

The Effect of Property Rights Protection on Capital Structure: Evidence from a Chinese Natural Experiment *

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Abstract

We examine how changes in property rights security impact firm capital structure decisions by exploiting a natural experiment, the enactment of China's Property Rights Law in 2007 (the Law). Using a large dataset of non-listed firms, we document a significant overall decrease in leverage after the Law's passage, consistent with the reinvestment hypothesis' prediction that owners are willing to reinvest more of their profits as property rights protection strengthens, substituting for external debt. Difference in difference analyses document that relatively more financially constrained firms experience an increase in leverage following the Law's enactment, consistent with the financial constraint hypothesis' prediction that lenders become more willing to extend credits to constrained firms as creditor rights are strengthened. For listed firms, we verify that leverage also declines after the Law's passage, but financial constraints do not significantly impact the Law-leverage relation.

Keywords: China; Property rights protection; Capital structure; Leverage
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Abstract

We examine how changes in property rights security impact firm capital structure decisions by exploiting a natural experiment, the enactment of China's Property Rights Law in 2007 (the Law). Using a large dataset of non-listed firms, we document a significant overall decrease in leverage after the Law's passage, consistent with the reinvestment hypothesis' prediction that owners are willing to reinvest more of their profits as property rights protection strengthens, substituting for external debt. Difference in difference analyses document that relatively more financially constrained firms experience an increase in leverage following the Law's enactment, consistent with the financial constraint hypothesis' prediction that lenders become more willing to extend credits to constrained firms as creditor rights are strengthened. For listed firms, we verify that leverage also declines after the Law's passage, but financial constraints do not significantly impact the Law-leverage relation.

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The economic effect of secure property rights has been examined extensively in the literature. Prior studies investigating property rights protection at the country level show that poor protection can lead to lower investment, slower economic growth, and negative stock market performance (Knack and Keefer, 1995; Acemoglu et al., 2001; Claessens and Laeven, 2003; Girardi and Bowles, 2018). Other recent studies focus on firm level policies and report a positive effect of property rights on corporate governance, resource allocation, profit reinvestment, R&D activity, cash holdings and firm productivity (Cull and Xu, 2005; Lin, Lin and Song, 2010; An, 2013; Lu, Png and Tao, 2013; and Kusnadi, Yang and Zhou, 2015). Although the extant literature has recognized the importance of property rights security, little is known about whether and how changes in property rights protection influence firm capital structure choices, one of the most fundamental corporate financial policies. We address this question by examining how improved property rights security resulting from the enactment of China's Property Rights Law in 2007 (the Law) impacts the debt-equity choice of unlisted firms after the Law's passage.

Ex ante, it is unclear how property rights security influences firm capital structure choices. We propose and test two hypotheses. First, we draw on the "reinvestment hypothesis" to predict how the Law's passage will affect the overall leverage of the full sample. Second, we draw on the "financial constraint hypothesis" to predict how the Law will differentially impact firms with varying degrees of financial constraint.

The reinvestment hypothesis (RIH) is based on empirical findings in Johnson, McMillan and Woodruff (2002) and Cull and Xu (2005). Johnson, McMillan and Woodruff (JMW, 2002) find that entrepreneurs in five transition economies with the least secure property rights reinvest 40% less of their profits than do those with the most secure property rights, irrespective of whether bank finance is available. They argue that entrepreneurs will not invest if they don't expect to be able to keep the returns from their investment. JMW further pronounce that "*secure property rights are both necessary and sufficient to induce investment by entrepreneurs* (pp.1336)." Consistent with this thesis, Cull and Xu (2005) find a positive correlation between property rights protection and reinvestment rates in China's private firms. In conjunction with the pecking order theory of capital structure (Myers and Majluf, 1984), we hypothesize that as property rights protection

strengthens, especially when the government is newly constrained by law from expropriating private profits, entrepreneurs are incentivized to reinvest more of their internal profit and use relatively less external debt. Therefore, the RIH predicts that firm leverage decreases as property rights become more secure, *ceteris paribus*.

The financial constraint hypothesis (FCH) emphasizes the role of creditors in influencing firm-level capital structure choices (Kaplan and Zingales, 1997). This literature stipulates that in a business environment where creditor rights are insecure—as when the right to seize collateral from a defaulting borrower is not well protected or debt covenants are hard to enforce--banks may choose to curtail their lending to entrepreneurs (Djankov et al., 2008). Consistent with this hypothesis' predictions, empirical studies find that small and medium sized enterprises tend to have higher debt levels in countries with efficient bankruptcy laws (McNamara, Murro and O'Donohoe, 2017). Moreover, financially constrained firms are more likely to forego, or postpone, attractive investment opportunities that they cannot fund with internal cash flows (Campello, Graham and Harvey, 2010).

The enactment of China's Property Rights Law in 2007 strengthens creditor rights and gives creditors greater incentives to lend to entrepreneurs. However, we expect the Law to have uneven impacts on firms with different degrees of financial constraints. With improved creditor rights protection, financially constrained firms are more likely to borrow successfully from creditors. Thus, the FCH predicts an increase in leverage in financially constrained firms over relatively unconstrained ones as property rights protection improves.

Although these two hypotheses propose different working mechanisms between property rights and capital structure, they are not mutually exclusive. The RIH may have a general negative effect on leverage—by encouraging more reinvestment of retained earnings--for firms which are considering the reinvestment rate of their internal funds, while the FCH may have a positive effect on leverage for financially constraint firms.

To investigate the effect of property rights on firm leverage choices, we exploit a natural experiment in this study, the passage of Property Rights Law in China. The Property Rights Law (referred to as “the Law”, hereafter) was passed on December 29, 2006, at the 10th National People's Congress (NPC), and formally adopted on March 16, 2007. Berkowitz, Lin and Ma (2015) explain that December 29, 2006 should be the event date, as NPC is the supreme authority in China and investors/firms began to modify their expectations about property rights after that date.

For at least two reasons, the passage of the Law represents an opportune setting for our study of corporate capital structure choice. First, prior to the enactment of the Law, China had provided very little formal recognition/protection of private property rights since the founding of the People's Republic of China in 1949. The Law for the first time established the formal institution of private property rights protection in China's legal system (Zhang, 2008), which is likely to encourage entrepreneurs to increase capital investments. Second, the Law includes specific provisions that strengthen creditors' rights in the event of defaults, hence incentivizing creditors to lend.¹ Moreover, the introduction of the Law is not a smooth process and the fate of the Law is unclear even five days before its approval date, December 29, 2006 (Berkowitz, Lin and Ma, 2015). Therefore, the passage of the Law can be viewed as an exogenous shock for research purposes, allowing us to isolate the impact of property rights on firm decisions without having to deal with reverse causality or other endogeneity complexities.

In a related paper, Berkowitz, Lin and Ma (2015) use an event study framework to examine the effect of the Law on firm value in China's listed firms, and find that the passage of the Law has a positive effect on Tobin's Q. While we also examine the effect of the Law's passage on listed Chinese firms as a robustness test, we choose to focus on China's unlisted sector in our paper, for three reasons. First, prior to 2007, most publicly listed firms in China were former state-owned enterprises restructured or carved out for publicly listing, and the government continued to hold significant ownership in many of these firms after 2007. As such, political interference is widespread in the listed sector. Second, one of the main objectives of the Law is to protect the property rights of private business owners against the "grabbing hands" of the government, since the dominance of state ownership had already been enshrined in China's first constitution in 1954 and in subsequent amendments (Zhang, 2008). China's Company Law of 2006 (and subsequent revisions) explicitly protects cash flow rights of shareholders of limited liability or joint stock companies (Yueh, 2011), so it is more difficult for the government to expropriate from listed firms than from unlisted ones. Third, unlisted firms are more financially constrained than listed firms, as the listed ones have greater access to capital markets for funding (Li, Yue and Zhao, 2009; Huang, 2012). Allen, Qian and Qian (2005) also point out that most of China's bank credit is issued

¹ Article 170 of the Property Rights Law explicitly gives creditors priority in receiving compensation when the debtor defaults or the loan contract is not properly enforced. Article 179 specifies that creditors have priority in receiving compensation from selling secured assets in case of debtor defaults or other conditions that lead to materialization of the right to collateral.

to firms in the state and listed sectors, and that the private sector only receives 24% of bank credit or loans.

In summary, China's unlisted sector, which is dominated by privately owned firms, is particularly constrained by the country's institutional development, especially prior to 2007. Therefore, the strengthening of property rights should have more pronounced effects in the unlisted sector, making it a more suitable setting to examine our research question.

We first conduct full sample comparisons of firm leverage ratios in the Law's pre- versus post-enactment periods. We find that the average firm in the sample experiences a significant leverage decrease following the Law's enactment. This is consistent with the reinvestment hypothesis, which argues that entrepreneurs are more willing to reinvest their own profits and use less external debt as property rights protection strengthens.

Before concluding that the Law's passage was the principal cause of the leverage decline in Chinese unlisted firms after 2006, we examine possible confounding impacts of three other significant policy initiatives and macroeconomic events that occur shortly after the Law becomes effective in 2007. These are: (1) the adoption of a new labor protection law in 2008, which increases employment security for Chinese employees; (2) the adoption of a new enterprise income tax law, which reduces effective tax rates for most Chinese incorporated firms; and (3) the onset of the Global Financial Crisis in 2008, to which the Chinese government adopts swift and effective counter-measures, including flooding the economy with easy bank credit. We run multiple robustness tests and confirm that our basic finding that the Law's adoption leads to a significant decline in leverage for Chinese unlisted firms is robust to all three potentially confounding events.

To test the financial constraint hypothesis (FCH), we use difference-in-difference (DID) analysis to study how different firm characteristics, which represent a company's relative ease of access to external finance prior to the Law's passage, affect the property rights-leverage relation. We choose asset tangibility, ownership structure, and firm size to proxy the financial constraints faced by firms. The FCH points to a more pronounced effect of the Law on financially constrained firms than on unconstrained ones.

We first investigate the effect of asset tangibility on the relation between property rights and leverage. JMW (2002) use collateral as a proxy for access to finance since firms with more collateral have better access to external debt. Cerqueiro, Ongena and Roszbach (2016) stipulate the importance of collateralization for banks' incentives to provide credit, design contracts and

monitor borrowers. We use fixed assets over total assets as a proxy for asset tangibility (Berkowitz et al, 2015). Prior to the Law's enactment, in making lending decisions, creditors relied heavily on the amount of fixed assets that could be collateralized. As property rights protection strengthens, creditors are more willing to lend to firms with low tangibility but good profit history and future prospects, such as firms in service and high-tech industries. Our DID findings are consistent with the FCH and support the notion that the Law benefits low tangibility firms more than high tangibility ones by allowing low tangibility firms to gain access to external debt financing.

We then examine the effect of ownership structure on the property rights-leverage relation. Though our sample mostly consists of purely privately-owned companies, firms in the sample still have about 11% government or collective ownership on average. Government ownership has been linked to a higher likelihood of political intervention and a greater risk of pursuing non-economic objectives at the expense of other stakeholders (Cull and Xu, 2005; Jefferson and Rawski, 2002; Borisova and Megginson, 2011; Wei et al. 2005). Chinese firms with government ownership have also been linked to soft-budget constraints due to better access to state-owned banks (Cull and Xu, 2005; Megginson et al. 2014). We argue that privately-owned firms are more financially constrained than state-owned enterprises and find that relative to state-owned firms, privately-owned firms experience an increase in leverage after the Law takes effect, consistent with the FCH. This finding suggests that the Law effectively incentivizes creditors to lend more to privately-owned firms.

We also examine the effect of firm size on the property rights-leverage relation and find that small companies experience an increase in leverage relative to large firms after the Law's enactment, also consistent with FCH predictions. Firth et al. (2009) contend that smaller firms have difficulty obtaining external finance in developing economies. Small firms also have few political connections, which are vital channels to gain access to credit in developing countries such as China, where financial systems are underdeveloped and dominated by state-owned banks. After the Law takes effect, creditor rights are better protected. As such, banks should be more willing to consider loan applications from smaller firms that they would have ignored previously. This size effect is also consistent with Beck et al. (2005), who show that smaller firms are more financially constrained and that when institutional obstacles are eased, smaller companies benefit more.

While we maintain that the non-listed sector is a more suitable setting to investigate our research question, as a robustness check we also examine the impact of the Law on China's listed

companies. We confirm that listed firms also experience an overall decrease in leverage after the Law's passage, consistent with the prediction of the reinvestment hypothesis. However, we find that proxies for financial constraints—such as asset tangibility, private ownership and firm size—do not have any significant effect on the property rights-leverage relation for listed companies. One plausible explanation is that the gap in access to external debt between financially constrained versus unconstrained firms is wider in the unlisted sector than that in the listed sector. Listed firms also have easier access to financing in the equity market. As a result, the differential effect of the Law on financially constrained versus unconstrained firms is more pronounced for unlisted ones.

Our paper makes several contributions to the literature. First, we are among the first to provide direct evidence that property rights protection matters in firm capital structure decisions. JMW (2002) attempt to disentangle the intricacies of property rights, access to finance, and profit reinvestment in five transition economies in eastern Europe and the former Soviet Union. We exploit an exogenous shock and directly examine the link between property rights and firm leverage decisions in China, the world's biggest transition economy. Specifically, we provide novel evidence that property rights significantly influence firms' borrowing in China's unlisted sector, and that asset tangibility, ownership structure and firm size all significantly impact the property rights-capital structure relationship.²

Second, we add new empirical evidence to the literature examining how institutions impact firm-level financial decisions. It has been well documented that legal systems impact the development of financial markets (La Porta et al., 1998; La Porta et al., 2008) and that corporate and personal tax rates are important determinants of capital structure and investment behavior (Fazzari, Hubbard and Petersen, 1988; Faccio and Xu, 2015; Zwick and Mahon, 2017). Macroeconomic factors, such as financial sector development, government borrowing and macroeconomic uncertainty also play a more important role in influencing the leverage of U.S. firms than do firm characteristics (Graham, Leary and Roberts, 2015). Although many institutional

² An (2017) examines the effect of China's 2004 Constitutional Amendment on firm capital structure and finds that, relative to state- and collective-owned firms, private companies exhibit a leverage decrease after the Amendment. We strongly argue that the Property Rights Law of 2007 (the focus of our study) is the proper policy shock to examine the impact of property rights on firm leverage decisions, for at least two reasons. First, the 2004 amendment includes 13 changes, only one of which is the recognition of property rights in the constitution. This raises a valid case for severe confounding effects. Second and more importantly, the 2004 Constitution amendment does not include any actionable provisions nor legal framework to enforce property rights. In contrast, the Property Rights Law of 2007 focuses solely on property rights protection and offers detailed and actionable provisions and a legal framework to enforce the protection of private property rights and creditor rights.

factors have been shown to affect capital structure, McMillan (1997) and Shleifer and Vishny (2002) argue that there exists a hierarchy among institutions, where certain institutions will function only after others have been established and are functioning properly. Indeed, JMW (2002) show that the institution of property rights takes precedence over financial systems. And they specifically point out that “*if property rights are insecure, it is immaterial whether or not finance is available* (pp. 1336).” Our paper adds empirical evidence supporting the importance of the institution of property rights protection in affecting firm leverage decisions.

Last, but not least, our paper adds to the very limited but growing literature examining firm behavior in China’s private sector (Acharya and Xu, 2017; Firth et al., 2009; Gao, Harford and Li, 2013; Gao, Harford and Li, 2017).³ To date, most of the business research on China focuses on the publicly listed sector and somewhat overlooks the increasingly important private sector.⁴ This is despite the fact that the private sector’s share of industrial output has grown from 22% in 1978 to about 80% in 2016 (Chen, Liu and Su, 2013; Garnaut, Song and Fang, 2018), and by 2018 the private sector provides over 80% of jobs in the country and accounts for more than 60% of China’s fixed-asset investment.⁵

The rest of the paper is organized as follows. Section 1 provides institutional background on China’s Property Rights Law of 2007 and presents an overview of China’s private sector. Section 2 discusses empirical methods and describes our data and sample. Sections 3 and 4 present and discuss the empirical results related to the reinvestment hypothesis and the financial constraint hypothesis, respectively. Section 5 examines the effect of the Law on capital structure in listed firms, while Section 6 concludes.

1. Institutional Background

1.1. The 2007 Property Rights Law of China

Since the adoption of China’s famous “Opening-Door” policy in 1978, various economic reforms have been enacted to spark spectacular economic growth. As China’s economy became more market-oriented, protection of private property rights became a pressing issue. On December 29, 2006, after a fourteen-year legislative marathon, the long awaited and highly debated Property

³ For the unlisted firms we study, 86% of those are 100% privately-owned.

⁴ Notable exceptions are Cull and Xu (2005), Firth et al. (2009), Li et al. (2009), and Chen et al. (2013).

⁵ China Daily, 3-6-2018, “China’s private sector contributes greatly to economic growth: federation leader.”

Rights Law of China passed the National People's Congress. The Law became effective on March 16, 2007.

The Property Rights Law was adopted to define and protect private property and the rights of private property owners. The Law was widely acclaimed as a substantial step toward protection of private property rights. Zhang (2008) points out that the Law fills in the country's "legal blank" with regards to private property and property in general. The Law establishes a framework badly needed for the regulation as well as protection of property rights, and it reinforces the inviolable nature of private property in China. The latter is particularly important because the principle that private property is inviolable was denied in China until 2004, when the 1982 Chinese Constitution was amended for the fourth time.⁶

The Property Rights Law is intended to be a comprehensive legislation on property, with 247 articles comprising five parts and nineteen chapters. Several features are worth noting, beginning with the equal protection of public and private ownership. For years, public ownership enjoyed supreme status in China, as many believed that socialist economies should be centered on public ownership. The Property Rights Law, for the first time, makes equal protection a basic principle of the law of property. For example, Article 4 of the Property Rights Law is clear that a violation of property rights is prohibited, regardless of the type of property owner.

Second, creditor rights are strengthened. Part Four of the Property Rights Law, "Security Interests in Property," concerns the rights involving mortgages, pledges and liens. The Law gives creditors a security interest priority in having their claims paid in case of default. For example, Article 170 stipulates that "the holder of security interests shall have the priority in having his claim paid if a debtor defaults or the conditions for enforcement of the said interests, as agreed upon by the parties concerned, arise." According to Article 179, "Where a debtor or a third party, for guaranteeing the payment of debts, mortgages property to a creditor instead of transferring of the possession of such property, if the debtor defaults or the conditions for enforcement of the interest, as agreed upon by the parties concerned, arise, the creditor shall have priority in having his claim paid with the property." Article 174 gives creditors of security interest priority in getting insurance monies, compensation or indemnities "in case of damage or destruction, loss or requisition of the mortgaged property during the period of guarantee." Article 173 clarifies the

⁶ The current version of the Constitution of China was adopted in 1982 by the 5th National People's Congress with further amendments in 1988, 1993, 1999 and 2004.

scope of security interest as it “embraces the principal creditor’s right and the interest therefrom, penalty, damages and expenses for safekeeping of the property used as security and for enforcing security interest.” Article 191 further specifies that “the mortgagor may not transfer the mortgaged property without the consent of the mortgagee during the period of mortgage, unless the transferee pays off the debts for the mortgagor and thus the mortgage interest extinguishes.”⁷ The Law Articles mentioned above are cited in many court cases⁸ and they help firms access external finance using their collectables and inventories.⁹

The Law’s significance is reflected in World Bank’s Getting Credit scores. According to the World Bank, Getting Credit measures each country’s “strength of credit reporting systems and effectiveness of collateral and bankruptcy laws in facilitating lending.” Getting Credit distance to frontier (DTF) scores varies from 0 to 100, with 0 represents the lowest performance and 100 represents the frontier. Figure 1 shows China’s Getting Credit DTF score jumps from 18.75 in 2006 to 43.75 in 2007.

****** Insert Figure 1 here ******

We utilize the 2007 Property Rights Law enactment in China as a natural experiment to study firm capital structure decisions. Because the passage of the Law by the People’s Congress of China is outside the control of individual businesses, it can be considered as an exogenous shock to firms. The Law involves a universal strengthening of property rights protection. Therefore, the Law offers an ideal setting to study how firm leverage policies change in response to better property rights protection with minimal endogeneity concerns.

We understand that both the legal system and firms in China need time to make adjustments according to the Law. The capital structure adjustments may take years to fully materialize. We argue that facing a policy change, firms can be separated into early adopters, early majority, late majority and laggards. Early adopters react quickly to take advantage of the policy, while laggards resist any change until the majority has taken actions. The potential effects we find after the Law’s passage within one to three years probably come from early adopters and early majority.

⁷ The English-language version of the Property Rights Law is available at http://210.82.31.8/englishnpc/Law/2009-02/20/content_1471118.htm.

⁸ See <http://news.hf.berui.com/html/260071.html> and http://www.sohu.com/a/325980068_398113 for case reports which cite the Articles from the Property Rights Law.

⁹ Many economic articles/comments attribute the development of China’s moveable property financing market to the enactment of the Property Rights Law. See, for example http://www.sohu.com/a/305658165_481887, <http://finance.sina.com.cn/review/20071108/17394152983.shtml>.

1.2. *Private Firms in China*

Most of the research on capital structure is devoted to publicly traded firms in numerous developed and developing economies, especially the United States. Publicly traded firms and private firms may be systematically different from each other regarding their ownership structures, financing frictions, agency problems and asymmetric information issues (Acharya and Xu, 2017; Firth et al., 2009; Gao, Harford and Li, 2013; Gao, Harford and Li, 2017). The lack of available data on private firms limits comparable research in developing economies. This is particularly the case for China, even though the Chinese statistical authorities began publishing data on registered private firms in the industrial and service sectors in the late 1990s. According to their data, the number of registered private enterprises grew from 443,000 in 1996 to 14,368,860 in 2017, accounting for more than 79% of all firms. Private companies have also become important employers in the economy. As of 2017, employment in registered private firms exceeded 198 million.¹⁰ They are also economically important in terms of industrial output. According to Garnaut, Song and Fang (2018, Figure 18.2), the private sector in China accounted for about 80% of the industrial output in 2016. Despite their huge economic importance, private firms in China have been under-researched by economists. Our study examines the capital structure decisions of Chinese private firms.

2. **Methodology and Data**

2.1. *Full Sample Analysis: The Reinvestment Hypothesis (RIH)*

To analyze the impact of the Property Rights Law on corporate capital structure decisions for the full sample, we employ an OLS approach in which we compare firm leverage ratios before and after the enactment of the Law.

In the full sample, we estimate Eq (1) below:

$$Y_{it} = \delta \text{POST}_t + \gamma X_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

Where i indexes firms, t indexes time, Y_{it} is a measure of firm capital structure, X_{it} are control variables. Our variable of interest, POST_t , is a year indicator variable that equals one for the Law's post enactment years (07-09), and zero for the pre-enactment years (04-06). To examine a three-year post period is common in the literature. It also accounts for any delayed responses of firms

¹⁰National Bureau of Statistics of China website (data.stats.gov.cn), accessed 30 April 2019.

due to legal uncertainty. ε_{it} is an error term. The firm effects, α_i , control for any fixed differences across firms. In robustness tests, year, regional and industry dummies are added into the regressions besides firm dummies. δ is our coefficient of interest, which estimates the impact of the Property Rights Law. Standard errors are clustered at the firm level. The reinvestment hypothesis predicts a negative and significant δ .

We examine four measures of capital structure. Leverage (LEV) is the total debt ratio, defined as total liabilities over book assets (Li et al., 2009). We then break the total debt ratio into two components. AP is accounts payable scaled by book assets, which captures the main noninterest-bearing component of total liabilities. Debt is defined as total liabilities minus accounts payable divided by book assets, as a proxy for firms' use of interest-bearing debt. LTD is long-term liabilities over book assets, where China Stock Market & Accounting Research (CSMAR) defines liabilities with maturities greater than one year as long-term liabilities.

Following previous capital structure literature (Chen, Jiang and Lin, 2014; Öztekin, 2015), we employ the following control variables (X's) to explain firm capital structure decisions. Firm size, as measured by the natural log of total assets, helps to lower the likelihood of bankruptcy as well as bankruptcy costs (Booth et al., 2001; Frank and Goyal, 2009; Öztekin, 2015). Tangible assets can be viewed as good candidates for collateral (Titman and Wessels, 1988; Öztekin, 2015). We measure asset tangibility as fixed assets divided by total assets. Petersen and Rajan (1994) suggest that a company becomes better known as it ages and this reputation expands its access to capital. We thus control for firm age, measured as the natural log of the number of years since start plus one, in our regressions. We also include the profitability measure, return on assets (ROA), as Myers and Majluf (1984) suggest that firms use debt financing only when internal funding is insufficient. We calculate ROA as operating profit divided by book assets. Sales growth is used to proxy for a firm's growth opportunities (Frank and Goyal, 2009). We calculate sales growth as current year's sales minus last year's sales divided by last year's sales.

2.2. *DID Analyses: The Financial Constraint Hypothesis (FCH)*

While it is important to examine the effect of the Property Rights Law on an average firm in the full sample, from a policy perspective it is more important to investigate how the Law impacts firms with different characteristics. We do this by examining the effect of financial constraints on the property rights-leverage relation. To test the FCH, we employ a difference-in-differences (DID) approach and estimate Eq (2), as shown below:

$$Y_{it} = \delta_1 \text{CHARACTERISTIC}_{it} + \delta_2 \text{CHARACTERISTIC}_{it} \times \text{POST}_t + \delta_3 \text{POST}_t + \gamma X_{it} + \alpha_i + \varepsilon_{it} \quad (2)$$

Where $\text{CHARACTERISTIC}_{it}$ represents the firm characteristic we want to study. We examine three firm characteristics: asset tangibility (FA, defined as the ratio of fixed assets to total assets), private ownership (PRIVATE, defined as the fraction of non-state/non-collective shares), and firm size (Ln_ASSETS), all of which are used as proxies for financial constraints. The coefficient of the interaction term $\text{CHARACTERISTIC}_{it} \times \text{POST}_t$, δ_2 , is the key coefficient of interest in Eq (2) since it captures the differential effect of the Law on various groups of firms. The FCH predicts a significant δ_2 , the sign of which depends on the specific measure of financial constraint.

The firm characteristics used to proxy financial constraints in Eq (2) are continuous variables. As a robustness check, we modify Eq (2) as below:

$$Y_{it} = \delta_1 \text{CHARACTERISTIC_DUM}_i + \delta_2 \text{CHARACTERISTIC_DUM}_i \times \text{POST}_t + \delta_3 \text{POST}_t + \gamma X_{it} + \alpha_i + \varepsilon_{it} \quad (3)$$

Where $\text{CHARACTERISTIC_DUM}_i$ represents a dummy variable defined according to each characteristic's relative value in the pre-enactment period. For instance, when we study the moderating effect of private ownership, we define PRIV_DUM equals one if a firm has neither state nor collective ownership in the pre-enactment period and zero otherwise. Similar dummy variables are defined for firm size and asset tangibility.

2.3. Data and Sample

Our initial dataset is developed by China Stock Market & Accounting Research (CSMAR), which collects the data from the National Bureau of Statistics of China, Enterprise Association. The dataset covers over 1.28 million unique unlisted manufacturing firms from 1998-2012. It also reports firm production activities and financial information. One feature of this database worth noting is that it provides detailed information on firm ownership structure over time. To investigate the effect of the Property Rights Law on firm capital structure, we focus on three years before and three years after the Law took effect in 2007.¹¹ Our sample thus spans the period of 2004-2009. This dataset includes manufacturing firms only. We also require sample companies to have sales greater than RMB 1 million (roughly US\$131,500 in 2007 USD value) and to have more than 20

¹¹ Though China's Property Rights Law was enacted on March 16, 2007, Berkowitz, et al (2015) use December 29, 2006 as the event date in their paper, the day a draft of the Law was accepted by the 10th Standing Committee of the People's Congress. Therefore, we argue that it is reasonable to consider 2007 as a post-enactment year.

full-time employees. This procedure eliminates micro firms from the sample.¹² To ensure the comparability of firms, we further require sample firms to exist at least three years before and after the enactment of the Law. This ensures that any evidence we document is not due to changing sample composition. Our final sample has 629,221 firm-year observations for more than 107,000 unique firms. We winsorize all the dependent variables and Ln_ASSETS, FA, ROA and GROWTH at the top and bottom 1%.

Figure 2 shows our sample distribution by industry. Our sample firms come from a variety of industries, with textile, metal/nonmetal, equipment, and electronic and computer industries having the highest concentration of firms. These industries together account for more than 50% of the sample. Another significant portion of the sample firms operate in the food, wood-processing and raw chemical industries.

****** Insert Figure 2 here ******

Table 1, Panel A provides descriptive statistics for sample firms. The total debt ratio, LEV, calculated as total liabilities over total assets, has a mean value of 0.56 and a median of 0.58. We also partition the total debt ratio into an interest-bearing component and a non-interest-bearing component. The non-interest-bearing component of debt is measured by AP (accounts payable scaled by book assets), which has a mean value of 0.16 (median 0.10). Our variable DEBT captures the use of interest-bearing debt in the capital structure and is calculated as total liabilities minus accounts payable divided by book assets. This ratio has a mean value of 0.41 (median 0.39), which suggests that the majority of the debt used by our sample firms bears interest. Most of our sample firms have difficulty raising long-term debt (LTD), as shown by the mean value of LTD of 0.04, where LTD is estimated as long-term liabilities with maturity over one year divided by total assets.

The average company in our sample has a book value of assets of RMB 81 million (median RMB 21 million). Fixed assets represent a nontrivial fraction of total assets, with a mean value of 34% (median 31%). Mean ROA is an impressive 10% with a comparable sales growth rate of 30%, while the median of ROA and sales growth are 4% and 13%, respectively. Our sample firms are 11 years old on average.

The variable POST equals one if a firm-year observation falls within the three post-enactment years, 2007-2009, and zero otherwise. We also report information on PRIVATE, an

¹² Cull and Xu (2005) require their sample firms to have at least 20 (15) employees in the manufacturing (service) industry, respectively.

ownership variable which measures the percentage of private ownership in a firm (non-state and non-collective). As shown, our sample companies are dominated by private ownership. On average, private ownership accounts for 89% of shareholdings in our sample, and more than 75% of sample firms are 100% privately owned.

We conduct a univariate comparison of firm capital structures before and after the enactment of the Law. Specifically, we look at the means of the various debt ratios before (2004-2006) and after (2007-2009) the passage of the Property Rights Law. Table 1, Panel B reports the results. LEV decreases from 0.571 to 0.558. DEBT shows a slight drop from 0.407 to 0.406 in the post-enactment period, while LTD shows a similar pattern from 0.045 to 0.041. Panel B suggests that after the passage of the Law, firms use fewer liabilities in their capital structures, consistent with the reinvestment hypothesis that with strengthened property rights protection, entrepreneurs are willing to reinvest more internally generated profits and use less external debt financing.

Table 1, Panel C reports the Pearson correlation coefficients for variables used in our analyses. Consistent with the literature, large sample firms tend to use more debt, as do mature firms. Private ownership is negatively associated with firm debt use. This is consistent with the observation that in developing countries, privately-owned businesses have more difficulties than state-owned enterprises in accessing external debt financing (Firth et al., 2009).

**** **Insert Table 1 here** ****

3. Empirical Results: The Reinvestment Hypothesis

3.1. The Baseline Results

We first investigate the effect of property rights protection on capital structure choices for the full sample. We estimate our baseline model, Eq (1), and present the panel regression results using clustered standard errors in Table 2. The explanatory variable of interest is POST, the indicator variable for the Law's post-enactment period. The coefficients of POST are negative and significant for all four measures of leverage, indicating that leverage decreases after the enactment of the Law. These results are consistent with the reinvestment hypothesis, which predicts that when property rights protection improves, firms are willing to reinvest more of their profits, leading to relatively less use of external debt.

We understand that firm owners with political acumen may react quickly to the Law (early adopters), while firm owners who are highly risk averse may not do anything within a three-year

frame (laggards). Hence, the leverage decreasing effect we find after the Law's passage within three years probably come from early adopters and early majority. The full-fledged effects from the Law may take more years to materialize.

Table 2 also documents the effects of key firm characteristics on firm capital structure choices. Firm size (Ln_ASSETS) is negatively related to total debt ratio (LEV), and this outcome is entirely driven by firms' declining usage of supplier credits (AP). As shown in columns (3) and (4), after excluding AP from total liabilities, firm size becomes positively linked to the use of interest-bearing debt (DEBT) and long-term debt (LTD), respectively. These results indicate that bigger firms have better access to external interest-bearing debt funding than do smaller firms. Asset tangibility (FA) is negatively linked to total debt ratio (LEV) and total interest-bearing debt ratio (DEBT), but positively linked to long-term debt ratio (LTD). The latter indicates that when evaluating long-term loans, lenders focus on firms' fixed assets that can be collateralized. Consistent with Petersen and Rajan (1994), firm age (Ln_AGE) is positively related to all measures of leverage, largely because older firms have longer verifiable business records and more established relations with suppliers and creditors. Firm profitability (ROA) is negatively linked to all four measures of leverage. These results suggest that on average, more profitable firms are likely to borrow less, consistent with the pecking order theory of capital structure (Myers and Majluf, 1984). As expected, high growth firms borrow more (GROWTH).

****** Insert Table 2 here ******

3.2. *Confounding Events*

The enactment of China's Property Rights Law in 2007 represents an exogenous shock to firm-level decisions, as well as to creditors' lending behavior. In the three post-enactment years, there could be other confounding macro and/or policy shocks, which would affect our results. To address this concern, we carefully examine all business-related laws passed by the People's Congress of China and all major macro policy initiatives carried out by the government in 2007, 2008, and 2009. During this three-year period, China implemented three major pieces of business-related legislation, namely the Property Rights Law of China in 2007 (the focus of this study), the Labor Law of China in 2008, and the Enterprise Tax Law in 2008. Additionally, the Chinese government adopted aggressive policy responses to the Global Financial Crisis, which began in late 2008. We examine possible confounding impacts of each of these events in this section.¹³

¹³ We examine whether the Law's passage lead to declining leverage for China's listed firms in Section 6.

3.2.1. *The Effect of the Labor Law Change*

The Labor Law of China is passed in June 2007 and enacted in January 2008. The main theme of the Labor Law is the protection of worker's rights, including collective bargaining for wages and benefits and legally binding written contracts for all workers.

The theoretical impact of better employment protection on unlisted firms' leverage is ambiguous, and most of the prior literature is from listed firms in developed economies. Agrawal and Matsa (2013) find that a reduction in labor force unemployment risk resulting from statutory improvements in (U.S.) state unemployment insurance laws is associated with a subsequent *increase* in corporate leverage in affected firms, implying that better employment protection reduces the need for companies to maintain low leverage to protect their workforce against unemployment risk. On the other hand, Simintzi, Vig, and Volpin (2015) document that the stringency of national employment laws is associated with a subsequent *decrease* in corporate leverage due to increased fixed costs for companies.

To exclude the influence of the Labor Law enacted in 2008, we shorten our testing window in Table 2 by using only 2006 as the pre- and 2007 as the post-enactment year. We re-run regressions in Table 2 and continue to find a significant decline in firm leverage post-enactment of the Property Rights Law.¹⁴

3.2.2. *The Effect of the Enterprise Tax Law Change in 2007*

The Enterprise Income Tax Law of China was adopted at the 5th Session of the 10th National People's Congress on March 16, 2007. It went into effect on January 1, 2008.¹⁵ The most relevant change in the new Tax Law is that the enterprise statutory tax rate was lowered from 33% to 25%. This change in tax rates could potentially confound our finding that leverage decreases mainly/partially due to the property rights law's enactment, in two ways. First, lowering marginal tax rates reduces the interest tax-shield benefit, which mainly comes from long-term debt usage. As a result, firms may reduce their long-term debt usage, leading to an overall decrease in leverage. However, as shown in Table 1 (Panel B), the long-term debt component for an average firm in our sample is only 4%. A simple calculation would show that the loss in interest tax-shield due to the reduced tax rate is an economically insignificant amount of RMB 20,846 per year for an average firm with total book assets of RMB 81.43 million (assuming an 8% cost of debt). Therefore, we

¹⁴ The 2006-2007 results are available from the authors upon request.

¹⁵ Described in http://www.fdi.gov.cn/1800000121_39_3339_0_7.html.

argue that long-term debt interest tax-shield loss is not a significant driving force for the companies in our sample to reduce debt ratios.

Second, reduced tax rates imply that firms can keep more of their profits for investments, leading to less need for external debt (the pecking order theory). A profit measure, ROA, is included in all our regressions, which helps us partially address this concern. Additionally, using only data from 2006 to 2007 helps us to focus on the period before the Tax Law. The 2006-2007 regression results, as previously stated in Section 4.2.1, are similar to those reported in Table 2.

Another relevant change in the new Tax Law is that the super-preferential tax treatment for foreign firms is eliminated. Our dataset does not contain foreign ownership information. Hence, we are unable to empirically examine the effect of this provision on firm capital structure choices. However, we argue that this provision works in our favor. Before the enactment of the 2007 enterprise tax law, foreign firms in China paid very little or no taxes for an extended period of time. Therefore, they did not benefit from the long-term debt interest tax-shield. After the new Tax Law went into effect, foreign firms have to pay taxes similar to their domestic counterparts. This in turn may incentivize foreign firms to use more long-term debt due to new interest tax-shield benefits, *ceteris paribus*.

3.2.3. *The Effect of the 2008-2009 Financial Crisis*

There could be another alternative explanation for the overall leverage decrease in the post-period documented in Table 2. Two of the three post-enactment years coincided with the 2008-2009 global financial crisis, which was characterized by widespread credit contractions. It could be that during the financial crisis, China's credit supply to the private sector declined, contributing to the overall leverage decrease documented in this study. In this section, we examine China's credit supply over the sample period. We use the World Bank's measure of credit supply, defined as domestic credit to the private sector over GDP. As shown in Figure 3, China's credit supply to the private sector experienced a gradual downward trend, starting in the pre-enactment years and continuing into the post-years of 2007 and 2008. However, at the outset of the global financial crisis (the third quarter of 2008), the Chinese government announced a large stimulus package (RMB 4 trillion, or US\$580 billion) that combined an active fiscal policy and an expansionary monetary policy (Li, Willett and Zhang, 2012). As a result, credit supply to the private sector experienced a huge jump in 2009, from about 100% of GDP in 2008 to over 120% of GDP in 2009 (Figure 3). The fact that credit supply increased during the financial crisis helps strengthen the

reinvestment hypothesis explanation of our study. At the minimum, we can qualitatively rule out a credit crunch during the financial crisis being the cause of the documented leverage *decrease* following the Law's enactment.

****** Insert Figure 3 here ******

Additionally, we provide several robustness tests to address this concern. First, we add year, industry and region fixed effects in Eq. (1), besides firm fixed effects, and the main results remain unchanged. Second, we estimate pre- and post-enactment leverage changes by using only 2006 as the pre- and 2007 as the post-enactment year, thus excluding the financial crisis years of 2008 and 2009. These results are free from the effects of the 2008-2009 financial crisis and are highly consistent with our baseline results shown in Table 2. Third, we include China's domestic credit to the private sector over GDP as a control variable and re-estimate Eq. (1). The results are highly consistent with those documented in Table 2 across all dependent variables.¹⁶ As discussed previously, this policy initiative meant to increase credit supply, also an exogenous shock, actually helps strengthen our reinvestment hypothesis.

In summary, we argue that the policy and macroeconomic events mentioned above do not weaken our findings that enactment of the property rights law leads to an overall leverage decrease.

4. Empirical Results: The Financial Constraint Hypothesis

In the DID analyses below, we focus on the impact of financial constraints on the property rights-leverage relation. As discussed earlier, the Financial Constraint Hypothesis predicts a more pronounced effect of the Law on financially constrained firms than on the unconstrained ones, relatively speaking. More specifically, we expect to observe a higher leverage in the financially constrained firms than in the financially unconstrained firms, following the Law's enactment. As mentioned earlier, we use three firm characteristics as proxies for financial constraints: asset tangibility, private ownership and firm size. We estimate a DID analysis in Eq (2) and Eq (3) to obtain the panel regression results.

4.1. The Effect of Asset Tangibility

We now explore the role of asset tangibility in the relationship between property rights protection and capital structure choices. We use fixed assets (FA) over total assets as a proxy for asset tangibility (Li et al., 2009; Berkowitz et al, 2015). Prior to the Law's enactment, when making

¹⁶ The results from these robustness tests are not tabulated for brevity, but are available upon request.

lending decisions, creditors focused heavily on the amount of fixed assets that could be collateralized (Firth et al., 2009; Chen et al., 2013; Cerqueiro, Ongena and Roszbach, 2016). Hence, firms with low asset tangibility are more financially constrained than are high asset tangibility ones in terms of access to external credit. As private property rights protection is institutionalized post-enactment, the credit market becomes more developed.¹⁷ As a result, credit analyses become more sophisticated and are no longer a mere evaluation of collateral. Like their counterparts in developed economies, Chinese lenders are more willing to lend to firms with low tangibility but a solid business history or prospects, such as firms in the service and high-tech industries that traditionally have low asset tangibility.

The financial constraint hypothesis predicts that, post-enactment, firms with low tangibility experience a larger increase in leverage than do those with high tangibility. We present our DID regression results in Table 3. As shown in Panel A, the coefficients of the interaction term, FA*POST, are negative and significant for three leverage measures (columns (1), (3) and (4)), indicating a negative correlation between firm leverage and asset tangibility. These findings provide strong evidence that as property rights become more secure, firms with relatively low asset tangibility improve their access to external credit. The results are consistent with the findings from Ang, Cheng and Wu (2014). Ang, Cheng and Wu (2014) find that as intellectual property rights enforcement improves, unlisted high-tech firms in China, which tend to be firms with low asset tangibility, are more likely to obtain new debt.

****** Insert Table 3 here ******

In Panel A, the asset tangibility measure (FA) is a continuous value. As a robustness check, we divide the full sample firms into three groups by asset tangibility distribution, low (FA_low=1 if bottom third), middle (FA_mid=1 if middle third), and high tangibility (FA_high=1 if top third, our default category). We re-estimate our DID models and the results are presented in Panel B. The results are fully consistent with those in Panel A. Moreover, firms in both the bottom third and the middle third experience significant leverage increases, shown in columns (1), (3) and (4), over firms in the top third group.

¹⁷ Lim, Macias and Moeller (2014) argue that intangible assets can be very effective in generating cash. Loumioti (2012) contends that sophisticated lenders accept liquid and re-deployable intangible assets as collateral, as they have identified ways to leverage, finance and value intangible assets. Ellis and Jarboe (2010) provide examples of intangible asset-backed loans.

4.2. *The Effect of Ownership Structure*

Owing to the legacy of China's planned economy, various levels of governments continue to hold stakes in many private sector companies. Government ownership in developing economies represents a double-edged sword. On the one hand, governments have political, non-profit maximization objectives (Megginson and Netter, 2001). Government ownership has been linked to a greater expropriation risk (Bai et al., 2006) and a higher political intervention risk (Jefferson and Rawski, 2002; Cull and Xu, 2005; Borisova et al., 2015). On the other hand, government ownership helps establish political connections between the firm and state-owned banks, leading to better access to capital (Firth et al., 2009). When the institutional environment is weak, entrepreneurs with political connections tend to reinvest more than entrepreneurs without political connections (Ge et al., 2017). Cull and Xu (2005) and Megginson et al. (2014) argue that government ownership leads to soft-budget constraints. Cull et al. (2015) further argue that political connections substantially lower firms' financial constraints. *Ceteris paribus*, government ownership is linked to fewer financial constraints, whereas private ownership is linked to more financial constraints.

A priori, it is not clear how government ownership affects the property rights protection-capital structure relation. Creditors' willingness to lend clearly is influenced by their perceptions of the likelihood of being 'robbed' by the government in case of default. By putting a check on the government's "grabbing hand" and by giving equal protection to public and private property (Zhang, 2008) the Law may alleviate creditors' concerns and strengthen their willingness to extend credit to firms with government ownership. The reduced concern for the grabbing hand would predict a more pronounced effect of the Law on leverage as firm government ownership rises.

A counter argument can be made that firms with little or no government ownership are more attractive to lenders. Cull and Xu (2005) find that the share of private ownership has a positive effect on the rates of profit reinvestment. Borisova et al. (2015) also show that in "normal" times—before the 2008-10 Global Financial Crisis—state ownership of a firm's stock increases the cost of its bonds, then the relationship flips during the crisis as investors put greater weight on the implicit guarantee aspect of state ownership. Private firms tend to be better run than SOEs, yet they lack the easy access to capital that comes with government ownership in China (Firth et al., 2009). As such, firms with little or no government ownership have a strong demand for capital.

By incentivizing creditors to lend, the Law could exert a larger impact on these firms by influencing both the supply and demand sides of capital acquisition.

Table 4 presents the estimation results of our DID regression models. Our primary variable of interest is the interaction term, PRIVATE*POST, the interaction of firm private ownership percentage (PRIVATE) and the indicator for the Law's post-enactment period (POST). As column (1) shows, the coefficient of the interaction term is negative but insignificant. This decline is attributable to the decrease in the accounts payable component of total liabilities (AP, column (2)). In fact, as shown in columns (3) and (4), respectively, the interest-bearing debt ratio (DEBT) and long-term debt ratio (LTD) both increase significantly as private ownership increases.

****** Insert Table 4 here ******

As a robustness check, we interact POST with PRIV_Dum, a dummy equal to one if a firm is 100% privately owned, and zero otherwise. We re-estimate our DID models and report the results in Panel B. These results further support our conjecture that the effect of the Law on firm-level interest-bearing leverage choices is more pronounced in private firms with little or no government ownership. In conclusion, results in this section indicate that privately-owned firms in general benefit more from the Law than do companies with residual state ownership.

4.3. *The Effect of Firm Size*

We conclude this section by examining the effect of firm size on the relation between property rights protection and firm capital structure decisions. Beck et al. (2005) find that smaller firms consistently face higher levels of business obstacles. They also find that when financial and institutional development weakens these obstacles, small firms benefit more than large firms. Cull and Xu (2005) argue that weak property rights protection represents a major obstacle to firm development. They also document that access to finance and risk of government expropriation affect small firms more than large ones. The enactment of China's Property Rights Law represents a major institutional advancement. As such, we expect the Law to have a more pronounced effect on small than on large firms. Specifically, we expect that, post-enactment, smaller firms will experience a larger relative increase in leverage than will large firms. We test this conjecture below.

Table 5 reports our DID regression results for the size effect. As shown in Panel A, the coefficients for the interaction between firm size (Ln_ASSETS) and post-enactment of the Law, Ln_ASSETS*POST, are significant and negative in both interest-bearing debt measures (columns (3) and (4)). The negative sign indicates that, post-enactment, leverage decreases as firm size

increases. In other words, relative to large firms, small firms increase leverage in the post-enactment period.

****** Insert Table 5 here ******

In Panel A, firm size is a continuous measure. As a robustness check, we follow Beck et al. (2005) and divide the full sample into three size groups using dummy variables: Small=1 (if in the bottom third in size), Middle=1 (if in the middle third), and Large=1 (if in the top third, which is the default category in our regressions). We re-estimate our DID models and report the results in Panel B. The coefficients of the interaction terms, Small*POST and Middle*POST, are our focus here and are mostly positive and significant across the leverage measures. These results are consistent with those in Panel A, although the size effect is nonlinear. In particular, we observe that, post-enactment, medium-size firms experience a significantly larger increase in all three measures of leverage than do large firms (columns (1), (2) and (4)). Small firms also experience a bigger increase in their long-term debt ratios (LTD) than do large firms (column (4)). In addition, small firms receive relatively more supplier credit (AP) than do large firms following the Law's passage (column (2)).

5. The Effect of the Law on the Listed Sector

The focus of our study is on the unlisted sector, where we find empirical evidence supportive of both the Reinvestment Hypothesis in section 4 (full sample analysis) and the Financial Constraint Hypothesis in section 5 (DID analyses). As a robustness check, in this section we examine the effect of the property rights law on China's listed firms. We argue in the introduction and reiterate here that different market, institutional and regulatory forces are at work in influencing firm level decisions for unlisted and listed Chinese firms. We thus conjecture the enactment of China's property rights law should have different effects on these two groups of firms.

It is tempting to quantitatively compare how the Law impacts leverage decisions of the unlisted versus listed firms. However, in addition to the aforementioned different forces influencing unlisted and listed firms, we observe two notable imbalances between these two groups. The first issue is the huge difference in sample sizes. The final unlisted sample has 629,161 firm-year observations (Table 1, Panel A), whereas the sample of listed manufacturing firms has 5,246 firm-year observations (Table 6). Pooling listed and unlisted firm-year observations together, the results would be dominated by unlisted firms' characteristics.

The second issue is the dramatically different average firm size between these two groups. The median (mean) total assets in the unlisted sample is RMB 20.72 (81.43) million (Table 1, Panel A), while the median (mean) total assets in the listed sample is RMB 1,619 (1,301) million (Table 6). Measured by median (mean), a listed firm is 78 (16) times larger than an unlisted firm. If we were to use firm size as one of the matching criteria, we would be matching the largest unlisted firms with the smallest listed firms, which would make it difficult to generalize and interpret the matching results. Therefore, we argue that the unlisted and listed sectors are not empirically comparable. Instead, we opt to examine the effect of the Law on the listed firms separately, as opposed to a matching analysis. We infer qualitative comparisons with the unlisted firms based on the empirical results.

We first discuss descriptive statistics of the listed sample, as compared to the unlisted sample. We then test the Reinvestment Hypothesis and the Financial Constraint Hypothesis, respectively, using listed firms.

5.1. Full Sample Analysis: The Reinvestment Hypothesis

In our analyses of listed firms, we include only companies in the manufacturing sector, to be consistent with our unlisted sample.¹⁸ In addition to differences in firm size and number of observations between unlisted versus listed firms, we also observe other interesting differences. As shown in Table 6 (listed firms) and Table 1 (Panel A, unlisted firms), the mean total liabilities (LEV) for listed firms is 55% of book assets, similar to that of unlisted firms (56%). However, the components of LEV are quite different between the two. Unlisted firms rely much more on supplier credits (AP, 16%) and less on long-term debt (LDT, 4%), compared to listed firms that have a mean AP of 9% and LDT of 8%. This is expected given that listed firms have better access to the corporate bond market and formal financial institutions, relative to unlisted firms.

We also observe that on average, unlisted firms (Table 1, Panel A) are five times as profitable as listed firms (Table 6), measured by mean ROA. Furthermore, unlisted firms on average outpace listed firms in growth by seven percentage points. These two observations are important and provide further support for our argument that the unlisted sector is a more useful setting to examine the effect of China's property rights law on firm capital structure choices. First, the fact that the unlisted firms are much more profitable affords them the freedom to reinvest more of their retained earnings if they perceive that the Law helps constrain bureaucrats from

¹⁸ All the results in Section 6 are similar if we use listed firms exclusive of financial and utilities firms.

appropriating the fruits of their investments. Second, the fact that unlisted firms grow at much higher rates but had historically been and continued to be disadvantaged by financial institutions called for policy actions to level the playing field.¹⁹ One such action was the enactment of the 2007 Property Rights Law. Hence, we reiterate that the unlisted sector offers a more suitable setting to examine if the Law has made incremental improvements for these financially disadvantaged firms.

**** **Insert Table 6 here** ****

We re-estimate Eq. (1) using the full sample of listed manufacturing firms and report the results in Table 7. As shown, total liabilities (LEV), total debt (DEBT) and long-term debt (LTD) all exhibit a significant decrease following the passage of the Law, consistent with the prediction of the reinvestment hypothesis.

**** **Insert Table 7 here** ****

5.2. *Interaction Analyses: The Financial Constraint Hypothesis*

Similar to our analysis on unlisted firms, we use three measures of financial constraint to partition the listed sample: asset tangibility (FA), ownership structure (PRIVATE), and firm size (Ln_ASSETS). We re-estimate Eq. (2) and report the results in Table 8.

In Panel A, we report the regression results on the effect of asset tangibility (FA) on the Property Rights Law – leverage relation. As shown, the coefficients of the interaction term, FA*POST, are insignificant for all four measures of leverage. These results suggest that, for publicly listed firms, creditors do not change how they rely on collateral when making lending decisions before and after the Law’s passage. For unlisted firms, however, creditors significantly reduce their reliance on asset tangibility after the passage of the Law.

In Panel B, we report the regression results on the effect of private ownership (PRIVATE) on the property rights law – leverage relation. As shown, the coefficients of the interaction term, PRIVATE*POST, are insignificant for total liabilities (LEV), total debt (DEBT) and long-term debt (LTD). Existing studies have shown that state ownership is linked to soft-budget constraints, whereas private ownership is linked to more financial constraints (Cull and Xu, 2005; Megginson, et al. 2014; Cull et al. 2015). However, the results documented here suggest that, once a company becomes publicly traded, creditors do not distinguish whether the shares are owned by the

¹⁹ See the article in the *Wall Street Journal* on 4/1/2019, entitled, “China’s Entrepreneurs are Left High and Dry Despite a Flood of Credit,” <https://www.wsj.com/articles/chinas-entrepreneurs-are-left-high-and-dry-despite-a-flood-of-credit-11554111004?mod=searchresults&page=1&pos=17>

government or by private investors, before and after the Law's passage. Thus, ownership structure in listed firms has no impact on the property rights law – leverage relation. In contrast, for unlisted firms, creditors are more willing to lend to private firms as creditor rights protection improves.

Lastly, we examine the effect of firm size (Ln_ASSETS) on how the Law affects leverage decisions, and report the results in Panel C. As shown, the coefficients of the interaction term, Ln_ASSETS*POST , are insignificant for total liabilities (LEV), accounts payable (AP) and long-term debt (LTD). These results suggest that firm size, used here as a proxy for financial constraints, has no significant impact on how the Law influences firm decisions on total liabilities, supplier credit, or long-term debt. However, the coefficient is positive and significant for total debt (DEBT), suggesting that the Law helps bigger, less financially constrained firms improve their total debt capacity. This is opposite to the results documented in our analysis of unlisted firms, where we find that the Law helps smaller, more financially constrained companies increase their leverage.

In summary, the findings in this subsection indicate that, for publicly listed firms, the degree of financial constraint plays an insignificant role in how the Law influences firm capital structure choices. In contrast, among unlisted firms, we find that financial constraints play an important role in how the Law influences firm capital structure decisions. Specifically, we find that financially constrained unlisted firms benefit more than unconstrained ones as a result of the Law's enactment in terms of accessing external debt capital.

We provide two possible explanations why the financial constraint hypothesis holds for unlisted firms but not for listed firms. The first is that the unlisted sector is more financially constrained than the listed sector. The second and perhaps equally important reason is that the gap of access to external debt between constrained and unconstrained firms is wider in the unlisted sector than in the listed sector. Hence, the differential effect of the Law on financially constrained versus unconstrained firms is more pronounced in the unlisted sector.

****** Insert Table 8 here ******

6. Conclusions

This paper exploits a natural experiment, the enactment of China's Property Rights Law in 2007, to investigate the impact of property rights protection on firm capital structure. The Law contains specific provisions designed to strengthen creditor rights and to restrain governments from expropriating private property. These provisions, if enforced effectively, should incentivize

creditors to lend and private businesses to invest in capital projects. However, *ex ante*, it is unclear how the Law would impact firm leverage choices, as there exist alternative hypotheses that point in both directions.

We employ a large dataset of non-listed Chinese firms in this study. Regression results from our full sample analyses show an overall decrease in leverage following the Law's enactment. These findings are consistent with the reinvestment hypothesis in that with better property rights protection, firms are willing to reinvest their retained earnings and thus use less external debt. Our results remain strong after several robustness checks, which supports the Reinvestment Hypothesis.

Our findings of a decline in firm leverage at first seems to contradict one of the intended purposes of the Law, which is to incentivize creditors to lend. We argue that this is not necessarily the case. The Law can still incentivize creditors to lend more, possibly to firms that they would not lend to previously. The financial constraint hypothesis predicts that pre-enactment financially constrained firms should benefit more from the Law, relative to unconstrained ones. We partition the full sample based on a firm's relative degree of financial constraint and employ a DID framework to empirically test this conjecture. The results summarized below support the Financial Constraint Hypothesis.

First, we document that the effect of the Law on capital structure varies with firm asset tangibility. In the post-enactment period, with the enhanced creditor rights protection, lenders look beyond asset tangibility and give more weight to business history and/or project merits. As a result, low tangibility firms experience a larger leverage increase relative to high tangibility firms. Second, ownership structure plays an important role in the relationship between property rights protection and firm leverage. In particular, post-enactment, interest-bearing debt ratios increase as private ownership in the firm increases. This is consistent with the notion that, pre-enactment, fully private firms are more financially constrained than are companies with residual state ownership. Post-enactment, creditor rights, as well as private business profits, are better protected. This finding is important in that it provides empirical support for the effectiveness of the Law in encouraging lending to privately-owned businesses. Third, we find that small firms experience a relatively bigger leverage increase than large firms following the Law's passage. Smaller firms have fewer tangible assets, fewer political connections, and generally more financial constraints than large firms. Beck et al. (2005) find that small firms encounter more business obstacles (financial, legal

and corruption) than large firms. When institutional developments weaken these constraints, small firms benefit more do than their larger counterparts.

As a robustness check, we also study the effect of the Law on China's listed firms. The results from listed firms support the reinvestment hypothesis but not the financial constraint hypothesis. We argue that, on average, unlisted firms are more financially constrained than listed firms and the gap of access to external debt between financially constrained and unconstrained firms is wider in the unlisted than in the listed sector. Hence the Law's differential effect on constrained versus unconstrained firms is more pronounced for unlisted firms.

In conclusion, our study adds novel and comprehensive evidence to the growing literature on the paramount importance of property rights protection in shaping business decisions (Cull and Xu 2005, JMW 2002, among others). In particular, we find that secure property rights protection has important implications for firm capital structure choices, one of the most consequential corporate decisions.

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Table 1
Summary Statistics

Our sample includes all firm-years in CSMAR's non-listed firms' database during the 2004-2009 period subject to the twin requirements of sales greater than RMB 1 million and full-time employees greater than 20. The non-listed firms' database includes only manufacturing firms. Panel A reports descriptive statistics, Panel B reports univariate tests of leverage measures pre- and post-enactment of the Property Rights Law, and Panel C reports Pearson correlation coefficients. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. ASSETS is book assets in millions of RMB. Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of the number of years since inception plus one. ROA is operating profit over assets. Growth is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). PRIVATE is the percentage of non-state and non-collective ownership. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

Panel A: Summary Statistics of Key Variables

| Variable | Mean | 1st Quartile | Median | 3rd Quartile | Std. Dev. | N |
|-------------------------|-------|-----------------|--------|-----------------|--------------|---------|
| LEV | 0.56 | 0.37 | 0.58 | 0.76 | 0.27 | 629,161 |
| AP | 0.16 | 0.02 | 0.10 | 0.23 | 0.18 | 629,161 |
| DEBT | 0.41 | 0.19 | 0.39 | 0.59 | 0.26 | 629,161 |
| LTD | 0.04 | 0.00 | 0.00 | 0.01 | 0.11 | 629,161 |
| ASSETS (in million RMB) | 81.43 | 9.15 | 20.72 | 55.81 | 213.10 | 629,163 |
| Ln_ASSETS | 17.02 | 16.03 | 16.85 | 17.84 | 1.39 | 629,159 |
| FA | 0.34 | 0.17 | 0.31 | 0.49 | 0.22 | 629,161 |
| Ln_AGE | 2.16 | 1.79 | 2.20 | 2.56 | 0.71 | 629,164 |
| ROA | 0.10 | 0.01 | 0.04 | 0.12 | 0.20 | 629,161 |
| GROWTH | 0.30 | -0.06 | 0.13 | 0.40 | 0.90 | 573,251 |
| POST | 0.50 | 0.00 | 0.00 | 1.00 | 0.50 | 629,221 |
| PRIVATE | 0.89 | 1.00 | 1.00 | 1.00 | 0.29 | 628,554 |

Panel B: Univariate Test of Capital Structure Measures

Significance of pre- versus post-enactment mean difference is based on t-test statistics.

| | Pre-enactment | Post-enactment | Mean difference |
|------|---------------|----------------|-----------------|
| LEV | 0.571 | 0.558 | -0.013*** |
| AP | 0.164 | 0.153 | -0.011*** |
| DEBT | 0.407 | 0.406 | -0.001* |
| LTD | 0.045 | 0.041 | -0.003*** |

Panel C: Correlation Coefficient Matrix

Correlations significant at least at the 10% level are shown in bold font.

| | LEV | AP | DEBT | LTD | Ln_ASSETS | FA | Ln_AGE | ROA | GROWTH | POST |
|-----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|---------------|-------------|
| AP | 0.37 | | | | | | | | | |
| DEBT | 0.77 | (0.30) | | | | | | | | |
| LTD | 0.20 | (0.12) | 0.29 | | | | | | | |
| Ln_ASSETS | 0.02 | (0.07) | 0.07 | 0.15 | | | | | | |
| FA | (0.18) | (0.24) | (0.02) | 0.21 | 0.05 | | | | | |
| Ln_AGE | 0.03 | (0.06) | 0.07 | 0.09 | 0.22 | (0.03) | | | | |
| ROA | (0.27) | (0.13) | (0.19) | (0.04) | (0.15) | 0.10 | (0.04) | | | |
| GROWTH | (0.02) | (0.01) | (0.01) | 0.01 | 0.02 | 0.05 | (0.13) | 0.16 | | |
| POST | (0.02) | (0.03) | (0.00) | (0.02) | 0.12 | (0.03) | 0.24 | 0.08 | (0.10) | |
| PRIVATE | (0.04) | 0.06 | (0.08) | (0.15) | (0.11) | (0.08) | (0.30) | 0.06 | 0.02 | 0.02 |

Table 2
Property Rights Law and Capital Structure

This table reports regression results of firm capital structure changes surrounding the enactment of China's 2007 Property Rights Law. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. In all regressions, we include firm fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| POST | -0.0114*** (0.0007) | -0.0056*** (0.0005) | -0.0052*** (0.0007) | -0.0041*** (0.0003) |
| Ln_ASSETS | -0.0082*** (0.0011) | -0.0126*** (0.0007) | 0.0038*** (0.0011) | 0.0056*** (0.0004) |
| FA | -0.1442*** (0.0034) | -0.0797*** (0.0021) | -0.0633*** (0.0033) | 0.0342*** (0.0015) |
| Ln_AGE | 0.0149*** (0.0014) | 0.0003 (0.0009) | 0.0149*** (0.0014) | 0.0012* (0.0006) |
| ROA | -0.1268*** (0.0029) | -0.0284*** (0.0018) | -0.0976*** (0.0029) | -0.0029** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0034*** (0.0003) | 0.0008** (0.0004) | 0.0005*** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 573240 | 573240 | 573240 | 573240 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Table 3
Property Rights Law, Asset Tangibility and Capital Structure

This table reports the DID regression results of the impact of asset tangibility on the Property Rights Law-capital structure relation. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, all scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. Asset tangibility is measured by FA in Panel A, and by tercile dummies based on 2006 FA in Panel B. FA_Low and FA_Mid are dummies that equal to 1 if a firm is in the lowest or the middle tercile of firm tangibility, respectively, and 0 otherwise. In all regressions, we include firm fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

Panel A: Using Continuous Asset Tangibility Measure, FA

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| FA*POST | -0.0129*** (0.0028) | 0.0183*** (0.0019) | -0.0321*** (0.0029) | -0.0126*** (0.0014) |
| POST | -0.0070*** (0.0012) | -0.0119*** (0.0009) | 0.0058*** (0.0012) | 0.0002 (0.0005) |
| Ln_ASSETS | -0.0081*** (0.0011) | -0.0127*** (0.0007) | 0.0039*** (0.0011) | 0.0056*** (0.0004) |
| FA | -0.1363*** (0.0037) | -0.0909*** (0.0024) | -0.0436*** (0.0037) | 0.0420*** (0.0017) |
| Ln_AGE | 0.0149*** (0.0014) | 0.0004 (0.0009) | 0.0148*** (0.0014) | 0.0011* (0.0006) |
| ROA | -0.1263*** (0.0029) | -0.0292*** (0.0018) | -0.0963*** (0.0029) | -0.0024** (0.0012) |
| GROWTH | 0.0041*** (0.0004) | 0.0034*** (0.0003) | 0.0007* (0.0004) | 0.0004** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 573240 | 573240 | 573240 | 573240 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Panel B: Using FA Tercile Dummies as Tangibility Measures

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| FA_Low | -0.0039 (0.0027) | 0.0043** (0.0018) | -0.0086*** (0.0027) | -0.0007 (0.0012) |
| FA_Mid | -0.0063*** (0.0019) | 0.0016 (0.0012) | -0.0081*** (0.0019) | -0.0006 (0.0009) |
| FA_Low*POST | 0.0068*** (0.0017) | -0.0113*** (0.0013) | 0.0195*** (0.0018) | 0.0089*** (0.0009) |
| FA_Mid*POST | 0.0083*** (0.0015) | -0.0059*** (0.0009) | 0.0146*** (0.0015) | 0.0064*** (0.0008) |
| POST | -0.0175*** (0.0014) | 0.001 (0.0008) | -0.0186*** (0.0014) | -0.0098*** (0.0008) |
| Ln_ASSETS | -0.0083*** (0.0011) | -0.0132*** (0.0007) | 0.0056*** (0.0010) | 0.0055*** (0.0004) |
| FA | -0.1474*** (0.0036) | -0.0763*** (0.0022) | -0.0714*** (0.0035) | 0.0322*** (0.0016) |
| Ln_AGE | 0.0150*** (0.0014) | 0.0006 (0.0009) | 0.0135*** (0.0013) | 0.0012* (0.0006) |
| ROA | -0.1264*** (0.0029) | -0.0298*** (0.0018) | -0.0930*** (0.0028) | -0.0023** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0035*** (0.0003) | 0.0007* (0.0004) | 0.0005** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 573237 | 573237 | 573237 | 573237 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Table 4
Property Rights Law, Ownership and Capital Structure

This table reports DID regression results of the impact of ownership on the Property Rights Law-capital structure relation. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. We use two private ownership measures: the continuous percentage of private shares (Panel A) and private ownership dummy (Panel B). PRIVATE is the percentage of non-state and non-collective ownership. PRIV_DUM is a dummy that equals to 1 if a firm has no state or collective ownership in the pre-enactment period and 0 otherwise. In all regressions, we include firm fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

Panel A: Using the Percentage of Private Shares, PRIVATE

| | LEV (1) | AP (2) | DEBT (3) | LTD (4) |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| PRIVATE | 0.0024 (0.0023) | 0.0075*** (0.0015) | -0.0055** (0.0024) | -0.0043*** (0.0012) |
| PRIVATE*POST | -0.0031 (0.0020) | -0.0155*** (0.0013) | 0.0131*** (0.0021) | 0.0076*** (0.0011) |
| POST | -0.0086*** (0.0019) | 0.0079*** (0.0012) | -0.0164*** (0.0019) | -0.0107*** (0.0011) |
| Ln_ASSETS | -0.0081*** (0.0011) | -0.0124*** (0.0007) | 0.0037*** (0.0011) | 0.0055*** (0.0004) |
| FA | -0.1441*** (0.0034) | -0.0795*** (0.0021) | -0.0634*** (0.0033) | 0.0339*** (0.0015) |
| Ln_AGE | 0.0151*** (0.0014) | 0.0011 (0.0009) | 0.0143*** (0.0014) | 0.0008 (0.0006) |
| ROA | -0.1267*** (0.0029) | -0.0282*** (0.0018) | -0.0978*** (0.0029) | -0.0031*** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0033*** (0.0003) | 0.0009** (0.0004) | 0.0005*** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 572823 | 572823 | 572823 | 572823 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Panel B: Using Private Ownership Dummy, PRIV_DUM

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| PRIV_DUM | 0.0016 (0.0021) | 0.0071*** (0.0014) | -0.0058*** (0.0021) | -0.0052*** (0.0011) |
| PRIV_DUM*POST | -0.0033** (0.0016) | -0.0127*** (0.0011) | 0.0098*** (0.0017) | 0.0045*** (0.0009) |
| POST | -0.0085*** (0.0015) | 0.0050*** (0.0010) | -0.0133*** (0.0016) | -0.0078*** (0.0008) |
| Ln_ASSETS | -0.0081*** (0.0011) | -0.0124*** (0.0007) | 0.0036*** (0.0011) | 0.0055*** (0.0004) |
| FA | -0.1441*** (0.0034) | -0.0795*** (0.0021) | -0.0634*** (0.0033) | 0.0339*** (0.0015) |
| Ln_AGE | 0.0151*** (0.0014) | 0.0011 (0.0009) | 0.0143*** (0.0014) | 0.0009 (0.0006) |
| ROA | -0.1267*** (0.0029) | -0.0281*** (0.0018) | -0.0978*** (0.0029) | -0.0030** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0033*** (0.0003) | 0.0009** (0.0004) | 0.0005*** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 572712 | 572712 | 572712 | 572712 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Table 5
Property Rights Law, Firm Size and Capital Structure

This table reports DID regression results of the impact of firm size on the Property Rights Law-capital structure relation. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. In Panel A, firm size measure is Ln_ASSETS. In Panel B, we use tercile dummies based on 2006 Ln_ASSETS. Small and Middle are dummies that equal to 1 if a firm belongs to the lowest or middle tercile, respectively, and 0 otherwise. In all regressions, we include firm fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

Panel A: Using Ln_ASSETS as the Firm Size Measure

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| Ln_ASSETS*POST | -0.0009** (0.0004) | 0.0000 (0.0003) | -0.0011** (0.0004) | -0.0022*** (0.0002) |
| POST | 0.0048 (0.0070) | -0.0055 (0.0049) | 0.0128* (0.0072) | 0.0332*** (0.0035) |
| Ln_ASSETS | -0.0076*** (0.0011) | -0.0126*** (0.0007) | 0.0044*** (0.0011) | 0.0069*** (0.0004) |
| FA | -0.1443*** (0.0034) | -0.0797*** (0.0021) | -0.0634*** (0.0033) | 0.0340*** (0.0015) |
| Ln_AGE | 0.0149*** (0.0014) | 0.0003 (0.0009) | 0.0149*** (0.0014) | 0.0010* (0.0006) |
| ROA | -0.1271*** (0.0030) | -0.0284*** (0.0018) | -0.0979*** (0.0029) | -0.0035*** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0034*** (0.0003) | 0.0008* (0.0004) | 0.0004** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 573240 | 573240 | 573240 | 573240 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Panel B: Using Ln_ASSETS Tercile Dummies as Firm Size Measures

| | LEV | AP | DEBT | LTD |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) |
| Small | 0.0038 (0.0039) | 0.0022 (0.0027) | -0.0003 (0.0039) | 0.0024 (0.0016) |
| Middle | 0.0001 (0.0026) | 0.0008 (0.0018) | -0.0019 (0.0026) | -0.0012 (0.0012) |
| Small*POST | 0.0036* (0.0019) | 0.0043*** (0.0014) | 0.0007 (0.0020) | 0.0067*** (0.0008) |
| Middle*POST | 0.0032*** (0.0012) | -0.0007 (0.0008) | 0.0049*** (0.0012) | 0.0062*** (0.0006) |
| POST | -0.0134*** (0.0010) | -0.0052*** (0.0007) | -0.0084*** (0.0010) | -0.0081*** (0.0005) |
| Ln_ASSETS | -0.0082*** (0.0011) | -0.0131*** (0.0007) | 0.0055*** (0.0011) | 0.0054*** (0.0004) |
| FA | -0.1444*** (0.0034) | -0.0802*** (0.0021) | -0.0641*** (0.0032) | 0.0339*** (0.0015) |
| Ln_AGE | 0.0149*** (0.0014) | 0.0006 (0.0009) | 0.0135*** (0.0013) | 0.0011* (0.0006) |
| ROA | -0.1271*** (0.0030) | -0.0293*** (0.0018) | -0.0944*** (0.0028) | -0.0034*** (0.0012) |
| GROWTH | 0.0042*** (0.0004) | 0.0034*** (0.0003) | 0.0008* (0.0004) | 0.0004** (0.0002) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 573237 | 573237 | 573237 | 573237 |
| R2 | 0.75 | 0.67 | 0.70 | 0.66 |

Table 6
Summary Statistics for Listed Firms

This table reports summary statistics for listed firms. Our sample includes all firm-years in CSMAR listed firms' database during the 2004-2009 period. As non-listed firms' database includes only manufacturing firms, we cover only listed manufacturing firms for comparison purpose. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. ASSETS is book assets in millions of RMB. Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of the number of years since inception plus one. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). PRIVATE is the percentage of non-state and non-collective ownership.

| Variable | Mean | 1st Quartile | Median | 3rd Quartile | Std. Dev. | N |
|----------------------|-------------|-------------------------|---------------|-------------------------|----------------------|----------|
| LEV | 0.55 | 0.39 | 0.52 | 0.64 | 0.33 | 5,246 |
| AP | 0.09 | 0.04 | 0.07 | 0.12 | 0.07 | 5,246 |
| DEBT | 0.44 | 0.30 | 0.43 | 0.55 | 0.20 | 5,246 |
| LTD | 0.08 | 0.00 | 0.03 | 0.11 | 0.11 | 5,235 |
| ASSETS (million RMB) | 1,301.00 | 979.10 | 1,619.00 | 1,619.00 | 442.50 | 5,246 |
| Ln_ASSETS | 20.89 | 20.70 | 21.21 | 21.21 | 0.54 | 5,246 |
| FA | 0.33 | 0.20 | 0.31 | 0.45 | 0.17 | 5,246 |
| Ln_AGE | 2.43 | 2.20 | 2.48 | 2.71 | 0.34 | 5,246 |
| ROA | 0.02 | 0.00 | 0.03 | 0.06 | 0.10 | 5,246 |
| GROWTH | 0.23 | -0.01 | 0.14 | 0.31 | 0.73 | 5,166 |
| POST | 0.50 | 0.00 | 0.00 | 1.00 | 0.50 | 5,246 |
| PRIVATE | 0.73 | 0.51 | 0.73 | 1.00 | 0.25 | 4,914 |

Table 7
Property Rights Law and Capital Structure for Listed Firms

This table reports regression results of firm capital structure changes surrounding the enactment of China's 2007 Property Rights Law. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, then scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. In all regressions, we include firm fixed effects. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

| | LEV (1) | AP (2) | DEBT (3) | LTD (4) |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| POST | -0.0174** (0.0078) | -0.0024 (0.0023) | -0.0200*** (0.0051) | -0.0078** (0.0033) |
| Ln_ASSETS | -0.1097* (0.0648) | 0.0065 (0.0074) | 0.0212 (0.0228) | 0.0312** (0.0141) |
| FA | 0.2541*** (0.0855) | 0.0192 (0.0167) | 0.0946** (0.0374) | 0.0472** (0.0227) |
| Ln_AGE | 0.1746*** (0.0285) | 0.0376*** (0.0071) | 0.1038*** (0.0188) | 0.0435*** (0.0121) |
| ROA | -0.8870*** (0.1072) | -0.0924*** (0.0193) | -0.5898*** (0.0429) | -0.0911*** (0.0231) |
| GROWTH | 0.0134* (0.0070) | 0.0057*** (0.0020) | 0.006 (0.0044) | 0.0053*** (0.0016) |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 5166 | 5166 | 5166 | 5155 |
| R2 | 0.84 | 0.81 | 0.84 | 0.73 |

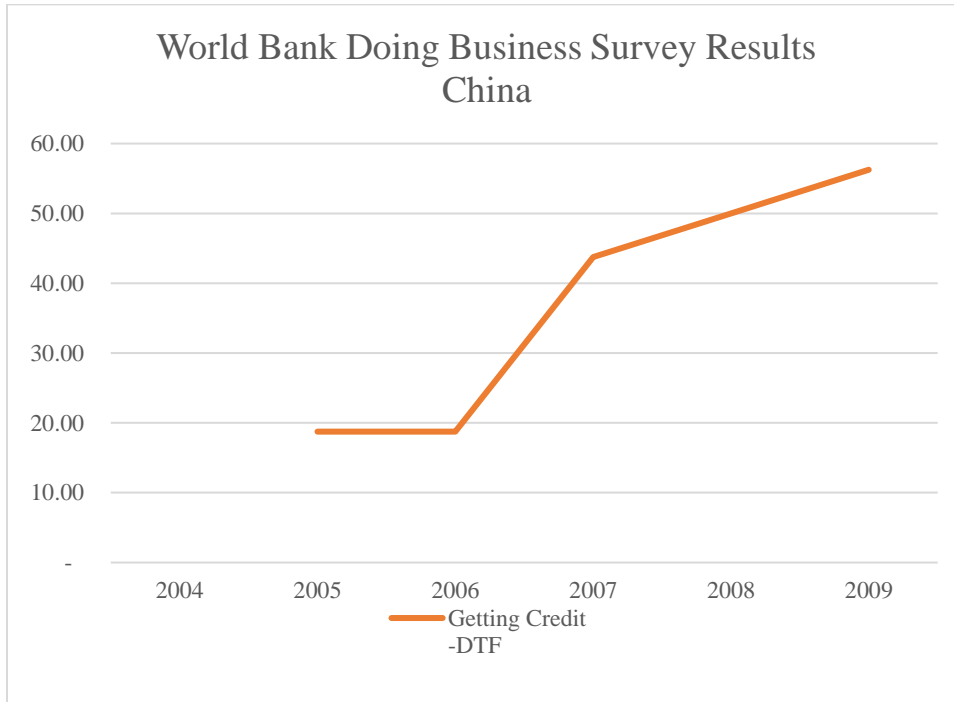
Table 8**The Effect of Asset Tangibility, Ownership and Firm Size in Listed Firms**

This table reports the DID regression results of the impact of asset tangibility, ownership or firm size on the Property Rights Law-capital structure relation. LEV is total liabilities over book assets. AP is accounts payable over book assets. DEBT is total liabilities minus accounts payable, all scaled by book assets. LTD is long-term liabilities over book assets. POST is a dummy equal to 1 for the post-enactment period (2007-2009) and 0 for the pre-enactment period (2004-2006). Ln_ASSETS is the natural log of book assets. FA is fixed assets over book assets. Ln_AGE is the natural log of firm age in years. ROA is operating profit over assets. GROWTH is sales growth measured as sales in year t minus sales in year t-1, then divided by sales in year t-1. Asset tangibility, ownership and firm size are measured by FA, PRIVATE, and Ln_ASSETS, respectively. In all regressions, we include the same set of firm control variables and firm fixed effects as we do in unlisted firms' regressions. Standard errors, clustered at the firm level, are reported in parentheses. Significance levels at 1%, 5% and 10% are denoted by *, ** and *** respectively.

| | LEV (1) | AP (2) | DEBT (3) | LTD (4) |
|---|---------------------|----------------------|------------------------|----------------------|
| <i>Panel A: Property Rights Law, Asset Tangibility and Capital Structure</i> | | | | |
| FA*POST | 0.0113 (0.0399) | -0.0101 (0.0092) | 0.0123 (0.0250) | -0.0235 (0.0190) |
| POST | -0.0213 (0.0161) | 0.0011 (0.0043) | -0.0243** (0.0102) | 0.0004 (0.0065) |
| Firm controls | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 5166 | 5166 | 5166 | 5155 |
| R2 | 0.84 | 0.81 | 0.84 | 0.73 |
| <i>Panel B: Property Rights Law, Ownership and Capital Structure</i> | | | | |
| PRIVATE*POST | -0.0225 (0.0251) | -0.0136* (0.0071) | -0.0301 (0.0184) | -0.0023 (0.0122) |
| POST | 0.0029 (0.0172) | 0.0078 (0.0051) | 0.0042 (0.0137) | -0.0068 (0.0099) |
| Firm controls | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 4838 | 4838 | 4838 | 4827 |
| R2 | 0.82 | 0.80 | 0.83 | 0.73 |
| <i>Panel C: Property Rights Law, Firm Size and Capital Structure</i> | | | | |
| Ln_ASSETS*POST | 0.0377 (0.0333) | 0.0025 (0.0062) | 0.0281** (0.0111) | 0.0117 (0.0071) |
| POST | -0.8049 (0.6989) | -0.0545 (0.1299) | -0.6059*** (0.2321) | -0.2514* (0.1493) |
| Firm controls | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| N | 5166 | 5166 | 5166 | 5155 |
| R2 | 0.84 | 0.81 | 0.84 | 0.73 |

Figure 1
China's Score of Getting Credit: 2004-2009

According to the World Bank, getting credit measures each country's "strength of credit reporting systems and effectiveness of collateral and bankruptcy laws in facilitating lending". DTF stands for Distance to Frontier. A higher DTF score indicates that the regulatory performance of an economy improves.



Data: The World Bank

Figure 2
Firm Distribution by Industry (%)

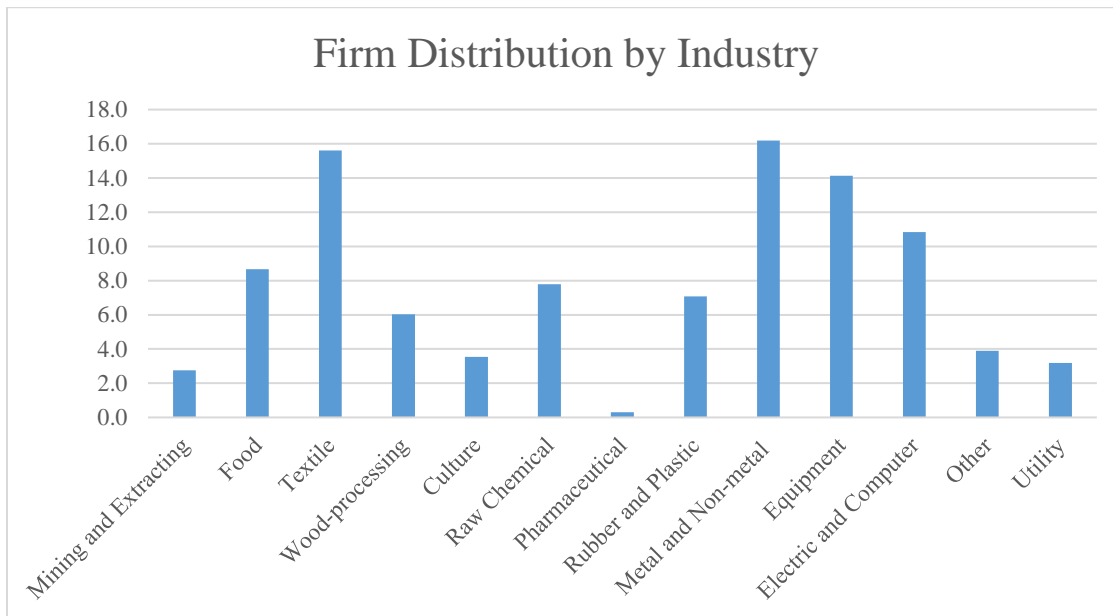
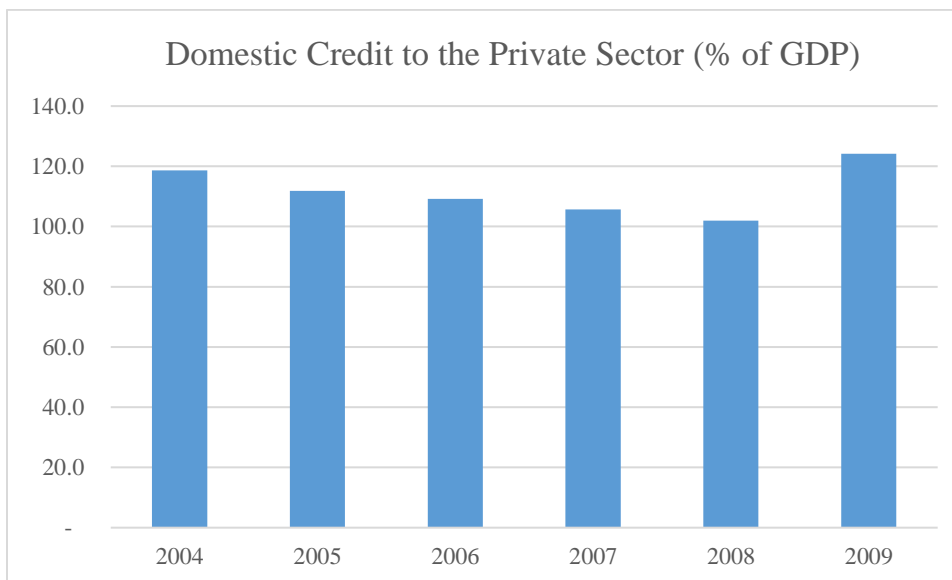


Figure 3
China's Domestic Credit to the Private Sector: 2004-2009



Data: The World Bank