

# The Real and Financial Effects of Property Rights: Evidence from a Natural Experiment\*

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## ABSTRACT

The 2007 Property Law in China checked the power of local governments to expropriate the assets of private firms and it gave creditors (primarily banks) more rights over the assets underlying their secured loans to private firms. We use the property law as a natural experiment for understanding the real and financial effects of property rights on firms. Using a panel of over seven hundred listed private firms, we show that after the enactment firms increased the quantity and efficiency of their investments. We also document using several measures that firms had more access to external finance: firms became less dependent on their internal cash flows for financing their investments, firms issued more debt, firms held less cash, the marginal value of their cash fell and the cash flow sensitivity of their cash dropped. We argue that the beneficial impacts of this law should have been more profound for firms that had a large stock of tangible assets and more growth opportunities and less profound for politically connected firms. Our comprehensive set of estimates confirms these predictions. Consistent with the above findings, we find that the property law had a strong announcement effect. Specifically, firms with better opportunities for growth, lower cash flows, higher tangibility and that did not have political connections had higher cumulative abnormal returns around the time when the law was announced.

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## 1. Introduction

Property rights are a fundamentally important concept in economics and finance. As Levine (p.61, 2005) points out, "the security of property rights . . . is not a natural occurrence; rather it is an outcome of policy choices and social institutions." Given the importance of the topic, recent literature has explored how cross country differences in colonial origins and natural endowments shape property rights which, in turn, cause long run country-level growth (La Porta et al., 1998; Acemoglu et al., 2001; Shleifer and Wolfenzon, 2002; Beck et al., 2003; Beck and Levine, 2005; Levine, 2005). At the firm level, Beck et al., (2005) and La Porta et al. (2002) also show that legal institutions that provide property rights protection enhance firm value and growth.

Existing theories suggest that property rights protections have a direct impact on firm's investment and financing decisions. A firm is at risk of getting inadequate returns on its investments when the government can grab private assets and does not provide fundamental protections of property rights (e.g. Shleifer and Vishny, 2002). Firms operating in an environment with insecure property rights are uncertain about their ability to keep the fruits of their efforts and as a consequence, decrease their investment activities (North, 1990; Cull and Xu, 2005). Furthermore, creditors limit their supply of finance when their rights to seize collateral from a firm that is in default on a loan or to receive compensation from a firm that degrades its collateral are weak (Djankov et al., 2007, 2008) And, creditors are less willing to make loans to firms whose assets can be easily expropriated. Thus, weak creditor rights over the assets underlying its secured loans and weak firm property rights over its assets place constraints on a firm's access to external finance.

Despite the importance of property rights, evidence of their impact *at the firm level* is limited. Using cross-sectional enterprise survey data, Johnson, McMillan and Woodruff (2002) and Cull and Xu (2005) find that property rights affect a firm's incentives to reinvest retained profits. Using the 2007 China Property Law as a quasi-natural experiment, this paper explores the effects of property rights for firm-level investments, financing policies and value.

The 2007 Property Law included provisions that broadly strengthened property rights for private firms and for their creditors (primarily banks). The law included measures that checked the power of local government to expropriate assets from private firms. The law gave creditors the right to seize their collateral if a private firm defaulted on a loan: moreover secured creditors would get paid first out of the proceeds of the liquidation; and, creditors were also given assurances that they would be fully compensated if a borrower damaged the collateral underlying a loan. In sum, because the property law significantly strengthened property rights protections for private firms, its enactment should have given private firms a greater incentive to invest in potentially profitable projects and also to seek access to external finance for funding these projects. And, because the law also strengthened creditor rights and the protection of a creditors' collateral, its enactment should have led to an increase in the supply of external finance. Because of incentives the law gave to both private firms and to their creditors, we should observe that its enactment led a set of beneficial outcomes including an easing of firms' external financing obstacles, a higher quantity and quality of firm investment and an improvement in firm value.

We also explore how asset tangibility and political connections influences the relation between the enactment of the law and firm-level investment and financing decisions and firm valuation. The idea is that the beneficial impact of the property law should be more profound when, before the enactment of the law, a private firm is more likely to use its assets that are at risk of being expropriated as collateral and also when a private firm is facing more limited access to external finance. On the contrary, the impact of the property law should be less profound for a private firm that, before the enactment of the law, has alternative ways of shielding itself from potential expropriation and of gaining access to external finance.

Prior to the enactment, the way Chinese firms accessed external finance is somewhat typical for firms in economies with underdeveloped financial markets. Highly tangible assets including property, plant and equipment could be collateralized for securing a loan; however, assets such as inventories and accounts receivables and intangibles were generally not used as

collateral (Cousin, 2007; Ayyagari et al., 2010). Political connections<sup>1</sup> also served as an informal type of collateral for gaining favorable access to external finance (see, for example, Firth et al., 2009; and Li et al., 2008). Therefore, the beneficial effects of the law on firm-level investment, financial access and value should have been more profound for firms that have highly tangible assets since these firms are more affected by the property law. And, the positive impacts of the reform should have more profound for firms that lack political connections, because these firms have less access to external finance than politically connected firms: moreover, politically connected firms could use their connections as protections against expropriation.

Our empirical analysis contains a strong confirmation of these predictions. Using firm-level evidence during 2003-2009 we document that after the enactment, firm value increased, the quantity and quality (efficiency) of firm level investment increased, firm debt issuance increased, and the firms changed their internal cash policies in ways that indicate that their financial constraints were less taut: firms became less dependent on their internal cash flows for financing their investments, firms issued more debt and this pattern was most pronounced for firms that had a high degree of external financial dependence, firms held less cash, the marginal value of their cash fell and the cash flow sensitivity of their cash also fell.

The major contribution of this paper is to show that strengthening property rights can have a large effect on firm investment and finance and firm value. To our knowledge, we are among the first to document this finding at the firm level and using a large-scale natural experiment. We also show asset tangibility and political connections serve as important channels through which property rights influence firm investment and finance and firm valuation. Moreover, we check the validity of the experiment setting and gauge the instantaneous value implications by conducting an event study of the announcement effect of this law in the Chinese stock markets.

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<sup>1</sup> We will provide a precise definition of “political connections” in section 4.1 of this paper.

This paper also is related to the debate about “law and finance”. La Porta et al (1998, 2000, 2008) show how different legal systems and their particular bodies of law shape the quality of finance which in turn drives growth. Using country level data, Beck, Demirgüç-Kunt and Levine (2003) documents an important effect of legal traditions on financial development. Beck and Levine (2005) provides an extensive review of the literature. This paper shows the law and finance perspective works well in the case of China’s 2007 Property Law. As we will argue in section 3, the 2007 property law was conducive to finance and was effective in making external finance more accessible to private firms, which in turn promoted the level and quality of firm-level investment and improved firm value<sup>2</sup>. While the law as written may have not been completely or consistently enforced, its enactment was highly beneficial to private firms. Moreover, the impact of the law on access to finance, investment and value was most profound for private firms with no political connections and private firms with higher growth opportunities.

Our study also adds to the corporate cash policy literature (e.g. Opler et al, 1998; Harford, 1999; Faulkender and Wang, 2006; Harford, Mansi, and Maxwell, 2008; Bates, Stulz and Kahle, 2009; Gao, Harford, and Li, 2013) and document how the law affects corporate cash holdings, the value of cash, and the cash flow sensitivity of cash and how these effects vary by a firm’s political connections, growth opportunities and tangibility. In this regard, the study also contributes to the liquidity management literature (Campello, Graham, and Harvey, 2010; Campello, Giambona, Graham, and Harvey, 2011) by showing how the institutional and macroeconomic environment influence how firms manage their internal sources of funds.

The next section contains a summary and analysis of the 2007 Property Law. Section three describes our data and section four contains a discussion of empirical strategy and summarizes our major findings; section five concludes the paper.

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<sup>2</sup> As documented in a survey study among a large group of CFOs in U.S., Europe and Asia, Campello, Graham and Harvey (2010) find that the inability to borrow externally force many firms to forgo attractive investment opportunities.

## 2. The Law

The Property Law of the People's Republic of China 10<sup>th</sup> National People's Congress of the Peoples' Republic of China was passed on March 16, 2007 and went into effect as of October 1, 2007. The Property law obviously pertains to the formal sector, and here state banks provide the overwhelming share of finance to firms.<sup>3</sup> Chinese firms typically use their land and buildings and other tangible assets as collateral.<sup>4</sup> The law gave creditors (primarily banks) more power to seize these secured assets in the event of a default. According to article 170 of the property law, it is the creditor who holds the security interests "if the debtor defaults..." or if the loan contract is not being properly enforced. There are also provisions that protect the creditor's secured asset. For example, article 173 stipulates that the "costs of penalties, damages and expenses incurred for the safekeeping of the property used as security and for enforcing the security interest are not to be deducted from the principal and interest due to the creditor as stipulated in the debt contract". Article 174 gives the creditor priority in obtaining insurance monies, compensation, etc. to cover his/her claims if the secured asset is accidentally destroyed. Article 193 allows a creditor to order the borrower to "cease and desist" from misusing a secured asset. And, the creditor has the right to demand that the borrower restore the secure asset to its original value or provide monetary payment equal to the depreciation value. However, creditor rights are limited to the sale of a secured asset in the event of a default. That is, creditors cannot seize title to the collateral.

However, the requirement that secured loans be registered that can create difficulties for creditors. Articles 188 and 189 of law state that if a mortgage is not registered, a claim cannot be made against a "bona fide third party". And, registering land and premises can be problematic.

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<sup>3</sup> The description of collateral rights in China draws heavily on Ayyargi et al (2010), section 1.1 and the sources cited within and the official translation of the law provided by National Congress of the People's Republic of China (2009).

<sup>4</sup> See World Bank – People's Bank of China (2006). This report also documents that before 2007 only 4-percent of commercial loans were securitized with moveable assets.

Before the passage of the Property Law, the local Land Administration Bureau offices under the Ministry of Land and Resources handled land registration and recorded changes in title, mortgages, etc. And office of the Construction Ministry handled registration of buildings. After the enactment of the Property Law, the regulations on land registration were revised and new "Land Registration Measures" (Tudi Dengji Banfa) took effect, but transactions continue to be registered in the same bureaus; and these bureaus have the reputation of being slow and nontransparent.<sup>5</sup> According to a World Bank study (2008), before the passage of the law the registration of secured assets for obtaining a loan was particularly burdensome for small businesses. They would often have to register the same asset in several agencies; and many of these the agencies did not have modern computer systems that allowed for on-line registration.

However, there are other factors at work that protect creditor rights. Local governments and provincial governments in China have traditionally helped banks collect payments on loans and repossess, if need be, collateral. And, after the passage of the law, some Chinese cities are taking measures to make it easier for firms to register their assets so that they can obtain secured loans.<sup>6</sup>

The property law also puts some formal restraints on local governments that engage in predatory land grabbing.<sup>7</sup> Prior to the passage of the law, local governments forced millions of homeowners to sell their land to land developers at government set prices that were generally below market valuation. Residents had few legal rights to negotiate with their local governments

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<sup>5</sup> We thank Katherine Wilhelm, Director of the Beijing Office, the China Law Center of Yale Law School for this comment.

<sup>6</sup> We thank Joyce Mann and her colleagues at the Lincoln Institute at Beijing University for explaining the evolution of registries in China after the reform. And, in a survey of 30 Chinese cities in 2008, the World Bank (2008) documents that the large variation in quality of systems for small businesses to register assets to obtain a secured bank loan.

<sup>7</sup> This description government draws on Wilhelm (2004) and Kung et al (2009). We use Zhang (2008) and the official translation of the law provided by National Congress of the People's Republic of China (2009) as sources for describing how the Property reform put some formal restraints on land grabbing.

(see Wilhelm, 2004).<sup>8</sup> This land grabbing also affected urban enterprises. The local government taking of land from households and firms is perhaps even more prevalent in the rural sector (see Kung et al 2009).

The property law on the books put a check on the grabbing hand of local governments because it gives equal protections to public and private properties (Zhang, 2008). However, while the property law allows people to own the premises of their house or business, they cannot own the land. The owner of private property has “usufructuary right”: the user of the land “has the right to possess and use the land, and the right to gain interest from the land, but has no right to dispose of or sell the land (Zhang, 2008). And, the right to use of the land is on a term basis. Article 149 of Property Law states that when the long term lease for land on which a residence is located expires, it will be automatically renewed. However, the renewal of these leases for businesses (“land not for dwelling houses”) is not automatic and is subject to “legal provisions.”

The law contains several provisions that put direct constraints on the ability of local government to take land. According to Article 42, the state is “allowed to requisition lands owned collectively, premises owned by entities and individuals or other realities...” in order to meet the needs of public interest. However, in the case of private property, i.e., premises owned by entities or individuals, the state “is required to compensate for demolition and relocation in accordance with law and protect the lawful rights and interests of the owners of the requisitioned realities; when requisitioning the individuals’ residential houses, it is required to guarantee the housing conditions of the owners of the requisitioned houses.” Thus, the law is clear that compensation land taking must be done carefully. “The compensation fees for requisition and other fees may not be embezzled, misappropriated, privately shared, detained or delayed in the payment of by any entity or individual.”

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<sup>8</sup> Wilhelm (2004) cites data that between 1991 and 2003 Beijing and Shanghai evicted for million residents for urban redevelopment projects.

Thus, on paper the Chinese 2007 Property law made progress in strengthening creditor rights and restraining the grabbing hand of the government. The Chinese Property Law of 2007 is plausibly a quasi-natural experiment because its passage was not guaranteed. The property law was passed after a contentious fourteen year debate in the Peoples' National Congress. Powerful conservatives who had a more traditional and Marxist view of property relations strongly opposed this law and tried to block its passage.<sup>9</sup> Moreover, as we will document in Section three, market investors were arguably surprised by the announcement that the law had passed, and, thus, readjusted their valuations of private firms accordingly.

### **3. Data and Sample**

The firm level financial variables are obtained from the China Stock Market & Accounting Research (CSMAR) dataset. The sample period is from 2003 to 2009. To better understand the impacts of property rights protection on the firm investment and financing, we focus on private firms as the property rights are often not well defined in the state controlled firms (Cull and Xu, 2004; Lin et al., 2010). Hence, all the firms in our sample are privately owned and they are not state controlled. Specifically, if the total state shares among the top 10 shareholders of a firm are equal or above 20-percent, the firm is viewed as a state controlled firms. We also exclude firms that change from state controlled firms to private firms or change from private firms to state controlled firms during the sample period. Following the previous studies (e.g. Almeida, Campello and Weisbach, 2004), we then focus only on manufacturing firms in our sample. Moreover, as the property law was passed in 2007, we only include those firms that must have non missing observations at least for both before and after the law enactment for the purpose of our empirical setting. Finally, our sample contains more than 700 private-owned manufacturing listed firms with panel data in China. The variables definitions and

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<sup>9</sup> Again, we thank Joyce Mann and her colleagues for explaining this. See also Zhang (2008) for documentation of this opposition.

basic summary statistics are presented in Table 1 and 2.

[Insert Tables 1 and 2 here]

## **4. Estimation and Results**

### *4.1. Property Law and the cumulative abnormal returns around the announcement period*

Our first set of tests investigates how the stock market reacted to the initial announcement of the property law. The property law gave creditors (primarily state banks) more power to recover secured assets in a default state and made it more difficult for local governments to expropriate assets from private firms. Thus, the law strengthened creditor rights and bolstered the protection of firm assets. In this section we argue that if the property law was enforced, we would observe that stock market investors would upgrade their valuation of firms that have higher asset tangibility, lower internal cash flow, tighter financial constraints and more growth opportunities; and, stock market investors would downgrade firms that are politically connected.

A firm is upgraded (downgraded) when its abnormal stock return increases (decreases) around the time the law was announced. We calculate the announcement period of abnormal stock returns following the standard market model methodology for event studies. Specifically, we use the Shanghai Composite value-weighted index (for companies listed on the Shanghai Stock Exchange) or Shenzhen Composite Index (for companies listed on the Shenzhen Stock Exchange) as the market portfolio and estimate the parameters of the market model using stock returns over the 200-trading-day period from trading days -210 through -11 relative to the event date (day 0 is the law announcement date). The difference between the firm's daily return and the predicted daily return based on the market model is the firm's daily abnormal return. The law was passed on March 16, 2007. Following the literature (Lin, Officer and Zou, 2011), we calculate the five-day cumulative abnormal returns (CARs) over the (-2, +2) event window and

estimate the following regression model:

$$\text{CAR } (-2, +2) = f (\text{Tangibility}, \text{Cash Flow}, \text{Political Connection}, Q, \text{Financing Constraints}, \text{Industry Controls}). \quad (1)$$

The dependent variable is the five-day cumulative abnormal returns. Regarding the key independent variables, asset tangibility is defined as the ratio of net property, plant and equipment to total assets. As pointed out in the literature (e.g. Lin, Ma, Malatesta, Xuan, 2011), tangible assets can serve as valuable collateral and generate more external financing. All else equal, firms with more tangible assets offer higher recovery value in default states and as a consequence, firms with a higher tangibility ratio have lower borrowing costs (Lin et al., 2011). In China, most bank loans are backed by collateral, and tangible assets such as land or buildings are the only type of collateral acceptable to many banks (Cousin, 2007; Ayyagari et al., 2010). If the law was enforced, then the value of tangible assets would have increased because it could be used as collateral and because the tangible assets were given more protections against local government expropriation. Therefore, we expect that firms with higher asset tangibility would have higher CARs during the announcement period.

*Cash Flow* is defined as the ratio of earnings before extraordinary items and depreciation to total assets. Firms with low cash flows depend more on external financing. As a consequence, these firms should have benefited more the property law if it in fact it improved firm access to external finance. Therefore, we expect a negative relation between firm's cash flow and the CARs.

Following the literature (e.g. Fan, Wong and Zhang, 2007), *Political Connection* is an indicator variable that takes on a value of one if the CEO or board chairman previously held or currently holds a government official position or a position in People's Congress and People's

Political Consultative Conference.<sup>10</sup> As summarized in Houston, Lin and Ma (2011), there is substantial evidence in many countries and, especially in the developing countries, that political ties shape credit allocation. Using data on private firms in China before the property law of 2007, Li, Meng, Wang and Zhou (2008) and Firth, Lin, Liu, and Wong (2009) find that political connections significantly improve the access that private firms have to external finance. Moreover, Faccio, Masulis and McConnell (2006) show that companies with political ties are more likely to receive government bailouts when they are in financial distress. As a consequence, political connections might serve as implicit guarantees or collateral for access to external finance. Therefore, if the property law was enforced, we would observe that firms without political connections benefit more from the new law. That is because, these firms lacked political connections in the pre-reform period, and their non-political assets, largely tangible capital, take on more value as a source of collateral after the passage of the law.

We also expect that firms with more growth opportunities and firms that have tighter financial constraints are valued more highly after the passage and enforcement of the property law. Simply put, this is because stronger property rights protections increase the value of assets as a form of collateral, and this enables firms and creditors to finance profitable projects. Moreover, under these conditions, financial constraints would become less taut when there are positive NPV projects.

Following the literature (e.g. Mclean, Zhang and Zhao, 2011), a firm's growth potential is measured by Tobin's  $Q$ , which is defined as the ratio of the market value of total assets to the book value of total assets. And, using detailed qualitative information from financial filings to categorize financial constraints, Hadlock and Pierce (2010) propose a new measure of financial constraints based on firm characteristics such as size and age (see Table 1 for detailed definition of this index). Corroborating evidence from other approaches suggests that the *Hadlock and*

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<sup>10</sup> Some CEOs or board chairs hold concurrent positions in National People's Congress and Chinese People's Political Consultative Conference.

*Pierce Index* is a reasonable measure of financial constraints in various contexts (Hadlock and Pierce, 2010).

[Insert Table 3 here]

The results in Table 3 are consistent with our predictions. On the one hand, cumulative abnormal returns are positively associated at the 5-percent significance level with *Tangibility*, more growth opportunities (*Q*) and the *Hadlock Pierce Index* (the *Financing Constraint Index*). On the other hand, cumulative abnormal returns are negatively associated at the 5-percent significance level with *Political Connections* and with *Cash Flow*.

To measure quantitative significance of our continuous explanatory variables, we report the impacts of one standard deviation increases of *Q*, *Tangibility*, the *Financing Constraint Index* and *Cash Flow* on *CARs*.<sup>11</sup> The point estimates in columns 1 and 6 indicate that a one-standard-deviation increase in *Q* increases *CARs* by approximately 0.725 to 0.8 percentage points. Similarly, a one-standard-deviation increase in *Tangibility* increases *CARs* by approximately 1.06 to 1.18 percentage points. A one-standard-deviation increase in the *Financing Constraint Index* increases *CARs* by about 0.8 to 1 basis points. In contrast, a one-standard-deviation increase in *Cash Flow* decreases *CARs* by about 0.38 to 0.4 basis points. Moreover, the abnormal stock returns for firms without political connection are significantly higher (by 0.365 to 0.48 percentage points) than those for firms with political connections. Considering the sample mean of the *CARs* is 0.24 percentage points, the quantitative significance of each explanatory variable is generally substantial.

In order to better understand how property rights affect the valuation of firms, we explore the potential effects of the interplay between *Q*, asset tangibility and political connections. For

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<sup>11</sup> To compute this, we multiply the point estimates in Table 3 by a one standard deviation of *Q*, *Tangibility*, the *Financing Constraint Index* and *Cash Flow* as reported in Table 2.

instance, the link between  $Q$  and  $CARs$  might be stronger for firms without political connections because they lacked the necessary political collateral before the passage of the law and their tangible assets gained value after the enactment of the law. In the same spirit, we might also expect that the effect of tangibility on  $CARs$  would be more profound for the firms that lack political connections. To examine these potential effects, we include the interaction terms  $Political\ Connection \times Q$  and  $Political\ Connection \times Tangibility$  in Table 4 columns 1 and 2, respectively.

[Insert Table 4 here]

The results in columns 1 and 2 of Table 4 support our predictions. Specifically, the coefficients of the two interaction terms are negative and statistically significant, indicating that the effects of  $Q$  and  $Tangibility$  on  $CARs$  are weaker when firms are politically connected. For instance, the presence of political connections weakens the sensitivity between  $Q$  and  $CARs$  by about 19% ( $=0.081/0.42$ ), and also weakens the sensitivity between  $Tangibility$  and  $CARs$  by about 12% ( $=1.061/8.761$ ).

As previously discussed, the property law should have led to an increase in the value of the tangible assets as a source of collateral. If this was the case, then the effect of  $Q$ ,  $Cash\ Flow$  and the *Hadlock-Pierce* index on  $CAR$  will be more profound for firms with higher  $Tangibility$ . We examine these potential effects by including the interactions between  $Tangibility$  and  $Q$  in column 3, the interactions between  $Tangibility$  and  $Cash\ flow$  in column 4 and the interaction term between  $Tangibility$  and the *Hadlock-Pierce Index* in column 5. As can be seen from the tables, all the interaction terms entered the models are statistically significant and their signs are consistent with our predictions.

This section has documented that the property law elicited a strong announcement effect on the Shenzhen and Shanghai stock markets. Moreover, the way in which stock market investors

used firm level characteristics including cash flow, profit opportunities, asset tangibility, financial constraints and political connections for valuing firms indicates they believed that the law would strengthen property rights protections. As we have already discussed, there was substantial resistance to the property law and it was enacted only after a divisive fourteen-year debate in the Peoples' National Congress. Arguably the announcement of the property law on March 16, 2007 was a surprise and the stock market quickly adjusted their valuations of firms to account for the “news” that property rights protections would be strengthened. Thus, the enactment of the property law is a plausible quasi-natural experiment for understanding at a firm-level the real and financial implications of property rights protections.

#### *4.2. Property Law and Firm Investment*

Having documented the value implications of the enactment of property law, in this section, we seek to identify the specific mechanisms (i.e. firm investment and financing activities) through which property rights protection affects firm value.

##### *4.2.1. Property Law, $Q$ and Firm Investment*

We first explore the relation between property law, Tobin's  $Q$  and investment. As pointed out in Tobin's (1969)  $Q$  model of investment, a firm will want to invest if the market value of a project exceeds its replacement value. Because financing constraints prevent firms from funding all desired investment projects, they weaken the effect of  $Q$  on investment (Fazzari, Hubbard, and Petersen, 1988; Baker et al, 2003). In other words,  $Q$  will be a less important factor in explaining the investments of financially constrained firms because these firms have to scale down or forgo investments in positive net present value projects. For this reason, the investment sensitivity to  $Q$  has been used as a measure of investment efficiency in the literature (e.g. Fazzari et al., 1988; Mclean et al., 2012).

Indeed, Mclean et al. (2012) find at a country level that the investment sensitivity to  $Q$

predicts more growth and higher profits, suggesting that it is positively associated with higher ex post efficiency. Thus, if the 2007 law increased property rights protections, we should observe a higher degree of investment sensitivity to  $Q$  after its enactment. And as previously discussed, this effect should be more profound for firms without political connections. In order to test these arguments, we use the standard investment equation:

$$Investment_{i,t} = \beta_0 + \beta_1 CashFlow_{i,t} + \beta_2 Q_{i,t-1} + \alpha_i + \alpha_t + \varepsilon_{it} \quad (2)$$

where *Investment* is defined as the ratio of capital expenditures to beginning-of-period capital stock.  $Q$  is defined as the ratio of the market value of total assets to the book value of total assets. Detailed variable definitions can be found in Table 1. We augment equation (2) and include, in various specification the variables *Political Connection* and *Law*, three interaction terms ( $Law \times Q$ ,  $Law \times Political Connection$ ,  $Political Connection \times Q$ ) and a triple interaction term ( $Law \times Political Connection \times Q$ ). We also include firm fixed effects ( $\alpha_i$ ) and year fixed effects ( $\alpha_t$ ) and estimate standard errors by clustering at the firm level. The empirical results are presented in Table 5.

[Insert Table 5 here]

The results in columns 1 to 4 of Table 5 strongly confirm our expectations. In column 1, the coefficients for both  $Q$  and *Cash Flow* are positive and statistically significant as expected and *Law* is significant at the 1-percent level. Since a standard deviation in investment is 0.534, the enactment of the law is associated with roughly a one-quarter (0.129/0.534) standard deviation increase in investment. In column 2 we include the interaction term  $Law \times Q$  and find that it is both statistically and quantitatively significant: thus, the investment sensitivity to  $Q$  increases by roughly 40% (=0.018/0.047). In column 3 the variables *Political Connection* and

*Political Connection*  $\times$   $Q$  pick up the overall effect of political connections on investment and the effect of political connections on the sensitivity of investment to  $Q$  over the entire period 2003-2009. Both these effects are statistically significant: and, *Political Connection* is associated with roughly a one-eighth ( $=0.074/0.534$ ) of standard deviation more investment and about a 25% ( $=0.014/0.048$ ) higher sensitivity of investment to  $Q$ . This evidence is consistent with the previously noted findings that political connections can serve as implicit collateral for firms seeking external finance (Li et al., 2008; Firth et al., 2009).

In column 4 of Table 5, we include the three interaction terms and a triple interaction term (*Law*  $\times$  *Political Connection*  $\times$   $Q$ ) that measures the impact of political connections on the sensitivity of investment to  $Q$  changes after the law is enacted. The estimates for the terms *Political Connection* (0.059 with p-value 0.011) and *Political Connection*  $\times$   $Q$  (0.014 with p-value 0.036) indicate, as expected, that political connections are associated with more investment and with a higher sensitivity of investment to  $Q$  (investment efficiency) before the passage of the law. However, the estimates for *Law*  $\times$  *Political Connection* (-0.014 with p-value 0.023) and *Law*  $\times$  *Political Connection*  $\times$   $Q$  (-0.014 with p-value 0.016) shows that the sensitivity of investment to political connections and the impact of political connections on the efficiency of investment fell after the enactment of the law. In other words, the impact of property law on enhancing investment efficiency is more profound for firms without political connections.

These findings, however, may be potentially biased because we may have measured  $Q$  with some error. While the ideal measure is the marginal  $Q$ , we follow common practice and use the average  $Q$ . Because it is somewhat controversial whether the average  $Q$  is an inadequate proxy (e.g. Poterba, 1988), we follow the literature (e.g. Barro, 1990; Morck, Shleifer, and Vishny, 1990; Mclean et al., 2011) and use lagged one-year stock returns as another proxy. As Barro (1990) notes that the change of  $Q$  is an appropriate proxy for the marginal  $Q$  and most of the change in  $Q$  comes from stock returns<sup>12</sup>. Therefore, stock returns can be used as a very good

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<sup>12</sup> Barro (1990) finds that stock returns are a better predictor of investment than both  $Q$  and changes in  $Q$ .

proxy of marginal  $Q$  (e.g., Morck et al. 1990; Mclean et al., 2011).

Another concern is that because a firm's *Cash Flow* is potentially correlated with its growth opportunity ( $Q$ ), the link between *Cash Flow* and investment could be spurious. We therefore follow Mclean et al. (2011) and use *Residual Cash Flow* as an alternative measure for *Cash Flow*. We compute *Residual Cash Flow* by regressing *Cash Flow* on lagged  $Q$ , lagged one-year stock returns and the past three years of sales growth. Thus, *Residual Cash Flow* should be orthogonal to various growth opportunity measures such as lagged  $Q$ , lagged stock returns and sales growth.

In order to check for the robustness of our results to these alternative measures, in columns 5-8 of Table 5 we use *Stock Returns* in place of  $Q$  and *Residual Cash Flow* in place of *Cash Flow*. The results are highly robust to the use of these alternative measures. We continue to find that investment and the sensitivity of investment to  $Q$  – i.e. investment efficiency (measured by lagged stock returns), increase after the passage of the law. And, the impact of law enactment on enhancing investment efficiency is more profound for firms without political connections.

#### 4.2.2. Property Law, Cash Flow and Firm Investment

In this section, we explore how the property law shaped firm-level financial constraints and investments. Firms that have low cash flow levels are more dependent on external capital markets for funding external their positive net present value (NPV) projects. If the external capital market was frictionless, then low cash flow firms could easily raise external capital, and their investments would not depend on their internal cash flows. On the other hand, if there are financial constraints, then firms depend more on the availability of internal funds for financing value enhancing projects. Therefore, the investment-cash flow sensitivity has been used as a measure of financial constraints in the literature (Hubbard, 1998; Fazzari et al., 2000).<sup>13</sup>

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<sup>13</sup> Almeida, Campello and Weisbach (2004) argue that the cash flow sensitivity of cash could be a better measure of financial constraints than the investment sensitivity of cash. In section 4.4.3 we explain why the cash flow

In our setting, because we expect that the law enabled firms to gain access to external capital markets, we should then observe that the firms' cash flow sensitivity of investment falls after the enactment. Moreover, this decrease in cash flow sensitivity of investment should be more profound for firms that do not have political connections. In order to test for these effects, we estimate the cash flow sensitivity of investment, the impact of political connections on investment and also include three interaction terms (*Law* × *Cash Flow*, *Law* × *Political Connection*, *Political Connection* × *Cash flow*) and a triple interaction term (*Law* × *Political Connection* × *Cash Flow*) into our baseline regression (equation 2). Firm fixed effects and year fixed effects are also included and standard errors are estimated by clustering at the firm level.

[Insert Table 6 here]

The results are presented in Table 6 columns 1- 4. In column 1 the variables *Political Connection* and *Cash Flow* are both statistically significant and positive. The interpretation of this is that during 2003-2009 firms on average had financial constraints (i.e., the cash flow sensitivity of investment was positive) and politically connected firms invested more than firms that did not have political connections. In column 2, the negative and statistically significant interaction term *Law* × *Cash Flow*, shows that the sensitivity of investment to cash flow fell by roughly 40% ( $=-0.057/0.134$ ) after the law was enacted: this indicates that firm investment depends less on internal cash flow after the enactment of law. In column 3 the estimate for *Political Connection* × *Cash flow* (-0.071 with p-value 0.007) shows that over the entire sample period the sensitivity of investment to cash was lower in politically connected firms: and, this indicates that political connections were useful for easing financial constraints. However, in column 4 *Law* × *Political Connection* × *Cash flow* is positive and significant (0.023 with p-

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sensitivity of cash is less ambiguous and also use it as a measure of financial constraints to test the robustness of our findings.

value 0.015), indicating that the advantages of political connections fell after the enactment of the law.<sup>14</sup> In other words, the impact of law on mitigating the cash flow sensitivity of investment and thus, loosening financial constraints is more profound for firms that do not have political connections.

As discussed in the previous subsection, there are several concerns about the measurement of  $Q$  and *Cash Flow*. Thus, in Table 6 columns 5-8, we use *Residual Cash Flow* in place of *Cash Flow* and also use lagged one-year stock returns in place of  $Q$ . As can be seen from the table, the empirical results are highly robust. As was the case with *Cash Flow*, the law reduced the sensitivity of investment to residual cash flow significantly. Moreover, after the enactment of the law, the effect of political connections on the sensitivity of investment to residual cash flow is weaker. Taken together, these results again indicate that the law alleviated financial constraints and downgraded the importance of political connections for obtaining external finance.

To summarize, the firm level evidence in Tables 5 and 6 is consistent with how stock markets responded to the announcement of the property law. Specifically, the findings in Table 5 and 6 explain why firms with high growth opportunities, high level of financial constraints and firms without political connections obtained higher CARs around the law announcement.

#### 4.3. *Property Law and Debt Finance*

Our aforementioned results show that the law improved investment efficiency and alleviated the dependence of firm investment on internal cash flow. We interpret these findings as evidence that the law improved an average firm's access to external finance. In this section, we directly test the effect of the law on firms' access to external finance.

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<sup>14</sup> More generally, the estimate of -0.011 with p-value 0.077 for *Law*  $\times$  *Political Connection* in column 4 shows that political connections became less important for firm investment besides its impact on the sensitivity of investment to cash flow.

#### 4.3.1. Property Law, $Q$ , and Debt Issuance

Following Mclean et al., (2012), we use the change of total debt as a proxy of debt issuance and control for lagged  $Q$  and *Cash Flow* in the baseline model. Moreover, we control for tangibility and firms size. We expect larger firms and firms with higher tangibility can get better access to external finance. Based on our previous discussions, we also expect a positive link between  $Q$  (investment opportunities) and debt issuance (external financing). In addition, we expect that the law increased debt issuance and strengthened the link between  $Q$  and debt issuance. *Political Connections*, on the other hand, is expected to play a less important role in determining firms' debt financing after the enactment. To test for these effects, we add the three interaction terms and the triple interaction term ( $Law \times Political\ Connection \times Q$ ) to the baseline regression. We control for firm fixed effects (columns 1-4) and year fixed effects (columns 2-4) and estimate standard errors by clustering at the firm level.

[Insert Table 7 here]

The empirical results presented in Table 7 are consistent with our expectations. In column 1, we find that debt issuance increased by 8.2 percentage point or about 40% of the sample average after the law enactment. Moreover, we find a positive sensitivity of debt changes to  $Q$  over the entire sample period. Both of these effects are statistically significant.

Drilling further down, in column (2) we interact *Law* and  $Q$  and find that the sensitivity of debt changes to  $Q$  increases by more than 50% ( $=0.025/0.046$ ) after the enactment of the law. In column 3 we include *Political Connection* and find that over the entire period they are positively associated with greater debt issuance ( $Political\ Connection = 0.061$  with p-value 0.019) and a greater sensitivity of debt issuance to  $Q$ . Again, this is consistent with the argument that political connections are used as collateral for obtaining external finance. In column 4 we include

all these interaction terms and the triple interaction term and find that the impact of law on enhancing the sensitivity of debt changes to  $Q$  is more profound for firms without political connections (coefficient of  $Law \times Political\ Connection \times Q = -0.011$  with p-value 0.027). In other words, their importance of political connections for obtaining debt was weakened after the law enactment, as indicated by the triple interaction term and by the interactive term between law and political connection.

#### 4.3.2. Property Law, Tangibility, and Debt Issuance

As discussed previously, because the law strengthened creditor rights and the protection of collateralized underlying loans, we would expect that tangibility becomes a more important determinant of debt financing after the law was enacted. We test this idea in Table 8. Specifically, we add three interaction terms ( $Law \times Tangibility$ ,  $Law \times Political\ Connection$ ,  $Political\ Connection \times Tangibility$ ) and a triple interaction term ( $Law \times Political\ Connection \times Tangibility$ ) into our baseline regression in column 1 in Table 7.

[Insert Table 8 here]

As can be seen from Table 8 column 1, over the entire sample period *Tangibility* and *Political Connection* are both important determinants of debt issuance (i.e.,  $Tangibility = 0.456$  with p-value 0.014 and  $Political\ Connection = 0.067$  with p-value 0.039). In column 2 the interaction variable  $Law \times Tangibility$  is positive and statistically significant: and, the impact of asset tangibility on debt issuance increases by roughly 14% ( $0.064/0.440$ ) after the law was enacted. Column 3 indicates that during the entire sample period political connections enable firms to make a better use of tangible assets in getting access to debt financing (coefficient of  $Political\ Connection \times Tangibility = 0.039$  with p-value 0.025): politically connected firm have

roughly an 8.8% advantage (0.039/0.443) in leveraging tangible assets. Column 4, however, indicates that the importance of political connections in getting access to external finance has been downgraded after the passage of the law. First, the clout of political connections for leveraging tangible assets to obtain loans gets weaker (i.e.,  $Law \times Political\ Connection \times Tangibility = -0.021$  with p-value 0.024); and, political connections become a less powerful for obtaining loans through all other channels besides *Tangibility* (i.e.  $Law \times Political\ Connection = -0.024$  with p-value 0.011). In other words, the impact of law on enhancing the link between tangibility and debt issuance is more profound for firms without political connections.

#### 4.3.3. Property Law, External Financing Dependence, and Debt Issuance

If the law does ease the financing difficulties of firms, this effect should be more pronounced in firms that have a higher degree of external financial dependence. In the spirit of Rajan and Zingales (1998), we construct the external financial dependence index (*EFD*) as the fraction of capital expenditures not financed with internal funds for US firms in the same industry during 2002-2005. In order to test for these effects, three interaction terms ( $Law \times EFD$ ,  $Law \times Political\ Connection$ ,  $EFD \times Political\ Connection$ ) and a triple interaction term ( $Law \times EFD \times Political\ Connection$ ) are added to the baseline regression.

[Insert Table 9 here]

In Table 9 column 1 the interaction term  $Law \times EFD$  is positive and statistically significant (0.131 with p-value 0.014), indicating that firms with higher external financial dependence were able to obtain more external finance after the enactment of the law. In column 2 the interaction term  $Political\ Connection \times EFD$  (0.076 with p-value 0.029) shows that political connections are more valuable to firms with higher external financial dependence as the

connections help these firms to obtain debt finance throughout the sample period. However, in column 3 the triple interaction term ( $Law \times Political\ Connection \times EFD = -0.036$  with p-value 0.015) and the interaction term ( $Law \times Political\ Connection = -0.022$  with p-value 0.017) imply that the advantages of political connections to firms seeking external finance are weakened after the enactment of the law. This is consistent with our previous findings that the enactment of the property law is particularly helpful for the firms with no political connections in getting access to external finance.

#### 4.4. *Property Law and Internal Cash*

We have shown in previous sections that the law improved firms' access to external finance for financing their investment projects. This finding implies that the law also should have made firms less dependent on internal cash holdings for funding their projects. As a consequence, the law should have made a direct impact on corporate cash policy. In this section we directly test for the impact of the law on firms' internal cash policies.

##### 4.4.1. *Property Law and Cash Holdings*

We have argued and documented that politically connected firms and firms that have highly tangible assets have more access to external finance: therefore, we expect that these firms are less dependent on internal cash for financing investments. And, firms that have financial constraints have a strong precautionary motive to hold onto cash when their investment opportunities are promising and  $Q$  is high. Thus, we expect to observe a negative link between internal cash and *Political Connection*, a negative link between internal cash and *Tangibility* and a positive link between internal cash and  $Q$ .

As the law is expected to give firms more protections against government expropriation of their tangible assets and also to provide creditors with more rights to put claims on a firm's tangible assets in the event of a default, the law should have enabled firms to use tangible assets

more effectively as potential collateral for external finance. Therefore, after the enactment firms that had highly tangible assets should have become less dependent on internal cash holdings, and we should observe that the negative link between *Tangibility* and internal cash holdings becomes stronger (more negative). Before the enactment of the law firms that were not politically connected lacked the “political collateral” that was useful for obtaining external finance. Since the law enabled these politically unconnected firms to more easily use their tangible assets as collateral for accessing external finance, these firms are expected to benefit more from the law. As a result, we should observe that the negative association between *Political Connection* and internal cash holding becomes weaker (less negative). Finally, as the law is expected to give firms more access to external finance, it should have weakened a firm’s precautionary motive for holding cash. Hence we should observe a weaker positive association between *Q* and internal cash holdings.

To test for the determinants of cash holding, we build on the standard estimating framework from Opler, Pinkowitz, Stulz and Williamson (1999, Table 4):

$$\begin{aligned}
Cash_{it} = & \alpha_0 + \alpha_1 Law + \alpha_2 Political\ Connection_{it} + \alpha_3 Q_{it} + \alpha_4 Tangibility_{it} + \alpha_5 Firm\ Size_{it} \\
& + \alpha_6 Cash\ Flow_{it} + \alpha_7 Net\ Working\ Capital_{it} + \alpha_8 Capital\ Expenditures_{it} + \alpha_9 Leverage_{it} + \\
& \alpha_{10} Industry\ Cash\ Flow\ Risk_{it} + \alpha_{10} Divident\ Dummy_{it} + \gamma_i + \gamma_t + \varepsilon_{it} \quad (3)
\end{aligned}$$

where subscripts *i* and *t* denote a firm and a year respectively, and *Cash<sub>it</sub>* denotes cash and equivalents divided by total assets. The independent variables include firm size, cash flow, net working capital, capital expenditures, leverage, industry cash flow risk and a dummy for whether or not a firm issues dividends (see Table 2, Panel B for detailed definitions of these control variables). Firm ( $\gamma_i$ ) and time ( $\gamma_t$ ) fixed effects are also included. In order to test our predictions,

we also include the variables *Political Connection*, *Tangibility*, *Q* and *Law*, and various double and triple interactions of these variables in the related specification in Table 10.

[Insert Table 10 here]

The results are consistent with our expectations. Column 1 shows that politically connected firms hold less cash (*Political Connection* = -0.016 with p-value 0.015), firms that have a large stock of tangible assets hold less cash (*Tangibility* = -0.158 with p-value 0.055) and firms that have good growth prospects hold more cash (*Q* = 0.020 with p-value 0.016). Moreover, after the passage of the law, firms were less dependent on internal cash (*Law* = -0.023 with p-value 0.000). Column 2 documents that politically connected firms held less cash than firms that did not have political connections prior to the passage of the law (*Political Connection* = -0.018 with p-value 0.019): and, after the enactment this difference between politically connected and unconnected firms decreased by more than 33% (*Law* × *Political Connection* = 0.006 with p-value 0.019). This suggests that the impact of law in reducing corporate cash holdings is more profound for firms without political connections. Column 3 shows that firms that have highly tangible assets held less cash compared to firms that did not have many tangible assets before the passage of the law (*Tangibility* = -0.142 with p-value 0.071), and these disparities between firms that have high and small stocks of tangible assets became more profound after the enactment (*Law* × *Tangibility* = -0.031 with p-value 0.014). This evidence suggests that the law enabled firms to more effectively use their tangible assets for obtaining external finance. Column 4 shows that while firms with tangible assets hold even less cash after the passage of the law (*Law* × *Tangibility* = -0.034 with p-value 0.12), this effect is more profound for firms without political connections (*Law* × *Political Connection* × *Tangibility* = 0.017 with p-value 0.016).

Columns 5 and 6 in Table 10 consider the impact of a firm's growth prospects (*Q*). Column 5 shows that firms that had good growth prospects held more cash prior to the enactment

( $Q = 0.023$  with p-value 0.028), however, the positive association between  $Q$  for cash holdings became weaker after the enactment ( $Law \times Q = -0.007$  with p-value 0.032). Column 6 shows that while firms with strong growth prospects held less cash after enactment ( $Law \times Q = -0.008$  with p-value 0.037), this effect is less profound for politically connected firms ( $Law \times Political Connection \times Q = 0.004$  with p-value 0.021). Thus, consistent with our expectations, after the passage of the law political connections become less important and firms depend less on internal cash holdings to finance the growth opportunities.

Overall, the results in this sub-section echo our previous findings on how property law affects external debt issuance (see sub-sections 4.3.1 and 4.3.2 and Table 7). The law enabled firms to more effectively use their tangible assets for obtaining external finance because it lowered the threat that local governments would expropriate a firm's assets and it also strengthened creditor rights over a firm's tangible assets. At the same time, the law downgraded the importance of political connections in external capital markets: while politically unconnected firms lacked the political clout necessary for accessing external capital markets before the enactment, the law enabled them to more intensively use their tangible assets for accessing external finance. On average, the law enactment increases corporate debt issuance (column 1, Table 7) and decreases corporate cash holdings (column 1, Table 10). More specifically, after the law enactment, firms with higher growth opportunities and firms with no political connections tend to issue more external debts (columns 2 and 3, Table 7) and hold less cash (columns 2 and 3, Table 10). Similarly, after the law enactment, firms with higher tangibility tend to issue more external debts (columns 2, Table 8) and hold less cash (columns 4, Table 10). Moreover, the aforementioned law effects related to growth opportunities and tangibility are more profound for firms that do not have political connections (column 4, Table 7 & 8, columns 5, 6, Table 10).

#### 4.4.2. Property Law and the Value of Cash

We argued above that firms operating under financial constraints are more dependent on cash holdings for financing positive NPV projects than firms that are not financially constrained. Thus, if financial constraints for firms were relaxed after the enactment, we would expect that firms became less dependent on internal cash and we should observe their marginal value of cash fell. To test this prediction, we adapt the baseline estimating following Faulkender and Wang (2006) and augment the model with variables such as law, tangibility and political connection:

$$\begin{aligned}
r_{i,t} - R_{i,t}^B = & \gamma_0 + \gamma_1 Law + \gamma_2 \frac{\Delta C_{i,t}}{M_{i,t-1}} + \gamma_3 \frac{\Delta E_{i,t}}{M_{i,t-1}} + \gamma_4 Political\ Connection_{i,t} + \gamma_5 Tangibility_{i,t} \\
& + \gamma_6 \frac{\Delta NA_{i,t}}{M_{i,t-1}} + \gamma_7 \frac{\Delta I_{i,t}}{M_{i,t-1}} + \gamma_8 \frac{\Delta D_{i,t}}{M_{i,t-1}} + \gamma_9 \frac{C_{i,t-1}}{M_{i,t-1}} + \gamma_{10} L_{i,t} + \gamma_{11} \frac{C_{i,t-1}}{M_{i,t-1}} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} \\
& + \gamma_{12} L_{i,t} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} + \alpha_i + \alpha_t + \epsilon_{i,t} \quad (4)
\end{aligned}$$

In the above equation (4), the dependent variable is a firm's excess annual market return. In columns 1-4 the excess return is measured as the firm's annual return minus the Fama-French (1993) size and book-to-market matched portfolio annual return. A portfolio return is a value-weighted return based on market capitalization within each of the 25 (5×5, intersection between the size and book-to-market independent sorts) portfolios. The main control variable is  $\Delta C$  (change of cash and cash equivalents divided by the lagged market value of equity) and the coefficient of  $\Delta C$  ( $\gamma_2$ ) is the marginal value of cash. Following Faulkender and Wang (2006), additional controls include the changes in firm's profitability ( $\Delta E$ ), the changes in the firm's net asset ( $\Delta NA$ , a proxy for corporate investment policy), the changes in interest expense ( $\Delta I$ ) and total dividends ( $\Delta D$ ) and some other variables. Detailed definitions of these variables can be found in Panel C, Table 1. Firm and time fixed effects are also included in the model specifications. The empirical results are presented in Table 11.

[Insert Table 11 here]

The estimate for the marginal value of cash in column 1 is 1.52 (p-value 0.000) and is comparable to the Faulkender and Wang (Table II, column II) estimate of 1.47 (p-value is 0.038) for publically traded firms in the U.S. during 1972-2001.<sup>15</sup> Column 2 estimates the impact of the law on the marginal value of cash. Consistent with our expectations that the law led to a loosening of financial constraints for firms,  $Cash\ Flow = 1.689$  (p-value is 0.002) and  $Law \times Cash\ Flow = -0.316$  (p-value is 0.028) and after the enactment the marginal value of cash fell by roughly  $(-0.316/1.689)$  19%.

Columns 3-6 analyze how *Tangibility* and *Political Connection* affected the marginal value of cash. In the previous section, we predicted and documented that firms are less dependent on internal cash when they have political connections and/or they have highly tangible assets. Because the marginal value of cash is lower when a firm is less dependent on internal cash, then our predictions about the impact of asset tangibility and political connections on internal cash holdings should be *qualitatively* the same as our predictions about the impact of asset tangibility and political connections on the marginal value of cash. Specifically, we should observe the marginal value of cash is lower for firms that have highly tangible assets and the marginal value of cash should be lower for politically connected firms. And, after the enactment of the law, we should observe that this negative association between *Tangibility* and the marginal value of cash should become stronger, while the negative association between *Political Connection* and the marginal value of cash should become weaker.

Column 3 contains our findings for *Tangibility*. While firms that have highly tangible assets tend to have a lower marginal value of cash prior to the enactment, we cannot reject the null that the influence of asset tangibility on the marginal value of cash is negligible (*Tangibility*

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<sup>15</sup> Because we used that specification from Faulkender and Wang that includes the interaction terms  $Cash_{it} \times Cash\ Flow_{it}$  and  $Leverage_{it} \times \Delta Cash_{it}$ , the estimated marginal value of cash cannot be solely represented by the coefficient.

$\times Cash Flow = -0.504$  with p-value 0.412). However, consistent with our expectations, higher asset tangibility is associated with a much lower marginal value of cash after the passage of the law (coefficient of  $Law \times Tangibility \times Cash Flow = -1.884$  with p-value 0.011). Column 5 shows this finding is robust when the firm's industry-adjusted annual stock return (adjusted for industry median return) is used as an alternative measure of stock returns (coefficient of  $Law \times Tangibility \times Cash Flow = -1.786$  with p-value 0.016). This is consistent with our previous finding that the law enabled firms to use tangible assets more effectively as potential collateral for external finance, and as a consequence, reduces the marginal value of cash.

Column 4 contains of our analysis of the influence of *Political Connection*. Consistent with our predictions, having political connections is associated with a lower marginal value of cash before the enactment of the law (coefficient of  $Political Connection \times Cash Flow = -0.287$  with p-value 0.024), and this difference between politically connected and unconnected firms becomes less profound after the enactment ( $Law \times Political Connection \times Cash Flow = 0.121$  with p-value 0.024). Column 6 shows that these findings also hold when we use our alternative measure of stock returns ( $Political Connection \times Cash Flow = -0.219$  with p-value 0.058;  $Law \times Political Connection \times Cash Flow = 0.104$  with p-value 0.023).

Overall, the results in this sub-section echo our results on how asset tangibility and political connections functioned as channels through which the property law affected debt issuance (see sub-sections 4.3.1 and 4.3.2 and Table 7 & 8). On average, the enactment of the law improves firms' access to external finance (column 1, Table 7) and decreases their marginal value of cash holdings (column 2, Table 11). More specifically, after the law enactment, firms that had highly tangible assets increased their debt issuance (column 2, Table 8) and their marginal value of cash holdings fell (columns 3, Table 11). Moreover, after the law enactment, politically unconnected firms in comparison to politically connected firms gain a greater improvement in access to external finance (column 4, Table 7 & 8): thus, the marginal value of

cash for politically unconnected firms decreased more after the law enactment (column 6, Table 11).

#### 4.4.3. *Property Law and the Cash Flow Sensitivity of Cash*

In the previous two sub-sections we have documented that after the enactment firms were less dependent on internal cash and they had a lower marginal value of cash. Also, in sub-section 4.2.2 we documented that the cash flow sensitivity of investment fell after the enactment. These findings indicate that financial constraints became looser after the law was passed. In this section we present additional and sharper evidence that firms gained access to external finance after the enactment of the law.

As pointed out by Almeida, Campello and Weisbach (2004), the cash flow sensitivity of cash could be a better measure of financial constraints because for a financial variable like cash, “it is difficult to argue that the explanatory power of cash flows over cash policies could be ascribed to its ability to forecast future business conditions (investment demand)” (p. 1778). Thus, if a firm does not have financial constraints, its current cash holdings should be unrelated to its anticipated future prospects and it should also be unrelated to current cash flows and its cash flow sensitivity of cash should be zero. On the other hand, when a firm is financially constrained, the firm has strong incentives to save cash out of cash flow, and as a consequence, displays a positive cash flow sensitivity of cash. In other words, financial constraints should be related to a firm’s propensity to save cash out of cash flows (Almeida, Campello and Weisbach, 2004). In Table 12 we report estimates for the cash flow sensitivity of cash. Specifically, we augment the standard model specification in Almeida et al. (2004) with our *Political Connection*, *Tangibility* and *Law*. The model specification can be expressed as:

$$\Delta Cash Holdings_{it} = \alpha_0 + \alpha_1 Law + \alpha_2 Political Connection_{it} + \alpha_3 Cash Flow_{it} + \alpha_4 Q_{it} + \alpha_5 Tangibility_{it} + \alpha_6 Firm Size_{it} + \alpha_i + \alpha_t + \varepsilon_{it} \quad (5)$$

The dependent variable is a firm's change in cash holdings (change in cash and cash equivalents divided by its total assets). The coefficient of *Cash Flow*,  $\alpha_3$ , is the cash flow sensitivity of cash. Thus, when  $\alpha_3 = 0$  there are no financial constraints. There are financial constraints when  $\alpha_3 > 0$ , and financial constraints tighten as  $\alpha_3 > 0$  increases.

[Insert Table 12 here]

In Table 12 column 1 the estimate for the cash flow sensitivity of cash (0.256 with p-value 0.021) indicates firms had financial constraints throughout the sample period. Column 2 shows financial constraints become less taut after the enactment:<sup>16</sup> the cash flow sensitivity of cash was positive pre-enactment (coefficient of  $\Delta Cash = 0.413$  with p-value 0.019), and it fell substantially after the law enactment (coefficient of  $Law \times \Delta Cash = -0.132$  with p-value 0.002).

If the propensity to save cash out of cash flows is indicative of a firm's financial constraints, the predictions we have already made about the influence of asset tangibility and political connections on internal cash holdings should be *qualitatively* the same as our predictions about the impact of asset tangibility and political connections on the cash flow sensitivity of cash: after the law enactment the negative association between *Tangibility* and the cash flow sensitivity of cash should become stronger, and the negative association between *Political Connection* and the cash flow sensitivity of cash should become less profound.

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<sup>16</sup> This column and the rest of the specifications in this table include more controls from Almeida et al. (2004), equation (9) such as the capital expenditure, change of net working capitals and change of short term debt.

Column 3 shows that politically connected firms have a much lower precautionary motive to save cash out of their cash flows ( $Political\ Connection \times Cash\ Flow = -0.069$  with p-value 0.027). This is because political connections gave firms access to external finance for funding their investment projects. This pattern, however, is weakened after the enactment ( $Law \times Political\ Connection \times Cash\ Flow = 0.046$  with p-value 0.019) because the law gave firms, and especially firms that lacked political connections, more access to external capital markets for funding their investment projects.

Column 4 documents that firms with highly tangible assets had a *marginally* lower tendency to use their cash flows to fund their investments ( $Tangibility \times Cash\ Flow = -0.122$  with p-value 0.389). This suggests that before the enactment firms had only a limited ability to use their tangible assets as collateral for gaining access to external capital because creditors' rights to seize firms' tangible assets in the event of a default were limited and local government powers to expropriate firms' tangible assets were not well checked. However, because the law gave creditors more rights to seize tangible assets in the event of a default and it also checked the grabbing hand of local governments, firms that had a larger stock of tangible assets had a significant lower precautionary motive to save cash out of their cash flows after the enactment ( $Law \times Tangibility \times Cash\ Flow = -0.253$  with p-value 0.007).

Table 12 column 5 studies the relevance of growth opportunities ( $Q$ ) for cash holding. The positive interaction term between  $Q$  and  $Cash\ Flow$  (0.003 with p-value 0.356) indicates that firms with stronger growth opportunities had a marginally higher propensity to save their cash flows as a precautionary motive for funding positive NPV projects. After the enactment, this precautionary motive for holding cash was weakened ( $Law \times Q \times Cash\ Flow = -0.029$  with p-value 0.028): this is because the law gave firms with promising projects more access to external capital markets.

The above results complement our findings about the channels through which the property law affected debt issuance (see sub-sections 4.3.1 and 4.3.2 and Tables 7 and 8). Specifically, the enactment of the law improves the firms' access to external debt finance (column 1, Table 7) and weakens the cash flow sensitivity of cash (column 2, Table 12). Moreover, this effect is more profound for firms with no political connection, with high tangibility and firms with more growth opportunities.

## **5. Conclusion**

This paper has used the 2007 Property Law in China as a natural experiment for identifying the impact of property rights on firm-level investment, finance and value. Consistent with fundamental work on institutions, we find that secure property rights promote investment, access to finance and value. The paper is consistent with the law and finance view (see La Porta et al, 1998 and 2008) that good laws on the books can promote finance which in turn promote investment and firm value (growth).

This paper also documents channels through which property rights affect observed firm-level investment, finance and value. While the analysis is specific to China, arguably the circumstances of the Chinese case apply to many countries that have underdeveloped financial markets where firms can only use highly tangible assets (plant, equipment and machinery) as collateral to gain access to bank finance and firms have more difficulties securing loans with inventories, accounts receivables, customer accounts, brand names, and other intangibles. Moreover, in economies with underdeveloped financial markets, political connections are also critical for gaining access to external finance. However, these political connections are generally associated with inefficiencies such as rent seeking and inefficient government bailouts.

In China the 2007 property law checked the power of local governments to seize private assets. Thus, private firms had more secure tangible assets; and, for creditors, the tangible assets underlying their secured loans to private firms were safer. Moreover, the law gave creditors more

rights to seize these tangible assets in the event of the default. By putting these protections in place for tangible assets, the law had the beneficial consequence of making political connections less important for accessing external finance, investment and value. And just whether firms had a good stock of tangible assets and also had promising growth prospects (as measured by Tobin's Q) became more important for investment and finance.

The design of reforms for improving institutions that protect property rights has proven to be difficult (see Acemoglu and Robinson, 2012). Part of the problem is that bundle of institutions that protect property rights tends to be highly persistent. A lesson of the Chinese Property Law of 2007 is that writing down laws that include fundamental protections of creditor rights and restraints on the grabbing hand of governments can improve property rights. And, consistent with theory, these improvements in property rights can promote finance, investment and growth.

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Table 1 Variable definitions

Variable	Definition
<b>Panel A. Key variables</b>	
Law dummy	The property law dummy that equals one starting from 2007, zero otherwise
Political connection dummy	Equals one if either the CEO or the board chairman previously held or currently holds a government official position. The official position may be a government position at a central, provincial, or city government, or at a ministerial or bureau level, or a community party secretary of the firm or shareholders.
Investment (scaled by net fixed assets)	(ending net fixed assets – beginning net fixed assets + depreciation)/lagged (net fixed asset)
Debt changes	Changes of total debt / lagged total debt
Q	[total assets + (share price × common shares outstanding) – book value of common equity – deferred taxes liabilities] / total assets
Stock return(-1) (percent)	Buy and hold return with cash dividend reinvested over the last year, in percentage
Cash flow (scaled by net fixed asset)	(Net profit + depreciation and amortization) / (net fixed asset)
Residual cash flow	Estimated residual cash flow by regressing cash flow on lagged Q, lagged 1-year stock returns, and past 3-year's sales growth (McLean, Zhang, and Zhao, 2011)
Tangibility	Net property, plant and equipment / total assets
External financial dependence	Fraction of capital expenditures not financed with internal funds for US firms in the same industry during 2002-2005 (Rajan and Zingales, 1998)
Firm size	Natural logarithm of total assets
CAR(-2,2) (percent)	Five-day cumulative abnormal return of a firm calculated using a market model estimated over the period [-210,-11] relative to the announcement date (day 0) of the Property Law on March 16, 2007 (in percentage)
Hadlock-Pierce index	Financial constraint index that equals $-0.737*(\text{total assets}) + 0.043*(\text{total assets})^2 - 0.040*\text{Age}$ , where Age equals the current year minus the first year that the firm was listed and total assets are in millions yuan: a higher value indicates more financial constraint for the firm (Hadlock and Pierce, 2010, p.1929)
<b>Panel B. Additional variables in cash holdings regression</b>	
Cash	Cash and cash equivalents / total assets
Cash flow (scaled by total assets)	(Net profit + depreciation and amortization) / total assets
Net working capital	(Current assets – current liabilities – cash holding) / total assets
Capital expenditures (scaled by total assets)	(ending net fixed assets – beginning net fixed assets + depreciation) / total asset
Leverage	Total debt / total assets
Industry cash flow risk	Following Bates, Kahle, and Stulz (2009, p.1995), we compute for each firm-year the standard deviation of cash flow to assets for the previous 5 years. We then average the firm cash flow standard

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	deviations each year across each two-digit industry code.
Dividend dummy	Equals to one if a firm pays a dividend, otherwise equals to zero.

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**Panel C. Additional variables in value of cash regressions**

Excess return (percent)	Firm's annual stock return minus Fama-French (1993) size and book-to-market matched portfolio annual return (in percentage). A portfolio return is a value-weighted return based on market capitalization within each of the 25 portfolios. For each year, we group every firm into one of 25 size and book-to-market portfolios based on the intersection between the size and book-to-market independent sorts.
Excess return (alternative measure) (percent)	Firm's industry-adjusted annual stock return, adjusted for industry medium return (in percentage)
$\Delta$ Cash	(Change of cash and cash equivalents) / lagged market value of equity
$\Delta$ Earnings	$\Delta$ (Net profit + interest payments + deferred taxes liabilities) / lagged market value of equity, where $\Delta$ indicates changes
$\Delta$ Net assets	$\Delta$ (total assets – cash holdings) / lagged market value of equity, where $\Delta$ indicates changes
$\Delta$ Interest expenses	(Change of interest expenses) / lagged market value of equity
$\Delta$ Dividends	Change of dividends / lagged market value of equity
Cash(-1)	(lagged cash and cash equivalents) / lagged market value of equity
Leverage	Total debt / total assets

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**Panel D. Additional variables in cash flow sensitivity of cash regressions (all are scaled by total assets)**

$\Delta$ Cash holdings (scaled by total assets)	(Change of cash and cash equivalents) / total assets
Cash flow (scaled by total assets)	(Net profit + depreciation and amortization) / total assets
Capital expenditures (scaled by total assets)	(ending net fixed assets – beginning net fixed assets + depreciation) / total asset
$\Delta$ (Net working capital)	$\Delta$ (current assets – current liabilities – cash holding) / total assets, where $\Delta$ indicates changes
$\Delta$ (short term debt)	(Change of short term debt) / total assets

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Table 2 Summary statistics

Variable	Mean	Median	STD	N
<b><i>Panel A. Key variables</i></b>				
Law dummy	0.449	0.000	0.497	4,617
Political connection dummy	0.388	0.000	0.487	4,588
Investment (scaled by net fixed assets)	0.271	0.130	0.534	4,410
Debt changes	0.183	0.054	0.591	4,157
Q	2.042	1.598	1.399	4,411
Stock return(-1) (percent)	0.266	-0.126	0.994	4,204
Cash flow (scaled by net fixed assets)	0.233	0.208	0.369	4,410
Residual cash flow	0.000	0.002	0.355	4,011
Tangibility	0.312	0.286	0.166	4,612
External financial dependence	0.405	0.270	0.491	4,617
Firm size	21.281	21.208	1.0461	4,617
CAR(-2,2) (percent)	0.244	0.192	7.071	777
Hadlock-Pierce index	-3.351	-3.368	0.193	777
<b><i>Panel B. Additional variables in cash holdings regression</i></b>				
Cash	0.144	0.121	0.106	4,376
Cash flow (scaled by total assets)	0.047	0.057	0.094	4,376
Net working capital	-0.088	-0.057	0.265	4,376
Capital expenditures (scaled by total assets)	0.052	0.033	0.088	4,376
Leverage	0.241	0.228	0.174	4,376
Industry cash flow risk	0.042	0.039	0.019	4,376
Dividend dummy	0.503	1	0.500	4,376
<b><i>Panel C. Additional variables in value of cash regressions</i></b>				
Excess return (percent)	0.495	0.097	1.059	4,340
Excess return (alternative measure) (percent)	0.468	0.054	1.029	4,340
$\Delta$ Cash	0.013	0.003	0.095	4,340
$\Delta$ Earnings	0.013	0.004	0.101	4,340
$\Delta$ Net assets	0.104	0.058	0.259	4,340
$\Delta$ Interest expenses	0.000	0.000	0.001	4,340
$\Delta$ Dividends	-0.001	0.000	0.015	4,340
Cash(-1)	0.152	0.114	0.135	4,340
Leverage	0.240	0.228	0.171	4,340
<b><i>Panel D. Additional variables in cash flow sensitivity of cash regressions</i></b> <i>(all are scaled by total assets)</i>				
$\Delta$ Cash holdings (scaled by total assets)	0.006	0.004	0.079	4,379
Cash flow (scaled by total assets)	0.047	0.057	0.094	4,379
Capital expenditures (scaled by total assets)	0.052	0.033	0.088	4,379
$\Delta$ (Net working capital)	-0.014	-0.01	0.117	4,379
$\Delta$ (Short term debt)	0.007	0.004	0.085	4,379

Note: Detailed variable definitions are given in Table 1.

Table 3 Property law and abnormal announcement returns [CAR(-2,2)]

	1	2	3	4	5	6
Q	0.575 [0.013]**					0.518 [0.014]**
Tangibility		7.084 [0.001]***				6.420 [0.003]***
Cash flow			-1.076 [0.002]***			-1.034 [0.002]***
Political connection				-0.480 [0.033]**		-0.365 [0.034]**
Hadlock-Pierce index					5.074 [0.011]**	4.170 [0.018]**
Industry dummies	yes	yes	Yes	yes	yes	yes
Observations	777	777	753	777	777	753
Adjusted R <sup>2</sup>	0.078	0.079	0.096	0.078	0.082	0.099

Note: The dependent variable is CAR(-2,2) (percent) (five-day cumulative abnormal return calculated using a market model estimated over the period [-210,-11] relative to the announcement date (day 0)) of the Property Law on March 16, 2007. The estimation is via cross-section OLS. All explanatory variables are for the year 2006. All variable definitions are reported in Table 1. Standard errors based on heteroskedasticity-consistent standard errors are reported in brackets. \*, \*\*, and \*\*\* represent statistical significance at the 10-percent, 5-percent, and 1-percent level, respectively.

Table 4 Political connections, property law, and abnormal announcement returns [CAR(-2,2)]

	1	2	3	4	5
Q	0.420 [0.018]**	0.440 [0.015]**	0.451 [0.023]**	0.459 [0.015]**	0.388 [0.025]**
Tangibility	6.277 [0.002]***	8.761 [0.011]**	7.636 [0.007]***	5.942 [0.003]***	6.053 [0.011]**
Cash flow	-1.053 [0.024]**	-1.046 [0.022]**	-1.054 [0.002]***	-1.021 [0.064]*	-1.067 [0.019]**
Political connection	-0.272 [0.019]**	-0.329 [0.025]**	-0.363 [0.028]**	-0.254 [0.021]**	-0.257 [0.022]**
Hadlock-Pierce index	3.933 [0.028]**	4.044 [0.021]**	3.983 [0.025]**	4.014 [0.024]**	3.438 [0.019]**
Political connection × Q	-0.081 [0.027]**				
Political connection × Tangibility		-1.061 [0.005]***			
Tangibility × Q			0.824 [0.036]**		
Tangibility × Cash flow				-0.600 [0.002]***	
Tangibility × Hadlock-Pierce index					0.803 [0.018]**
Industry dummies	yes	Yes	yes	yes	yes
Observations	753	753	753	753	753
Adjusted R <sup>2</sup>	0.101	0.103	0.098	0.097	0.095

Note: The dependent variable is CAR(-2,2) (percent) (five-day cumulative abnormal return calculated using a market model estimated over the period [-210,-11] relative to the announcement date (day 0)) of the Property Law on March 16, 2007. The estimation is via cross-section OLS. All explanatory variables are for the year 2006. All variable definitions are reported in Table 1. Standard errors based on heteroskedasticity-consistent standard errors are reported in brackets. \*, \*\*, and \*\*\* represent statistical significance at the 10-percent, 5-percent, and 1-percent level, respectively.

Table 5 Financial constraints, property law, Q, and investment

	1	2	3	4	5	6	7	8
Q(-1)	0.050 [0.005]***	0.047 [0.026]**	0.048 [0.016]**	0.045 [0.030]**				
Stock return(-1)					0.046 [0.008]***	0.052 [0.037]**	0.037 [0.024]**	0.061 [0.036]**
Law	0.129 [0.000]***				0.114 [0.000]***			
Law × Q(-1)		0.018 [0.022]**		0.019 [0.027]**				
Law × Stock return(-1)						0.029 [0.016]**		0.022 [0.028]**
Political connection			0.074 [0.028]**	0.059 [0.011]**			0.052 [0.015]**	0.065 [0.013]**
Political connection × Q(-1)			0.014 [0.036]**	0.012 [0.074]*				
Political connection × Stock return(-1)							0.010 [0.082]*	0.016 [0.035]**
Law × Political connection				-0.014 [0.023]**				-0.018 [0.019]**
Law × Political connection × Q(-1)				-0.014 [0.016]**				
Law × Political connection × Stock return(-1)								-0.016 [0.012]**
Cash flow	0.126 [0.015]**	0.121 [0.018]**	0.122 [0.017]**	0.120 [0.026]**				
Residual cash flow					0.146 [0.016]**	0.149 [0.014]**	0.149 [0.014]**	0.148 [0.015]**
Firm dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Year dummies	no	yes	yes	Yes	no	yes	yes	yes
Observations	4,410	4,410	4,385	4,385	3,380	3,367	3,357	3,357
Firms	707	707	706	706	657	656	655	655
Adjusted R <sup>2</sup>	0.073	0.076	0.076	0.077	0.061	0.066	0.065	0.068

Note: The dependent variable is firm's investment. The results are from OLS regressions. In columns 5 to 8, Q and cash flow are replaced by lagged stock return and residual cash flow, respectively. Q(-1) is Tobin's Q lagged by one year. Stock return(-1) is stock return lagged by one year. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 6 Financial constraints, property law, cash flow, and investment

	1	2	3	4	5	6	7	8
Political connection	0.045 [0.023]**	0.048 [0.024]**	0.045 [0.018]**	0.039 [0.027]**	0.046 [0.016]**	0.042 [0.018]**	0.055 [0.016]**	0.069 [0.011]**
Cash flow	0.122 [0.019]**	0.134 [0.014]**	0.117 [0.019]**	0.145 [0.025]**				
Residual cash flow					0.149 [0.028]**	0.251 [0.014]**	0.159 [0.026]**	0.273 [0.012]**
Law × Cash flow		-0.057 [0.006]***		-0.062 [0.017]**				
Law × Residual cash flow						-0.061 [0.017]**		-0.078 [0.007]***
Political connection × Cash flow			-0.071 [0.007]***	-0.087 [0.064]*				
Political connection × Residual cash flow							-0.057 [0.068]*	-0.062 [0.014]**
Law × Political connection				-0.011 [0.077]*				-0.016 [0.034]**
Law × Political connection × Cash flow				0.023 [0.015]**				
Law × Political connection × Residual cash flow								0.018 [0.037]**
Q(-1)	0.048 [0.018]**	0.044 [0.017]**	0.041 [0.018]**	0.039 [0.022]**				
Stock return(-1)					0.035 [0.029]**	0.032 [0.035]**	0.034 [0.030]**	0.029 [0.042]**
Firm dummies	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes
Observations	4,385	4,385	4,385	4,385	3,357	3,357	3,357	3,357
Firms	706	706	706	706	655	655	655	655
Adjusted R2	0.076	0.076	0.076	0.078	0.065	0.071	0.065	0.074

Note: The dependent variable is firm's investment. The results are from OLS regressions. In columns 5 to 8, Q and cashflow are replaced by lagged stock return and residual cashflow, respectively. Q(-1) is Tobin's Q lagged by one year. Stock return(-1) is stock return lagged by one year. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 7 Property law, Q, and debt changes

	1	2	3	4
Q(-1)	0.046 [0.012]**	0.046 [0.027]**	0.044 [0.023]**	0.041 [0.019]**
Law	0.082 [0.000]***			
Law × Q(-1)		0.025 [0.016]**		0.023 [0.012]**
Political connection			0.062 [0.019]**	0.060 [0.024]**
Political connection × Q(-1)			0.018 [0.022]**	0.016 [0.029]**
Law × political connection				-0.025 [0.014]**
Law × political connection × Q(-1)				-0.011 [0.027]**
Tangibility	0.475 [0.003]***	0.456 [0.015]**	0.451 [0.014]**	0.457 [0.016]**
Cash flow	0.133 [0.016]**	0.109 [0.031]**	0.105 [0.037]**	0.107 [0.038]**
Firm size	0.063 [0.017]**	0.041 [0.051]*	0.049 [0.027]**	0.051 [0.018]**
Firm dummies	yes	yes	yes	yes
Year dummies	no	yes	yes	yes
Observations	3,985	3,985	3,964	3,964
Firms	634	634	632	632
Adjusted R <sup>2</sup>	0.053	0.074	0.073	0.075

Note: The dependent variable is firm's debt changes. The results are from OLS regressions. Q(-1) is Tobin's Q lagged by one year. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 8 Property law, tangibility, and debt changes

	1	2	3	4
Tangibility	0.452	0.435	0.443	0.452
	[0.014]**	[0.018]**	[0.002]***	[0.015]**
Political connection	0.068	0.063	0.060	0.053
	[0.038]**	[0.039]**	[0.053]*	[0.026]**
Law $\times$ Tangibility		0.063		0.029
		[0.015]**		[0.018]**
Political connection $\times$ Tangibility			0.039	0.036
			[0.025]**	[0.029]**
Law $\times$ Political connection				-0.024
				[0.011]**
Law $\times$ Political connection $\times$ Tangibility				-0.021
				[0.024]**
Q(-1)	0.046	0.044	0.045	0.043
	[0.018]**	[0.023]**	[0.020]**	[0.029]**
Cash flow	0.105	0.103	0.104	0.101
	[0.035]**	[0.021]**	[0.024]**	[0.025]**
Firm size	0.052	0.048	0.051	0.039
	[0.014]**	[0.011]**	[0.012]**	[0.054]*
Firm dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
Observations	3,964	3,964	3,964	3,964
Firms	632	632	632	632
Adjusted R <sup>2</sup>	0.073	0.072	0.071	0.071

Note: The dependent variable is firm's debt changes. The results are from OLS regressions. Q(-1) is Tobin's Q lagged by one year. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 9 Property law, external financial dependence, and debt changes

	1	2	3
Political connection	0.064	0.056	0.061
	[0.012]**	[0.013]**	[0.014]**
Law × EFD	0.131		0.109
	[0.014]**		[0.015]**
Political connection × EFD		0.076	0.064
		[0.029]**	[0.025]**
Law × Political connection			-0.022
			[0.017]**
Law × Political connection × EFD			-0.036
			[0.015]**
Q(-1)	0.046	0.045	0.046
	[0.016]**	[0.020]**	[0.017]**
Cash flow	0.107	0.105	0.106
	[0.037]**	[0.035]**	[0.034]**
Tangibility	0.449	0.452	0.448
	[0.013]**	[0.016]**	[0.015]**
Firm size	0.054	0.055	0.053
	[0.021]**	[0.056]*	[0.036]**
Firm dummies	yes	yes	yes
Year dummies	yes	yes	yes
Observations	3,964	3,964	3,964
Firms	632	632	632
Adjusted R <sup>2</sup>	0.073	0.071	0.074

Note: The dependent variable is firm's debt changes. The results are from OLS regressions. Q(-1) is Tobin's Q lagged by one year. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 10 Property law and firm's cash holdings

	1	2	3	4	5	6
Law	-0.023 [0.000]***					
Political connection	-0.016 [0.015]**	-0.018 [0.019]**	-0.017 [0.016]**	-0.014 [0.016]**	-0.017 [0.016]**	-0.015 [0.019]**
Q	0.020 [0.016]**	0.022 [0.026]**	0.021 [0.035]**	0.022 [0.038]**	0.023 [0.028]**	0.024 [0.030]**
Tangibility	-0.158 [0.055]*	-0.149 [0.065]*	-0.142 [0.071]*	-0.140 [0.072]*	-0.149 [0.082]*	-0.149 [0.042]**
Law × Political connection		0.006 [0.019]**		0.007 [0.023]**		0.006 [0.021]**
Law × Q					-0.007 [0.032]**	-0.008 [0.037]**
Law × Tangibility			-0.031 [0.014]**	-0.034 [0.012]**		
Political connection × Q						-0.006 [0.042]**
Law × Political connection × Q						0.004 [0.021]**
Political connection × Tangibility				-0.022 [0.154]		
Law × Political connection × Tangibility				0.017 [0.016]**		
Firm size	-0.008 [0.138]	-0.012 [0.064]*	-0.011 [0.065]*	-0.012 [0.073]*	-0.011 [0.062]*	-0.013 [0.041]**
Cash flow	-0.111 [0.262]	-0.123 [0.198]	-0.121 [0.034]**	-0.121 [0.134]	-0.120 [0.157]	-0.120 [0.316]
Net working capital	-0.116 [0.401]	-0.126 [0.447]	-0.127 [0.473]	-0.127 [0.081]*	-0.126 [0.453]	-0.126 [0.448]
Capital expenditures (scaled by total assets)	0.037 [0.043]**	0.020 [0.367]	0.022 [0.242]	0.022 [0.232]	0.016 [0.387]	0.015 [0.391]
Leverage	-0.159 [0.349]	-0.162 [0.348]	-0.163 [0.241]	-0.163 [0.336]	-0.161 [0.336]	-0.160 [0.056]*
Industry cash flow risk	0.120 [0.074]*	0.141 [0.031]**	0.161 [0.029]**	0.169 [0.026]**	0.143 [0.034]**	0.141 [0.034]**
Dividend dummy	-0.014 [0.001]***	-0.012 [0.023]**	-0.011 [0.025]**	-0.011 [0.025]**	-0.011 [0.027]**	-0.012 [0.026]**
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes	Yes	Yes
Observations	4,376	4,376	4,376	4,376	4,376	4,376
Firms	702	702	702	702	702	702
Adjusted R <sup>2</sup>	0.204	0.231	0.233	0.234	0.231	0.231

Note: The dependent variable is firm's cash to total assets. The results are from OLS regressions. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 11 Property law and value of cash

	1	2	3	4	5	6
Law	0.329 [0.000]***					
Political connection	0.121 [0.030]**	0.102 [0.023]**	0.104 [0.021]**	0.127 [0.024]**	0.125 [0.027]**	0.136 [0.021]**
$\Delta$ Cash	1.522 [0.000]***	1.689 [0.002]***	1.554 [0.011]**	1.622 [0.004]***	1.528 [0.016]**	1.649 [0.012]**
Law $\times$ $\Delta$ Cash		-0.316 [0.028]**	-0.281 [0.031]**	-0.445 [0.016]**	-0.230 [0.028]**	-0.387 [0.014]**
Tangibility $\times$ $\Delta$ Cash			-0.504 [0.412]		-0.420 [0.253]	
Law $\times$ Tangibility			0.138 [0.123]		0.125 [0.137]	
Law $\times$ Tangibility $\times$ $\Delta$ Cash			-1.884 [0.011]**		-1.786 [0.016]**	
Law $\times$ Political connection				-0.047 [0.019]**		-0.048 [0.015]**
Political connection $\times$ $\Delta$ Cash				-0.287 [0.024]**		-0.219 [0.058]*
Law $\times$ Political connection $\times$ $\Delta$ Cash				0.121 [0.024]**		0.104 [0.023]**
Tangibility	0.520 [0.067]*	0.383 [0.114]	0.301 [0.178]	0.385 [0.248]	0.319 [0.172]	0.326 [0.237]
$\Delta$ Earnings	0.879 [0.040]**	0.817 [0.035]**	0.815 [0.028]**	0.827 [0.023]**	0.839 [0.023]**	0.858 [0.025]**
$\Delta$ Net assets	0.348 [0.016]**	0.274 [0.012]**	0.290 [0.014]**	0.287 [0.018]**	0.244 [0.013]**	0.237 [0.016]**
$\Delta$ Interest expenses	-0.955 [0.136]	-1.106 [0.020]**	-1.170 [0.053]*	-1.176 [0.075]*	-1.062 [0.072]*	-1.108 [0.063]*
$\Delta$ Dividends	1.317 [0.170]	2.114 [0.038]**	2.112 [0.037]**	2.093 [0.041]**	2.118 [0.034]**	2.148 [0.040]**
Cash(-1)	0.924 [0.320]	0.951 [0.223]	0.949 [0.038]**	0.923 [0.025]**	0.965 [0.034]**	0.960 [0.028]**
Leverage	-0.217 [0.192]	-0.281 [0.013]**	-0.283 [0.012]**	-0.277 [0.054]*	-0.242 [0.059]*	-0.225 [0.026]**
Cash $\times$ $\Delta$ Cash	-0.287 [0.216]	-0.156 [0.244]	-0.175 [0.237]	-0.112 [0.223]	-0.117 [0.224]	-0.132 [0.217]
Leverage $\times$ $\Delta$ Cash	-2.197 [0.147]	-2.095 [0.219]	-2.051 [0.358]	-2.043 [0.215]	-2.039 [0.267]	-2.025 [0.288]
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes	Yes	Yes
Observations	4,340	4,340	4,340	4,340	4,340	4,340
Firms	705	705	705	705	705	705
Adjusted R <sup>2</sup>	0.182	0.358	0.364	0.363	0.347	0.344

Note: The dependent variable is firm's excess return (in percentage). In columns 1 to 4, the excess return is firm's annual stock return minus Fama-French (1993) size and book-to-market matched portfolio annual return. A portfolio return is a value-weighted return based on market capitalization within each of the 25 portfolios. For each year, we group every firm into one of 25 size and book-to-market portfolios based on the intersection between the size and book-to-market independent sorts. In columns 5 and 6, the dependent variable is firm's industry-adjusted annual stock return, adjusted for the median industry return. The results are from OLS regressions. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 12 Cash flow sensitivity of cash and property law

	1	2	3	4	5
Law	-0.007 [0.024]**				
Political connection	-0.004 [0.031]**	-0.005 [0.029]**	-0.006 [0.031]**	-0.005 [0.029]**	-0.004 [0.030]**
Cash flow	0.256 [0.021]**	0.413 [0.019]**	0.405 [0.016]**	0.488 [0.018]**	0.422 [0.024]**
Q	0.010 [0.022]**	0.007 [0.004]**	0.007 [0.023]**	0.006 [0.024]**	0.008 [0.003]**
Tangibility	-0.070 [0.015]**	-0.042 [0.019]**	-0.043 [0.016]**	-0.031 [0.021]**	-0.040 [0.017]**
Law × Cash flow		-0.132 [0.002]**	-0.086 [0.019]**	-0.158 [0.012]**	-0.097 [0.023]**
Political connection × Cash flow			-0.069 [0.027]**		
Law × Political connection			0.002 [0.154]		
Law × Political connection × Cash flow			0.046 [0.019]**		
Law × Tangibility				-0.013 [0.040]**	
Tangibility × Cash flow				-0.122 [0.389]	
Law × Tangibility × Cash flow				-0.253 [0.007]**	
Law × Q					-0.002 [0.062]*
Q × Cash flow					0.003 [0.356]
Law × Q × Cash flow					-0.029 [0.028]**
Firm size	0.026 [0.021]**	0.024 [0.025]**	0.025 [0.016]**	0.025 [0.020]**	0.025 [0.028]**
Capital expenditures (scaled by total assets)		-0.152 [0.016]**	-0.151 [0.011]**	-0.156 [0.014]**	-0.154 [0.013]**
$\Delta$ (Net working capital)		-0.284 [0.020]**	-0.284 [0.021]**	-0.285 [0.018]**	-0.284 [0.019]**
$\Delta$ (Short term debt)		-0.012 [0.301]	-0.013 [0.457]	-0.014 [0.342]	-0.013 [0.318]
Firm dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	Yes	Yes	Yes
Observations	4,379	4,379	4,379	4,379	4,379
Firms	705	705	705	705	705
Adjusted R <sup>2</sup>	0.094	0.231	0.230	0.227	0.229

Note: The dependent variable is firm's change of cash holdings to total assets. The results are from OLS regressions. Detailed variable definitions are given in Table 1. P-values are in brackets and are based on heteroskedasticity-robust standard errors clustered at the firm level. \*\*\*, \*\*, \* indicate statistical significance at the 1-percent, 5-percent, and 10-percent levels, respectively.