibility*, *Bond Accessibility*, *Log(# Analysts)* and *Internal Rating*. All variables are winsorized at the 1st and 99th percentile values. Industry and year fixed effects are included in all regressions. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Variable	Dependent Variable: Strategic Default			
	(1)	(2)	(3)	(4)
# Lawyers/Population	-0.072 (-1.25)	-0.231*** (-3.97)	-0.308*** (-4.02)	0.211 (1.12)
# Lawyers/Population*Intangibility	-3.144*** (-2.79)			
# Lawyers/Population*Bond Accessibility		0.114** (2.15)		
# Lawyers/Population*Log(# Analysts)			0.060** (2.50)	
# Lawyers/Population*Internal Rating				-0.374** (-2.12)
Intangibility	3.398** (2.08)			
Bond Accessibility		-0.263* (-1.83)		
Log(# Analysts)	-0.115** (-2.32)	-0.122** (-2.44)	-0.214*** (-3.43)	-0.124** (-2.48)
Institutional Ratio	-0.022 (-0.10)	-0.022 (-0.10)	-0.002 (-0.01)	-0.004 (-0.02)
Log(Maturing Loan)	0.434*** (9.04)	0.436*** (9.06)	0.434*** (9.06)	0.433*** (9.05)
Guaranteed	-0.153 (-1.32)	-0.146 (-1.27)	-0.154 (-1.33)	-0.137 (-1.19)
Internal Rating	0.828*** (5.85)	0.845*** (6.00)	0.841*** (5.95)	1.303*** (5.39)
Log(Assets)	-0.052 (-0.68)	-0.028 (-0.34)	-0.049 (-0.64)	-0.043 (-0.56)
Leverage	0.896*** (2.97)	0.899*** (2.97)	0.901*** (2.98)	0.867*** (2.85)
ROA	-1.318 (-0.95)	-1.351 (-0.98)	-1.212 (-0.88)	-1.295 (-0.94)
Cash/Assets	-0.658 (-1.38)	-0.644 (-1.34)	-0.615 (-1.29)	-0.610 (-1.27)
Cash for Investment/Cash	-0.006 (-0.10)	-0.007 (-0.12)	-0.007 (-0.11)	-0.008 (-0.14)
Sales Growth	0.000 (0.01)	0.003 (0.03)	0.002 (0.02)	0.000 (0.00)
Regional GDP Growth	2.746* (1.89)	2.694* (1.85)	2.417* (1.66)	2.669* (1.84)
Financial Development	0.052 (1.38)	0.071* (1.86)	0.073* (1.86)	0.072* (1.89)
Private Sector Development	-0.575 (-1.35)	-0.600 (-1.42)	-0.606 (-1.44)	-0.557 (-1.31)
Log(# Corruptions)	0.248*** (3.37)	0.246*** (3.34)	0.240*** (3.28)	0.250*** (3.38)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	17,873	17,873	17,873	17,873
Pseudo R-squared	0.091	0.089	0.090	0.090

**Table 6: Impact of Credit Conditions on The Role of Legal Enforcement**

This table presents the results of the logistic regressions relating the likelihood of strategic default to legal enforcement based on the sample of solvent firms, with special emphasis on the marginal effects of interaction terms. The dependent variable is an indicator that takes the value of one if a firm with adequate cash chooses to default and zero otherwise. The independent variables of interest is the proxy for legal enforcement, *# Lawyers/Population*, and its interactions with two macro-economic variables, *M2/GDP* and *Regional Loan/Local GDP*. All variables are winsorized at the 1st and 99th percentile values. Industry fixed effects are included in all regressions. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Variable	Dependent Variable: Strategic Default			
	(1)	(2)	(3)	(4)
# Lawyers/Population	-0.195*** (-4.22)	-1.127** (-2.42)	-0.084 (-1.49)	-0.354** (-2.07)
# Lawyers/Population*M2/GDP		0.518** (2.03)		
# Lawyers/Population*Regional Loan/Local GDP				0.114* (1.69)
M2/GDP	-2.438*** (-6.65)	-3.146*** (-6.33)		
Regional Loan/Local GDP			-0.738*** (-3.62)	-0.808*** (-3.89)
Log(# Analysts)	-0.107** (-2.19)	-0.107** (-2.18)	-0.121** (-2.48)	-0.127*** (-2.60)
Institutional Ratio	-0.099 (-0.45)	-0.092 (-0.42)	-0.535** (-2.56)	-0.519** (-2.48)
Log(Maturing Loan)	0.430*** (9.06)	0.435*** (9.13)	0.419*** (8.81)	0.419*** (8.81)
Guaranteed	-0.147 (-1.28)	-0.146 (-1.27)	-0.137 (-1.20)	-0.141 (-1.23)
Internal Rating	0.846*** (6.02)	0.848*** (6.02)	0.810*** (5.76)	0.804*** (5.70)
Log(Assets)	-0.057 (-0.76)	-0.060 (-0.79)	-0.071 (-0.93)	-0.067 (-0.89)
Leverage	0.954*** (3.16)	0.935*** (3.09)	1.081*** (3.62)	1.061*** (3.55)
ROA	-1.266 (-0.93)	-1.349 (-0.99)	0.099 (0.07)	0.135 (0.10)
Cash/Assets	-0.647 (-1.35)	-0.638 (-1.33)	-0.924* (-1.93)	-0.874* (-1.83)
Cash for Investment/Cash	-0.024 (-0.40)	-0.023 (-0.39)	-0.022 (-0.38)	-0.020 (-0.33)
Sales Growth	0.063 (0.84)	0.060 (0.80)	0.011 (0.13)	0.006 (0.07)
Regional GDP Growth	3.389*** (3.75)	3.237*** (3.57)	5.285*** (6.51)	5.049*** (6.16)
Financial Development	0.093*** (2.78)	0.151*** (3.37)	0.098*** (3.02)	0.104*** (3.05)
Private Sector Development	-0.490 (-1.18)	-0.464 (-1.12)	-0.729* (-1.79)	-0.674* (-1.65)
Log(# Corruptions)	0.251*** (3.43)	0.244*** (3.34)	0.154** (2.06)	0.179** (2.33)
Industry FE	YES	YES	YES	YES
Year FE	NO	NO	NO	NO
Observations	17,873	17,873	17,873	17,873
Pseudo R-squared	0.085	0.085	0.079	0.080

**Table 7: Impacts of Fiscal Stimulus and Industrial Regulation on The Role of Legal Enforcement**

This table presents the results of the logistic regressions relating the likelihood of strategic default to legal enforcement based on the sample of solvent firms, with special emphasis on the marginal effects of interaction terms. The dependent variable is an indicator that takes the value of one if a firm with adequate cash chooses to default and zero otherwise. The independent variables of interest is the proxy for legal enforcement, # *Lawyers/Population*, and its interactions with two policy shock identification dummy variables, *4-Trillion Package* and *Risky Industry*. All variables are winsorized at the 1st and 99th percentile values. Industry fixed effects are included in the first two regressions and year fixed effect are included in the last two regressions. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.



Table 7—Continued

Variable	Dependent Variable: Strategic Default			
	(1)	(2)	(3)	(4)
# Lawyers/Population	-0.256*** (-4.28)	-0.336*** (-3.72)	-0.187*** (-3.72)	-0.175*** (-3.36)
# Lawyers/Population*4-Trillion Package		0.095** (1.97)		
# Lawyers/Population*Risky Industry				-0.055* (-1.77)
4-Trillion Package	-0.468*** (-3.87)	-0.606*** (-3.74)		
Risky Industry			0.255*** (2.62)	0.334** (2.39)
Log(# Analysts)	-0.121** (-2.02)	-0.120** (-2.01)	-0.089* (-1.83)	-0.090* (-1.84)
Institutional Ratio	-0.175 (-0.62)	-0.171 (-0.61)	-0.061 (-0.27)	-0.059 (-0.27)
Log(Maturing Loan)	0.387*** (6.91)	0.389*** (6.94)	0.436*** (9.11)	0.436*** (9.10)
Guaranteed	-0.019 (-0.14)	-0.018 (-0.14)	-0.119 (-1.05)	-0.121 (-1.07)
Internal Rating	0.831*** (5.18)	0.832*** (5.19)	0.804*** (5.78)	0.801*** (5.75)
Log(Assets)	0.003 (0.03)	0.002 (0.02)	-0.095 (-1.27)	-0.097 (-1.30)
Leverage	1.057*** (2.99)	1.048*** (2.96)	0.644** (2.20)	0.639** (2.18)
ROA	-1.475 (-0.96)	-1.520 (-0.99)	-1.811 (-1.32)	-1.834 (-1.34)
Cash/Assets	0.046 (0.08)	0.049 (0.09)	-0.570 (-1.20)	-0.579 (-1.22)
Cash for Investment/Cash	-0.115 (-1.43)	-0.115 (-1.43)	0.005 (0.09)	0.006 (0.10)
Sales Growth	-0.041 (-0.40)	-0.044 (-0.43)	-0.032 (-0.40)	-0.033 (-0.41)
Regional GDP Growth	1.307 (1.24)	1.176 (1.10)	2.710* (1.88)	2.719* (1.88)
Financial Development	0.091** (2.23)	0.120** (2.50)	0.079** (2.12)	0.078** (2.11)
Private Sector Development	-1.973*** (-3.89)	-1.961*** (-3.87)	-0.478 (-1.15)	-0.465 (-1.12)
Log(# Corruptions)	0.275*** (3.26)	0.271*** (3.23)	0.255*** (3.53)	0.257*** (3.55)
Industry FE	YES	YES	NO	NO
Year FE	NO	NO	YES	YES
Observations	9,456	9,456	17,960	17,960
Pseudo R-squared	0.078	0.079	0.084	0.084

**Table 8: Legal Development and Resolution Efficiency**

This table tests the effect of legal development on the resolution time. The sample are defaulted loans based on the definition of default in prior tables. The resolution duration in our sample means the number of months prior to the repayment of delinquent loans and we take natural logarithm as our dependent variable. The main independent variable of interest is # *Lawyers/Population*, # *Legal Facilities/Area*, and *Baidu Search Intensity*. All variables are winsorized at the 1st and 99th percentile values. Industry and Year fixed effects are included in all model specifications. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. \*, \*\*, \*\*\* Indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: Resolution Time					
	(1)	(2)	(3)	(4)	(5)	(6)
# Lawyers/Population	-0.016** (-2.09)	-0.011 (-0.40)				
# Legal Facilities/Area			-0.008** (-2.45)	-0.007* (-1.68)		
Baidu Search Intensity					-0.004** (-1.99)	-0.007* (-1.73)
Log(# Analysts)		-0.087*** (-2.90)		-0.088*** (-2.97)		-0.090*** (-3.02)
Institutional Ratio		0.216* (1.65)		0.220* (1.69)		0.236* (1.81)
Log(Maturing Loan)		0.001 (0.02)		-0.000 (-0.02)		-0.002 (-0.08)
Guaranteed		-0.129* (-1.85)		-0.132* (-1.91)		-0.128* (-1.85)
Internal Rating		0.038 (0.65)		0.035 (0.60)		0.042 (0.72)
Log(Assets)		-0.094** (-2.03)		-0.098** (-2.14)		-0.086* (-1.89)
Leverage		0.166 (1.17)		0.176 (1.25)		0.158 (1.12)
ROA		-1.895*** (-3.12)		-1.854*** (-3.06)		-1.943*** (-3.22)
Cash/Assets		0.049 (0.18)		0.045 (0.16)		0.055 (0.20)
Cash for Investment/Cash		-0.018* (-1.83)		-0.019* (-1.89)		-0.017* (-1.73)
Sales Growth		0.017 (0.42)		0.020 (0.51)		0.027 (0.68)
Regional GDP Growth		1.456* (1.70)		1.552* (1.91)		1.436* (1.81)
Financial Development		0.023 (0.99)		0.027* (1.69)		0.033** (2.05)
Private Sector Development		-0.303 (-1.28)		-0.261 (-1.09)		-0.438* (-1.74)
Log(# Corruptions)		0.063 (1.50)		0.075* (1.76)		0.022 (0.46)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	1.815	1.743	1.815	1.743	1.815	1.743
Adjusted R-squared	0.093	0.149	0.093	0.150	0.093	0.150

**Table 9: Robustness Check on Definitions of Default**

This table tests the robustness of the relationship between the strength of legal enforcement and the likelihood of strategic default regarding the definitions of default. We refine default as being delinquent for at least 6 months or one year, and repeat the analysis conducted in prior tables for the solvent sample. All variables are winsorized at the 1st and 99th percentile values. Industry and Year fixed effects are included in all model specifications. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. For sake of brevity, we just report the effect of legal enforcement and its interaction effect with firms' intangibility. \*, \*\*, \*\*\* Indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: Strategic Default			
	Delinquent over 6 Months		Delinquent over 1 Year	
	(1)	(2)	(3)	(4)
# Lawyers/Population	-0.239*** (-4.27)	-0.144** (-2.25)	-0.418*** (-3.60)	-0.322** (-2.41)
# Lawyers/Population*Intangibility		-2.646** (-2.40)		-2.542** (-1.99)
Intangibility	0.876 (1.10)	4.133*** (2.79)	0.685 (0.54)	3.570 (1.37)
Log(# Analysts)	-0.130** (-2.54)	-0.129** (-2.53)	-0.146* (-1.72)	-0.147* (-1.73)
Institutional Ratio	-0.287 (-1.25)	-0.284 (-1.23)	-0.681* (-1.72)	-0.683* (-1.72)
Log(Maturing Loan)	0.463*** (9.99)	0.466*** (10.03)	0.474*** (6.26)	0.478*** (6.29)
Guaranteed	-0.143 (-1.21)	-0.149 (-1.26)	-0.384** (-1.96)	-0.391** (-2.00)
Internal Rating	0.866*** (7.62)	0.855*** (7.52)	1.018*** (6.41)	1.017*** (6.41)
Log(Assets)	-0.114 (-1.49)	-0.120 (-1.58)	-0.206 (-1.60)	-0.213* (-1.66)
Leverage	1.018*** (3.81)	1.034*** (3.88)	0.820** (2.07)	0.833** (2.11)
ROA	-4.160*** (-3.65)	-4.147*** (-3.64)	-5.571*** (-3.61)	-5.556*** (-3.60)
Cash/Assets	-0.851* (-1.75)	-0.872* (-1.79)	-1.781** (-1.98)	-1.774** (-1.98)
Cash for Investment/Cash	-0.004 (-0.22)	-0.004 (-0.21)	0.000 (0.01)	0.000 (0.01)
Sales Growth	-0.005 (-0.07)	-0.009 (-0.12)	-0.190 (-1.21)	-0.192 (-1.23)
Regional GDP Growth	2.751* (1.90)	2.661* (1.83)	1.480 (0.64)	1.365 (0.59)
Financial Development	0.108*** (2.73)	0.096** (2.41)	0.224*** (3.52)	0.208*** (3.24)
Private Sector Development	-0.499 (-1.18)	-0.498 (-1.18)	-0.489 (-0.67)	-0.502 (-0.69)
Log(# Corruptions)	0.134* (1.88)	0.134* (1.88)	0.398*** (3.15)	0.401*** (3.17)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	17,873	17,873	17,873	17,873
Pseudo R-squared	0.108	0.109	0.156	0.156

**Table 10: Robustness Check on Definitions of Insolvency**

This table tests the robustness of the relationship between the strength of legal enforcement and the likelihood of strategic default regarding the definitions of insolvency. We filter the sample by deleting the firm-quarter observations in which the ratio of cash holding over maturing loans is smaller than 1.5, 2.0, and 3.0 respectively, and repeat the analysis conducted in prior tables, as shown in first six columns. In addition, we further define the solvency by comparing the cash holding and the total amount of maturing loans in one year, as shown in last two columns. All variables are winsorized at the 1st and 99th percentile values. Industry and Year fixed effects are included in all model specifications. Robust  $z$ -statistics (clustered standard errors by firm) are reported in parentheses. For sake of brevity, we just report the effect of legal enforcement and its interaction effect with firms' intangibility. \*, \*\*, \*\*\* Indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: Strategic Default							
	Cash/Maturing Loans						Cash > Maturing Loans	
	>1.5	>2.0	>2.0	>2.0	>3.0	>3.0	in one year	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
# Lawyers/Population	-0.179*** (-3.37)	-0.068 (-1.11)	-0.189*** (-3.29)	-0.101 (-1.51)	-0.240*** (-3.45)	-0.149* (-1.83)	-0.210*** (-4.52)	-0.149* (-1.83)
# Lawyers/Population*Intangibility		-3.606*** (-2.83)		-2.669** (-2.03)		-3.047* (-1.72)		-2.363** (-2.55)
Intangibility	-0.928 (-0.87)	3.708** (2.04)	-1.642 (-1.33)	1.951 (0.96)	-3.226** (-2.01)	0.811 (0.30)	0.065 (0.09)	3.048** (2.34)
Log(# Analysts)	-0.141** (-2.58)	-0.138** (-2.51)	-0.158*** (-2.64)	-0.155*** (-2.58)	-0.153** (-2.21)	-0.151** (-2.18)	-0.136*** (-3.18)	-0.135*** (-3.14)
Institutional Ratio	0.305 (1.26)	0.298 (1.23)	0.393 (1.49)	0.383 (1.45)	0.513* (1.66)	0.502 (1.63)	-0.069 (-0.36)	-0.067 (-0.35)
Log(Maturing Loan)	0.455*** (8.37)	0.457*** (8.38)	0.458*** (7.58)	0.459*** (7.59)	0.488*** (6.69)	0.489*** (6.69)	0.448*** (11.60)	0.450*** (11.64)
Guaranteed	-0.225* (-1.76)	-0.222* (-1.74)	-0.176 (-1.29)	-0.172 (-1.26)	-0.223 (-1.43)	-0.219 (-1.40)	-0.165* (-1.66)	-0.168* (-1.69)
Internal Rating	0.715*** (4.20)	0.692*** (4.08)	0.670*** (3.44)	0.655*** (3.38)	0.823*** (3.66)	0.815*** (3.64)	0.885*** (8.62)	0.873*** (8.50)
Log(Assets)	-0.065 (-0.76)	-0.067 (-0.77)	-0.067 (-0.70)	-0.067 (-0.70)	-0.145 (-1.25)	-0.144 (-1.25)	-0.073 (-1.14)	-0.078 (-1.22)
Leverage	0.867*** (2.58)	0.877*** (2.62)	0.770** (2.06)	0.778** (2.09)	0.486 (1.14)	0.495 (1.16)	0.736*** (3.15)	0.750*** (3.22)
ROA	-0.234 (-0.15)	-0.280 (-0.18)	0.027 (0.02)	0.003 (0.00)	-0.822 (-0.40)	-0.834 (-0.41)	-3.647*** (-3.53)	-3.640*** (-3.52)
Cash/Assets	-0.566 (-1.10)	-0.569 (-1.11)	-0.516 (-0.93)	-0.517 (-0.94)	-0.737 (-1.20)	-0.740 (-1.21)	-0.805** (-1.98)	-0.820** (-2.01)
Cash for Investment/Cash	-0.060 (-0.80)	-0.055 (-0.74)	-0.020 (-0.25)	-0.018 (-0.22)	0.003 (0.03)	0.004 (0.04)	0.013 (0.66)	0.013 (0.67)
Sales Growth	0.065 (0.76)	0.063 (0.73)	0.048 (0.51)	0.047 (0.51)	0.053 (0.51)	0.053 (0.51)	-0.040 (-0.59)	-0.043 (-0.63)
Regional GDP Growth	2.783* (1.72)	2.672 (1.64)	3.364* (1.91)	3.324* (1.88)	2.251 (1.09)	2.184 (1.05)	2.684** (2.20)	2.610** (2.14)
Financial Development	0.073* (1.89)	0.056 (1.46)	0.075* (1.85)	0.061 (1.51)	0.082* (1.74)	0.068 (1.44)	0.082** (2.34)	0.071** (2.05)
Private Sector Development	-0.768* (-1.65)	-0.761 (-1.63)	-0.902* (-1.80)	-0.903* (-1.80)	-1.066* (-1.86)	-1.064* (-1.85)	-0.574 (-1.60)	-0.578 (-1.61)
Log(# Corruptions)	0.265*** (3.31)	0.266*** (3.32)	0.251*** (2.91)	0.253*** (2.93)	0.240** (2.43)	0.243** (2.46)	0.182*** (3.00)	0.182*** (3.01)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	16,027	16,027	14,409	14,409	11,836	11,836	17,833	17,833
Pseudo R-squared	0.090	0.091	0.091	0.092	0.097	0.100	0.100	0.101

**Table 11: Robustness Check on Proxies of Legal Enforcement**

This table tests the robustness of the relationship between the strength of legal enforcement and the likelihood of strategic default regarding the proxies of legal enforcement. We orthogonalize the regional number of lawyers per 10,000 people, # *Lawyers/Population*, with other four regional variables, i.e. *Regional GDP Growth*, *Financial Development*, *Private Sector Development*, and *Log(# Corruptions)*, take the residual as a new proxy for the regional legal enforcement, and repeat the analyses conducted in prior tables. All variables are winsorized at the 1st and 99th percentile values. Industry and Year fixed effects are included in all model specifications. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. For sake of brevity, we just report the effect of legal enforcement and its interaction effect with firms' intangibility. \*, \*\*, \*\*\* Indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: # Lawyers/Population		Dependent Variable: Strategic Default	
	(1)	(2)	(2)	(3)
Residual # Lawyers/Population		-0.174*** (-3.46)	-0.072 (-1.25)	
Residual # Lawyers/Population*Intangibility				-3.144*** (-2.79)
Intangibility		-0.690 (-0.72)		3.398** (2.08)
Log(# Analysts)		-0.119** (-2.38)		-0.115** (-2.32)
Institutional Ratio		-0.016 (-0.07)		-0.022 (-0.10)
Log(Maturing Loan)		0.431*** (9.00)		0.434*** (9.04)
Guaranteed		-0.152 (-1.32)		-0.153 (-1.32)
Internal Rating		0.851*** (6.01)		0.828*** (5.85)
Log(Assets)		-0.047 (-0.61)		-0.052 (-0.68)
Leverage		0.892*** (2.95)		0.896*** (2.97)
ROA		-1.275 (-0.92)		-1.318 (-0.95)
Cash/Assets		-0.647 (-1.35)		-0.658 (-1.38)
Cash for Investment/Cash		-0.010 (-0.17)		-0.006 (-0.10)
Sales Growth		0.003 (0.03)		0.000 (0.01)
Regional GDP Growth	-4.878*** (-3.46)	1.976 (1.26)	2.392 (1.52)	
Financial Development	0.759*** (15.72)	0.197*** (2.76)	0.107 (1.42)	
Private Sector Development	0.321 (0.45)	-0.524 (-1.24)	-0.552 (-1.31)	
Log(# Corruptions)	-0.101 (-0.90)	0.230*** (3.05)	0.241*** (3.19)	
Industry FE	NO	YES	YES	
Year FE	NO	YES	YES	
Observations	216	14,409	14,409	
Adjusted R-squared	0.577			
Pseudo R-squared		0.092	0.092	

**Table 12: Robustness Check with Samples Including Firms with Inadequate Cash**

This table tests the robustness of the relationship between default and strength of legal enforcement using an alternative sample consisting firms whose cash is not adequate to cover the matured loan. The dependent variable is the dummy that takes the value of one if a firm with adequate cash chooses to default and zero otherwise. The independent variables of interest are # *Lawyers/Population*, which is the number of lawyers per 10,000 people. All variables are winsorized at the 1st and 99th percentile values. Industry and Year fixed effects are included in all model specifications. Robust z-statistics (clustered standard errors by firm) are reported in parentheses. For sake of brevity, we just report the effect of legal enforcement and its interaction effect with firms' intangibility. \*, \*\*, \*\*\* Indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Dependent Variable: Strategic Default	
	(1)	(2)
# Lawyers/Population	-0.178*** (-4.13)	-0.104** (-2.09)
# Lawyers/Population*Intangibility	0.332 (0.47)	3.034** (2.50)
Intangibility		-2.068** (-2.51)
Log(# Analysts)	-0.130*** (-3.13)	-0.128*** (-3.09)
Institutional Ratio	-0.072 (-0.39)	-0.070 (-0.38)
Log(Maturing Loan)	0.452*** (12.02)	0.454*** (12.05)
Guaranteed	-0.187* (-1.93)	-0.190* (-1.96)
Internal Rating	0.872*** (8.76)	0.860*** (8.63)
Log(Assets)	-0.071 (-1.15)	-0.076 (-1.23)
Leverage	0.706*** (3.14)	0.723*** (3.21)
ROA	-4.259*** (-4.31)	-4.255*** (-4.30)
Cash/Assets	-0.813** (-2.06)	-0.825** (-2.09)
Cash for Investment/Cash	0.010 (0.68)	0.010 (0.68)
Sales Growth	-0.035 (-0.52)	-0.037 (-0.55)
Regional GDP Growth	2.918** (2.46)	2.861** (2.41)
Financial Development	0.062* (1.77)	0.053 (1.52)
Private Sector Development	-0.599* (-1.74)	-0.602* (-1.74)
Log(# Corruptions)	0.135** (2.33)	0.135** (2.33)
Industry FE	YES	YES
Year FE	YES	YES
Observations	21,264	21,264
Pseudo R-squared	0.106	0.106