The Real and Financial Implications of Property Rights Protection: Evidence from a Natural Experiment"?

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This Draft: May 18, 2012

ABSTRACT

Using the 2007 China Property law as a natural experiment, we explore the implications of property rights protections for corporate finance and investment. The enactment of a new property law enabled business owners to use more of their assets for securing external finance and allowed creditors to recover a larger share of their secured assets in the event of a default. Moreover, because business owners faced a lower threat that the government would expropriate their assets, their collaterals were better protected. Because the law strengthened fundamental property rights protections, in theory it should have eased a firm's access to external finance, improved firm investment and as a consequence enhanced firm value. Using a balanced panel of roughly 700 private listed Chinese firms we find that firm level investment and debt finance substantially increased after the enactment of the law. Moreover, investment increased more strongly with q and depended less on cash flow after the enactment of the law. We also find that external finance increased more strongly with q after the enactment of the law. These effects are more profound for firms without political connections and with higher tangibility, suggesting the property law made political connections less important and made tangible assets more important as sources of collateral for external finance and for promoting firm investment. Consistent with the above findings, we find a strong announcement effect around the law announcement date. Specifically, firms with higher q and tangibility and firms without political connections benefited more from the enactment of the law.

Acknowledgements: We thank Michael Du, XIN He, Joyce Mann and Moe Zhang for carefully explaining the details of the 2007 Property Law in China. We also thank Dave Dennis, Ming Ouiye and seminar participants at Remin University for their comments. Berkowitz conducted much of the research in this paper during two visits to Tsinghua University.

Introduction

Property rights are a fundamental 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 shape property rights which, in turn, cause long run country-level growth (Acemoglu et al, 2001; Claessens and Laeven, 2003; La Porta et al, 1998; Levine, 2005). And, at the firm level, Beck et al., (2005) and La Porta et al (2002) also show that legal institutions that provide strong property rights protection enhance firm value and growth.

Despite the importance of the issue, little is known about how property rights affect firm-level investment and finance. Using enterprise survey data, Johnson et al. (2002) and Cull and Xu (2005) find that property rights affect firm incentives to reinvest retained profits. Using the 2007 China Property Law as a natural experiment, this paper analyzes the channels through which property rights affect firm-level investment, debt-issuance and value in roughly 700 listed private firms during 2003-2009.

The 2007 Property Law as written on the books included provisions the broadly strengthened property rights for business owners and for creditors.[1] Business owners and creditors were given assurances that the threat that the government could easily take their assets was lower, business owners were allowed to use more of their assets for securing external finance and creditors were given assurances than they could recover more of their secured assets in a default state. Because this law strengthened fundamental property rights protections, then the

[1] The firm also strengthened property rights protections for home-owners.

theory of property rights[2] predicts that, if enforced, it should have led to more firm level investment and debt issuance.

We take these predictions to the data and find that following the enactment of the property law firm-level investment and debt issuance increased by about a quarter and two fifths of a standard deviation. Building on standard property rights theory we propose three mechanisms through which law should have had real and financial effects: it should have increased the efficiency of investment (measured by a higher sensitivity of investment to profitability); it should have decreased firm-level financial constraints (measured by a lower sensitivity of investment to internal cash flow); and, it should have increased the importance of profitability in debt markets (measured by a higher sensitivity of debt issuance to profitability). Our empirical results strongly confirm these predictions and we find these effects were often economically significant.

We also argue that the law should have upgraded the importance of tangible assets versus political connections for investment and finance. There is a growing body of evidence around the world and, in particular, within developing economies, that political connections serve as an implicit guarantee or even a form of collateral that give firms access to external finance.[3] Therefore, the firms that are not politically connected generally lack the "political collateral" necessary for obtaining external finance for positive net present value projects. By strengthening the value of a firm's tangible assets, stronger property rights then should allow firms to substitute tangible capital for political capital as collateral for external finance.

[2] The basic theory of property rights is summarized in the sources cited in the first paragraph. See North (1990) for one of the classic references.

[3] See Houston, Lin and Ma (2011), Li, Meng, Wang and Zhou (2008), Firth, Lin, Liu and Wong (2009) and Faccio, Masulis and McConnell (2006)

Our empirical findings strongly confirm these predictions. First, we observe that the property law mitigated the advantages of political connections for debt finance. We also find that firms with high asset tangibility were able to better secure debt financing after the law was passed. Moreover, we also find that the law largely offset the advantages that political connections provided in leveraging tangible assets. Finally, we observe that political connections were less important for investment efficiency while asset tangibility gained importance after the law was enacted.

The major contribution of this paper is to show that strengthening property rights can have a large effect on firm investment and finance at the firm level. To our knowledge, we are the first to document this finding at the firm level and using a large-scale natural experiment. Moreover, we provide some validation that this law was a natural experiment by conducting an event study of the announcement effect of this law in the Chinese stock markets.

Finally, our paper provides evidence that is relevant to the debate about the possibility of large-scale transplantation of new laws. In this situation "laws on the books" are not necessarily enforced in countries that are not familiar with particular laws (Pistor et al, 2000 and Berkowitz et al, 2003). In the next section we argue that because private property is a somewhat new concept in China and necessary institutions such as land registries are underdeveloped (Zhang 2008), the 2007 Property Law in China as written on the books may have been difficult to enforce. Our empirical findings, however, show that the property had major positive impact of firm investment and finance in ways that are predicted by property rights theory and strongly suggests that the law was in large part enforced.

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 contains our conclusion.

2. The Law

The Property Law of the People's Republic of China 10th 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.[4] Before the reform, most state bank loans made to firms used land and buildings as collateral and the Chinese security law prohibited the use of accounts receivables and inventory as collateral.[5] The law broadens the set of assets firms can use as collateral and gives creditors more power to collect these secured assets in the event of a default. Article 180, point 4 stipulates that accounts receivables and inventory such as "production equipment, raw and semi-finished materials, semi-finished products and finished products" can be used as collateral. Moreover, Article 180, points 2 states that a possessor's rights to use land for construction and also to manage barren land can be used as collateral. Article 181 has a stipulation that allows borrowers to use claims on future assets as collateral

The law contains provisions that empower creditors to recover their collateral in the event of a default. Article 170 states that 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

[4] 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).

[5] 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.

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, there are 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. 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 bureaux; and these bureaus have the reputation of being slow and nontransparent. [6] 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

[6] We thank Ms. Katherine Wilhelm, Director of the Beijing Office, the China Law Center of Yale Law School for this comment.

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.[7]

The property law also puts some formal restraints on predatory land grabbing by local governments.[8] Prior to the passage of the law, local government forced millions of homeowners to sell their land to land developers at government set prices that were generally below market valuation. Residents few legal rights to negotiate with their local governments (see Wilhelm, 2004).[9] 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

[7] 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.

[8] This description government draws on Wilhelm (2004) and Kung et al (2009). We use Zhang (2008) and 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.

[9] Wilhelm (2004) cites data that between 1991 and 2003 Bejing and Shanghai evicted for million residents for urban redevelopment projects.

own the land. The owner of private property has "usufructary 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 demolishment 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."

Thus, on paper the Chinese 2007 Property law made progress in strengthening creditor rights and restraining the grabbing hand of the government. Transplantation of these laws, however, could be challenging in an environment where political connections were important. Moreover, as argued by Zhang (2008), because historically private property rights were limited in China, the enforcement of the law as written on the books was not guaranteed.

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.[10] 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

The firm level financial variables are obtained from 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 firms not controlled by the state. 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 and Campello, 2007), 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 basic summary statistics are presented in table 1 and 2.

[10] Again, again we thank Joyce Mann and her colleagues for explaining this. See also Zhang (2008) for documentation of this opposition.

[Insert Table 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 on the books broadened the set of assets that business owners could collateralize, it gave creditors more power to recover secured assets in a default state, and it lowered the threat of government expropriation of assets for both business owners and creditors.. 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 downgrade firms that are politically connected.

A firm is upgraded (downgraded) when its abnormal stock return increases (decreases) around the time when 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.

CAR (-2, +2) = *f* (*Tangibility, Cash Flow, Political Connection, Q, Financing Constraints, Industry Controls*).

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 more of them could be used as collateral and because they were given more protections against government expropriation. Therefore, we expect that firms with higher tangibility would have higher CARs during the announcement period than firms were lower asset tangibility.

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.[11] As summarized in Houston, Lin and Ma (2011), existing

[11] Some CEOs or board chairs hold concurrent positions in National People's Congress and Chinese People's Political Consultative Conference.

evidence shows that in many countries and, especially in the developing countries, 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 Pierce index is a reasonable measure of financial constraints in various contexts (Hadlock and Pierce, 2010). We therefore follow Hadlock and Pierce (2010) and construct the firm level financial constraints index.

[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 level with higher tangibility, more growth opportunities and a higher degree of financing constraints. On the other hand, cumulative abnormal returns are negatively associated at the 5-percent level with stronger political connections and a higher degree of cash flow.

In order to sharply describe the economic significance of our continuous explanatory variables on CARs, we report effect of one-standard deviation increases.[12] 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 the CARs by approximately 1.06 to 1.18 percentage points. A one-standard-deviation increase in the *Financing Constraint Index* increases the CARs by about 0.8 to 1 basis points. In contrast, a one-standard-deviation increase in *Cash Flow* decreases the CARS by about 0.38 to 0.4 basis points. Moreover, the abnormal stock returns for firms without political connection are significantly higher (by 0.36 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 effect of each explanatory variable is quantitatively significant.

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 instance, the link between *Q* and CARs might be stronger for firms without political connections because they lacked the necessary political collateral connections before the passage of the law and their tangible assets gained valued 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. We examine these potential effects by including the interaction

[12] To do this, we multiply the point estimates in Table 3 by a one standard deviation of each explanatory variable as reported in Table 2.

terms *Political Connection* x *Q* in Table 4 column 1 and *Political Connection* x *Tangibility* in Table 4 column 2.

[Insert Table 4 here]

The empirical results presented in columns 1 and 2 of Table 4 are support our predictions. Specifically, the coefficients of the two interaction terms are negative and statistically significant, suggesting 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-percentage points, and also weakens the sensitivity between *Tangibility* and CARS by about 12-percentage points.

As previously discussed, if the property law was enforced, it should lead to an increase in the value of the tangible assets as a source of collateral. We therefore expect that the effect of *Q*, *cash flow* and the financial constraint (*Hadlock-Pierce*) index on CAR will be more profound for firms with a higher degree of *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 interactions term between *Tangibility* and the *Hadlock-Pierce Index* in column 5. As can be seen from the tables, all the interaction terms enter 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 Shenzen 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 during the announcement period suggests 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 enactment came after a long and divisive debate spanning fourteen years in the Peoples' National Congress. Arguably the announcement of the property law on March 17, 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 natural experiment for study the role of property rights.

4.2. *Property Law and Firm Investment*

In this section, we try to identify the specific mechanisms through which property rights protection affects firm value by exploring the impact of the law on the firm investment and financing activities.

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. The presence of financing constraints, however, may weaken the relationship between Q and investment because financial constraints prevent firms from funding all desired 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 may have to scale down or forgo investments in positive net present value projects. Thus, 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, then 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 add three interaction terms (*Law x Q, Law x Political connection, Political connection x Q)* and a triple interaction term (*Law x Political connection x Q*) to the

standard investment regression. We also include firm fixed effects and year fixed effects and estimate standard errors by clustering at the firm level.

[Insert Table 5 here]

The empirical results presented 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 law overall 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 x Q* and find that it is both statistically and quantitatively significant: thus, the investment sensitivity to *Q* increases by roughly 40-percent.[13] In column 3 the variables *Political connection* and *Political connection x 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-percent (0.014/0.048) higher sensitivity of investment to Q. This evidence is consistent with the previously noted findings that political connection 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 x Political connection x 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 interaction terms *Political connection* (0.059 with p-value 0.011) and *Political connection X Q* (0.014 with p-value 0.036) political connections were 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 x Political connection* (-0.014 with p-value 0.023) and *Law x Political*

[13] To make this calculation note that *Lax x Q/Law* = 0.018/0.047 ≈ 40%.

connection X Q (-0.014 with p-value 0.016) show that after the law was enacted the sensitivity of investment to political connections and the impact of political connections on the efficiency of investment fell.

These findings, however, are 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., 2010) 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[14]. Therefore, stock returns can be used as a very good proxy of marginal Q (e.g. Morck et al. 1990; and, Mclean et al., 2010).

Another concern is that firm cash flow is potentially correlated with its growth opportunity. If these two variables cash flow are correlated, then the link between cash flow and investment could be spurious. We therefore follow Mclean et al. (2010) and use residual cash flow as an alternative measure for cash flow. Specifically, we obtain the residual cash flow by regressing cash flow on lagged Q, lagged one-year stock returns and the past three years of sales growth. Thus, the residual cash flow is 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 the 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 the enactment of the property law increases investment and the sensitivity of investment t Q – i.e.investment efficiency (measured by lagged stock returns). Similarly, leak downgrade the relevance of political connections for investment and for the sensitivity of investment to Q.

[14] Barro finds that stock returns are a better predictor of investment than both Q and changes in Q.

4.2.2. Property Law, Cash Flow and Firm Investment

In this section, we explore the relation between property rights, cash flow and investment. Low cash flow firms have a stronger need for external funds for financing positive net present value projects. If the 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 sensitivity of investment to cash flow has been used as a measure of financial constraints in the literature (Hubbard, 1998; Fazzari et al., 2000).

In our setting, we should then observe that firms are less dependent on internal cash flow for investments after the enactment of the law as described on the books. Moreover, this effect should be more profound for firms that do not have political connections. In order to test for these effects, we include three interaction terms (*Law x Cash flow*, *Law x Political connection*, *Political connection x Cash flow*) and a triple interaction term (*Law x Political connection x Cash flow*) into our baseline regression. 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 empirical results are presented in columns 1 to 4 of Table 6. As can be seen from column 1 table, the estimates for *Political connections* and *Cash flow* are statistically significant and positively associated with investment during the entire sample period. We interpret this to mean that political connections to firms who invested and firms operated with financial constraints during 2003-2009.. As indicated by the negative and statistically significant interaction term *Law x Cash flow* in column 2, the sensitivity of investment to cash flow fell by more than 40-percent (-0.057/0.134) after the law was enacted suggesting that the law helped relax financial constraints. In column 3 the estimate for *Political connection x 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 implies that political connections were useful for easing financial constraints. However, in column 4 the estimate for *Law x Political connection x Cash flow* is positive and significant (0.023 with p-value 0.015), suggesting that the advantages of political connections for investments fell after the law was enacted. [15]

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 suggest that the law alleviated financing frictions and downgraded the importance of political connections.

Overall it is striking that the firm level evidence in Tables 5 and 6 is consistent with the reaction of the stock markets to the announcement of the property law. This suggests that once the law passed, stock market investors adjusted the valuations of firm and expected that the law as written on the books would be generally enforced. Moreover, investors seemed to correctly predict how cash flow, profit opportunities, asset tangibility, financial constraints and political connection would matter for firm investment patterns once the law was in place.

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 showing that the law improved an average firm's access to external finance. In this

[15] More generally, the estimate of (-0.011 with p-value 0.077 for *Law x Political Connection* show that political connections became less important for all other channels besides its impact on the sensitivity of debt to cash flow.

section, we directly test the effect of the law on firms' access to finance.

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. Based on our previous discussions, we expect a positive link between Q (investment opportunities) and debt issuance (external financing). We also expect that the law increased debt issuance and strengthened the link between Q and debt issuance. Political connections, on the other hand, are expected to play a less important role in determining firms' debt financing after the enactment of the law. To test for these effects, we add the three interaction terms and the triple interaction term (*Law x Political connection x 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 8.1 percentage point or about 40-percent of the sample average and the sensitivity of debt changes to a one point increase in Q over the entire sample period is about 4.5 percentage points or about 18-percent of the sample average. Both of these effects are statistically significant.

Drilling further down, in column (2) we interact *Law* with *Q* and find that the sensitivity of debt changes to Q increases by more than 50-percent (0.025/0.046) after the enactment of the law.. In column 3 we include political connections 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 (*Political connection x Q* = 0.018 with p-value 0.022). Again, this is consistent with the evidence that political connections are a form of collateral for obtaining external finance. In column 4 we include all these interaction terms and the triple interaction term and find that following the law the power of political connections in enabling firm with profit opportunities to get debt is weakened (*Law x Political connection x Q* = -0.011 with p-value 0.027) and the power of political connections to obtain debt through all other channels is also weakened (*Law x Political connection* =- -0.025 with p-value 0.014). In other words, political connections became less important in debt markets after the law was passed..

4.3.2. Property Law, Tangibility, and Debt Issuance

Following our previous discussion, we would expect that tangibility became relatively more important than political connections as a source of leverage for firms in debt markets after the law was enacted. We test this idea in Table 8.

[Insert Table 8 here]

As can be seen from Table 8 column 1, over the entire sample period asset tangibility and political connection 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 x Tangibility* is positive and statistically significant: and, the impact of tangibility increases by roughly 14-percent (0.064/0.440) as a source of leverage for debt after the law was enacted. From column (3) we learn that during the entire sample period politically connected firms gets even more leverage in debt markets from tangible assets (*Political connection x Tangibility* = 0.038 with p-value 0.025): politically connected firm have roughly an 8-percent advantage (0.038/0.448) in leveraging tangible assets. However, the results in column 4 show that the law downgraded the importance of political connections for two reasons. First, the power of political connections to make tangible assets an even more valuable asset for obtaining loans

falls (i.e., *Law x Political connection x Tangibility* = -0.021 with p-value 0.024). And, political connections become a less powerful form of collateral through other channels besides tangibility (i.e. .*Law x Political connection* = -0.024 with p-value 0.011).

4.3.2. Property Law, External Financing Dependence, and Debt Issuance

If the law as described on the books was enacted, it should have eased the financing difficulties of firms; and, 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) by calculating the fraction of capital expenditures not financed with internal funds for US firms in the same industry during 2002-2005. We then add three interaction terms (*Law x EFD, Law x Political connection, EFD x Political connection*) and a triple interaction term (L*aw x EFD x Political connection*) to the baseline regression to test for these effects.

[Insert Table 9 here]

The results are report in Table 9. As can be seen from column 1, the interaction term *Law X EFD* has a positive sign and is statistically significant: thus, the law was more favourable to firms that had higher external financial dependence. The positive and statistically significant sign on *Political connection x EFD* in column (2) strongly suggest that during the sample period political connections help firms that have higher EFD obtain debt finance.. However, the triple interaction term (*Law x EFD x Political connection* = -0.021 with p-value 0.024) and the interaction term (*Law x Political connection* = -0.024 with p-value 0.011) imply that the advantages of political connections for leveraging debt are weakened following the passage of the law.

5. Conclusion

The passage of the Chinese Property Law of 2007 was uncertain: it was debated in the National Peoples' Congress for fourteen years and powerful factions opposed it. Moreover, during the days surrounding the announcement of the law, investors in the major Chinese stock markets appeared surprised, i.e., they reacted to the "news" and readjusted the valuations of listed Chinese private firms as if the property rights protections in the law would be enforced. Thus, the property law is plausibly a useful large-scale natural experiment for understanding how property rights protections influence firms and their creditors.

On the books the Chinese Property Reform of 2007 included provisions that strengthened the property rights protections for firms and their creditors. Provisions included limits on the threat of government expropriation, broadening the scope of assets that firms could use as collateral and giving creditors more power to recover secured assets in a default state. Thus, the property law increased the value of firm assets that could be used as collateral, and this was an important channel through which it shaped firm level investment and debt finance.

The property law included provision that clearly stipulated the new types of tangible capital and even intangible capital that could be used as collateral. However, it is not surprising that the law did not also include specific passages describing the role of political connections in debt markets Nevertheless, following the enactment of the law there was an upgrading of the importance of tangible assets for securing loans and a downgrading of the relevance of political connections. During the announcement period, the stock market upgraded its valuation of firms that had tangible assets while downgrading their valuation of politically connected firms. More generally, the strong positive associations between political connections and investment efficiency and looser financial constraints in the pre-law period were weakened after the law enacted.

In an influential article, Joel Hellman (1998) argues that it was political connections that in fact caused reversals in privatization and market reforms throughout the Former Soviet and Central and Eastern Europe during the 1990s. Hellman argues that politically connected elites supported the large scale privatizations at the start of the post-socialist transition because they

could use their connections to gain control over lucrative assets at below market prices. Once the elites were entrenched n their companies, banks, etc., they supported reforms that increased their monopoly rents including nationalizations, slow regulatory reforms, the blocking of competitive entry, restrictions on capital accounts etc. The Chinese Property reform of 2007 exhibits a strikingly different pattern. The strengthening of private property rights over assets was accompanied by a decline in the importance of political connections. Just why the Chinese experience was so different is a subject for future research.

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Table 1 Variable definitions

Variable	Definition
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	(ending net fixed assets – beginning net fixed assets + depreciation)/ lagged (net fixed asset)
Debt changes	Changes of total debt / lagged total debt
Tobin's Q	[total assets + (share price x common shares outstanding) – book value of common equity – deferred taxes (balance sheet item)] / total assets
Stock return(-1)	Buy and hold return with cash dividend reinvested over the last year
Cash flow	Income before extraordinary items + depreciation and amortization
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 firm's sales
CAR(-2,2)	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
Hadlock-Pierce index	Financial constraint index that equals –0.737*(total assets) + 0.043*(total assets)^2 –0.040*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)

Table 2 Summary statistics

Variable	Mean	Median	STD	N
Law dummy	0.449	0.000	0.497	4,617
Political connection dummy	0.388	0.000	0.487	4,588
Investment	0.271	0.130	0.534	4,410
Debt changes	0.183	0.054	0.591	4,157
Q(-1)	2.042	1.598	1.399	4,411
Stock return(-1)	0.266	-0.126	0.994	4,204
Cash flow	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	20.722	20.719	1.388	4,607
CAR(-2,2) (-percent)	0.244	0.192	7.071	777
Hadlock-Pierce index	-3.351	-3.368	0.193	777

Note: 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.

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

	1	2	3	4	5	6
Q	0.575					0.518
	[0.013]**					[0.014]**
Tangibility		7.084				6.420
		[0.001]***				[0.003]***
Cashflow			-1.076			-1.034
			[0.002]***			[0.002]***
Political connection				-0.480		-0.365
				[0.033]**		[0.034]**
Hadlock-Pierce index					5.074	4.170
					[0.011]**	[0.018]**
Industry dummies	yes	yes	yes	yes	yes	yes
Observations	777	777	753	777	777	753
Adjusted R2	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	0.440	0.451	0.459	0.388
	[0.018]**	[0.015]**	[0.023]**	[0.015]**	[0.025]**
Tangibility	6.277	8.761	7.636	5.942	6.053
	[0.002]***	[0.011]**	[0.007]***	[0.003]***	[0.011]**
Cashflow	-1.053	-1.046	-1.054	-1.021	-1.067
	[0.024]**	[0.022]**	[0.002]***	[0.064]*	[0.019]**
Political connection	-0.272	-0.329	-0.363	-0.254	-0.257
	[0.019]**	[0.025]**	[0.028]**	[0.021]**	[0.022]**
Hadlock-Pierce index	3.933	4.044	3.983	4.014	3.438
	[0.028]**	[0.021]**	[0.025]**	[0.024]**	[0.019]**
Political connection x Q	-0.081				
	[0.027]**				
Political connection x Tangibility		-1.061			
		[0.005]***			
Tangibility x Q			0.824		
			[0.036]**		
Tangibility x Cashflow				-0.600	
				[0.002]***	
Tangibility x Hadlock-Pierce index					0.803
					[0.018]**
Industry dummies	yes	yes	yes	yes	yes
Observations	753	753	753	753	753
Adjusted R2	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	0.047	0.048	0.045				
	[0.005]***	[0.026]**	[0.016]**	[0.030]**				
Stock return(-1)					0.046	0.052	0.037	0.061
					[0.008]***	[0.037]**	[0.024]**	[0.036]**
Law	0.129				0.114			
	[0.000]***				[0.000]***			
Law x Q(-1)		0.018		0.019				
		[0.022]**		[0.027]**				
Law x Stock return(-1)						0.029		0.022
						[0.016]**		[0.028]**
Political connection			0.074	0.059			0.052	0.065
			[0.028]**	[0.011]**			[0.015]**	[0.013]**
Political connection x Q(-1)			0.014	0.012				
			[0.036]**	[0.074]*				
Political connection x Stock return(-1)							0.010	0.016
							[0.082]*	[0.035]**
Law x Political connection				-0.014				-0.018
				[0.023]**				[0.019]**
Law x Political connection x Q(-1)				-0.014				
				[0.016]**				
Law x Political connection x Stock return(-1)								-0.016
								[0.012]**
Cash flow	0.126	0.121	0.122	0.120				
	[0.015]**	[0.018]**	[0.017]**	[0.026]**				
Residual cash flow					0.146	0.149	0.149	0.148
					[0.016]**	[0.014]**	[0.014]**	[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 R2	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	0.048	0.045	0.039	0.046	0.042	0.055	0.069
	[0.023]**	[0.024]**	[0.018]**	[0.027]**	[0.016]**	[0.018]**	[0.016]**	[0.011]**
Cash flow	0.122	0.134	0.117	0.145				
	[0.019]**	[0.014]**	[0.019]**	[0.025]**				
Residual cash flow					0.149	0.251	0.159	0.273
					[0.028]**	[0.014]**	[0.026]**	[0.012]**
Law x Cash flow		-0.057		-0.062				
		[0.006]***		[0.017]**				
Law x Residual cash flow						-0.061		-0.078
						[0.017]**		[0.007]***
Political connection x Cash flow			-0.071	-0.087				
			[0.007]***	[0.064]*				
Political connection x Residual cash flow							-0.057	-0.062
							[0.068]*	[0.014]**
Law x Political connection				-0.011				-0.016
				[0.077]*				[0.034]**
Law x Political connection x Cash flow				0.023				
				[0.015]**				
Law x Political connection x Residual cash flow								0.018
								[0.037]**
Q(-1)	0.048	0.044	0.041	0.039				
	[0.018]**	[0.017]**	[0.018]**	[0.022]**				
Stock return(-1)					0.035	0.032	0.034	0.029
					[0.029]**	[0.035]**	[0.030]**	[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)	0.045	0.046	0.043	0.041
	[0.012]**	[0.027]**	[0.023]**	[0.019]**
Law	0.081			
	[0.000]***			
Law x Q(-1)		0.025		0.023
		[0.016]**		[0.012]**
Political connection			0.061	0.059
			[0.019]**	[0.024]**
Political connection x Q(-1)			0.018	0.016
			[0.022]**	[0.029]**
Law x political connection				-0.025
				[0.014]**
Law x political connection x Q(-1)				-0.011
				[0.027]**
Tangibility	0.480	0.462	0.457	0.463
	[0.003]***	[0.015]**	[0.014]**	[0.015]**
Cashflow	0.135	0.110	0.106	0.108
	[0.016]**	[0.031]**	[0.038]**	[0.039]**
Firm size	0.042	0.027	0.033	0.034
	[0.018]**	[0.053]*	[0.029]**	[0.020]**
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 R2	0.051	0.071	0.071	0.072

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	0.457	0.440	0.448	0.457
	[0.014]**	[0.018]**	[0.002]***	[0.015]**
Political connection	0.067	0.062	0.061	0.054
	[0.039]**	[0.040]**	[0.053]*	[0.026]**
Law x Tangibility		0.064		0.029
		[0.015]**		[0.018]**
Political connection x Tangibility			0.038	0.037
			[0.025]**	[0.029]**
Law x Political connection				-0.024
				[0.011]**
Law x Political connection x Tangibility				-0.021
				[0.024]**
Q(-1)	0.045	0.043	0.044	0.042
	[0.018]**	[0.023]**	[0.020]**	[0.029]**
Cashflow	0.106	0.104	0.106	0.102
	[0.035]**	[0.021]**	[0.024]**	[0.025]**
Firm size	0.035	0.032	0.034	0.026
	[0.015]**	[0.011]**	[0.015]**	[0.057]*
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 R2	0.071	0.071	0.070	0.070

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	0.063	0.055	0.060
	[0.012]**	[0.013]**	[0.014]**
Law x EFD	0.132		0.110
	[0.014]**		[0.015]**
Political connection x EFD		0.077	0.065
		[0.029]**	[0.025]**
Law x Political connection			-0.022
			[0.017]**
Law x Political connection x EFD			-0.036
			[0.015]**
Q(-1)	0.045	0.044	0.045
	[0.016]**	[0.020]**	[0.017]**
Cash flow	0.109	0.106	0.107
	[0.037]**	[0.035]**	[0.034]**
Tangibility	0.454	0.457	0.455
	[0.013]**	[0.016]**	[0.015]**
Firm size	0.036	0.037	0.035
	[0.022]**	[0.058]*	[0.037]**
Firm dummies	yes	yes	yes
Year dummies	yes	yes	yes
Observations	3,964	3,964	3,964
Firms	632	632	632
Adjusted R2	0.071	0.070	0.072

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.