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Keywords

bank, corruption, china, connection, collateral

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Bank connection, corruption and collateral in China

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Keywords: Collateral, Bank connection, Corruption, Chinese listed firms

JEL: E51, G32, G34

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1. Introduction

Recent literature concerns the relationship between banks and non-financial firms and its impact on firms' financing policy. Using a sample of 20,000 commercial loans made to U.S. firms between 2000 and 2007, Engelberg et al. (2012) suggest that in a matured market with a highly developed financial and legal system and advanced investor protection, firms' connections with banks through pre-existing personal relationship can alleviate the information asymmetry and monitoring costs which in turn can reduce costs of borrowing and covenants. This new evidence from mature market prompts an important question, which has not yet been directly tested: due to the substantial differences in institutional environments with respect to financial and legal systems and investor protection, do connections with banks in an emerging market such as China also results in a lower cost of borrowing? And if this is the case, is it through the same mechanism of reducing information asymmetry and enhancing bank monitoring as in a developed market?

This paper directly and explicitly addresses this issue by constructing a notion of bank connection, which is derived from the literature of political connection that studies the consequences of establishment of close relationship with governments. It is well established in the literature that a firm's political connection will mitigate institutional constraint in emerging markets, such as China, where entrepreneurial firms are discriminated against and denied access to bank loans. Existing literature finds that political connection as capital can help entrepreneurial firms access bank loans and reduce the cost of borrowing through their rent seeking (Cull and Xu, 2003; Brandt and Li, 2003; Li et al., 2008; Faccio, 2010). As China's institutional environment is recognized as having an underdeveloped financial and legal system and weak investor protection, the banking sector is dominated by state ownership of banks and state control of key resources necessary for corporate growth. Thus, entrepreneurial firms in China face many obstacles of accessing finance and heavy government regulations. In such an environment, political connection facilitates rent seeking, which helps entrepreneurial firms overcome these market failures and avoid ideological discrimination (Li et al., 2008), and political connection is regarded as an alternative to legal protection (Chen et al., 2011a).

We differentiate ourselves from prior studies with respect to measurement of bank relationships. The traditional way to measure political connection is to determine that either one of the firm's executives or a large shareholder is a former or current government or military official. We argue that this measure is too ambiguous in the specific context of bank lending, as some type of officials may not have effective or direct influence over the bank's

lending decisions. In our study we propose an alternative and direct measurement for the firm's bank connection. In this study, a firm is identified as having a bank connection if any of its top executives, including the Chairman, CEO or other executives, the independent directors on its board or its largest shareholder currently work or have formerly worked as an executive or manager in the banking sector. The reason for including the connections of independent directors is that their monitoring role in China's firms is impaired because their nomination is approved by the controlling shareholders, who may nominate connected independent directors with the aim of using their network with banking to bring benefits to themselves (Lin, Piotroski, Tan and Yang, 2012). When a relationship exists between a senior banker and a senior member of the borrower's management, relationship-embedded financial contracting should occur, not only due to the nature of the relationship, but because rent creation and allocation occur through the relationship. Therefore, we conjecture that bank connections can encourage rent seeking from banks, and reduce collateral requirements.

In addition, recent literature on corruption suggests that in a lending market, corruption has significant impact on firms' access to external finance. Some literature finds that corruption reduces bank lending efficiency. For example, using an across-country study, Beck et al. (2006) find that corruption of bank officials is an obstacle to firms' raising external finance, and some subsequent studies try to find ways to curtail lending corruption (Barth et al., 2009; Houston et al., 2011). In addition, in China, due to the low lending efficiency and huge rents available resulting from government intervention through heavily regulated credit market, corruption is quite pervasive in financial institutions (Pei, 2008). However recent studies have provided evidence that corruption can benefit some firms in China. For example, Cai, Fang and Xu (2011) find that although bribery to government officials deteriorates firm performance overall, this effect is much less pronounced for firms located in regions with low quality of government service and those subject to severe government expropriation. Furthermore, Chen, Liu and Su (2013) provide evidence that in China corruption plays a role in improving lending efficiency and aids entrepreneurial firms. Thus, we expect that in China embedded with insufficient or unreliable legal protection for investors, connected firms offer bribes in exchange for the favoured allocation of economic rents in form of accessing bank loans and lower cost of borrowing. A natural question can be raised: is corruption the channel for the connections to play the role in accessing external finance and a lower cost of borrowing? We will answer the question of whether and how the bank relationship interacts with corruption in affecting firms' borrowing cost and bank lending efficiency.

To answer these questions, we extend existing studies by explicitly examining the impacts that bank connection, corruption, and their combination have on firms' collateral requirements, using China's listed entrepreneurial firms as the sample. We focus on collateral for two reasons. First, since the recent global financial crisis of 2007, creditors have expanded collateral requirements for their fund lending, and this observed tendency has again attracted considerable attention from academics and practitioners (Harrington, 2009). Second, extant studies suggest that collateral is a key ingredient used to enforce loan contracts as a response to information asymmetry (the source of adverse selection and moral hazard) (Besanko and Thakor, 1987; Boot et al., 1991; Jimenez et al., 2006; Menkhoff et al., 2012).

In our study we use a sample of Chinese entrepreneurial firms because it offers an excellent environment to study bank relationships, for three reasons. First, China is the largest emerging market with a financial and legal system substantially different from that of developed countries. The relationship between borrowers and lenders in China is strongly influenced by borrowers' political connections due to its unique institutional settings. Because entrepreneurial firms have suffered social and political discrimination, they have incentives to establish political connections to access bank loans, which are mainly controlled by the state (Li, Meng, Wang and Zhou, 2008; Chen, Lobo, Wang and Yu, 2011). Therefore, this unique institutional setting, under which borrows and lenders are related to each other through bank connections, expands our understanding of political connection literature. This institutional environment allows us to answer the question: do firms' bank connections matter, and if they do, do these relationships work the same way as in developed countries?

Second, in an emerging market, corporate sector growth will be hampered due to financial constraints (La Porta et al., 2000). In this sense, the coexistence of both underdevelopment in the financial and legal system and high growth in the non-state sector in China allows a better understanding of the available sources of external finance, and the channel through which it achieves. Chen et al. (2013) argue that corruption in China is effective in improving capital allocation and aids non-state sector growth, and we are motivated to investigate through which channel corruption is exercised.

Third, in a loan market where interest rates are not regulated by governments, a lender can price credit risk through interest rates as a substitute for pledging collateral. In this case academics face a potential endogeneity issue, where bank connection and collateral might have a joint impact on interest rates. China's credit market provides a powerful setting to

address this question because the interest rates charged on bank loans are relatively regulated¹, which limits lenders to pricing loans through interest rates. Finally, China's economic stimulus package represented an exogenous shock with respect to any individual firm; such a shock alleviates the endogeneity concern of bank connection. For these three reasons, our sample facilitates our research of exploring the economic implications of bank connections, corruption and collateral.

Following both univariate and multivariate analysis, we find that collateral is significantly lower for firms connected with banks through their executives, largest shareholders or independent directors. Our results indicate that the average collateral requirement is 5% lower in bank connected firms compared with non-bank connected firms. Furthermore, we find that corruption relates to lower collateral, and the negative association between bank connection and collateral becomes more pronounced if the firm is able to spend more on corruption. An increase of one standard deviation in corruption reduces the average requirement for collateral by 3.4% for bank connected firms. The above evidence supports the view that bank connections facilitate rent seeking from banking sector through corruption. In other words, bank connected firms are able to offer bribes to banking officials in exchange for favoured loan terms. Our findings suggest that in an emerging market, bank connection encourages rent seeking from borrowers to lenders, rather than reducing information asymmetry or monitoring costs, as in developed markets. Our results also corroborate the findings of several studies that firms' bank relationships and corruption have a significant effect on credit market outcomes in a relationship-based economy. In particular, Li et al. (2008) document that politically connected firms can obtain larger loans from banks. Engelberg et al. (2012) report that borrower-lender relationships relate to a lower cost of borrowing and covenants. Chen et al. (2013) provide evidence that corruption is helpful in improving lending efficiency and aiding entrepreneurial firms.

In addition, from the perspective of government intervention, we provide evidence that an economic stimulus package announcement reduces banking lending efficiency. We find that an economic stimulus package mitigates the improving effect of corruption on collateral requirements. In additional tests, we find that bank connections facilitate rent seeking through corruption, which results in the improvement of bank lending efficiency. Our results of the effect of bank connections and corruption on collateral are robust when we take the

¹ The People's Bank of China sets a lending rate as a benchmark for financial institutions to negotiate on each specific loan.

endogeneity of bank connections into consideration, as well as alternative measures of bank connections and collateral.

Our study is related to several strands of the growing volume of literature. First, our study contributes to the literature on law, finance and growth by extending the research field that examines the financial implications of the institutional environment. The interesting phenomenon of the coexistence in China of both an underdeveloped financial and legal system and high non-state sector growth has been explained by a relationship-based economy (Allen et al., 2005) and the use of unconventional governance methods, such as corruption, in the allocation of scarce economic resources (Chen et al., 2013). Our study extends further by identifying bank connections that facilitates corruption to obtain favoured loan terms for Chinese listed entrepreneurial firms.

Second, to the best of our knowledge, there is no direct evidence on the relation between firms' bank connections and lending efficiency. In this paper, we provide evidence for the presence of bank connections and corruption, and their joint effects on lending efficiency. This adds to the recent corruption literature. In addition, we explicitly use bank connections to capture firm behaviour in seeking rents from banks; this is a departure from previous studies that used former and current political connections as a proxy for rent seeking (Fan, Wong and Zhang, 2007; Faccio, 2010). We advance the traditional definition of political connections from two aspects. First, we develop a concept of bank connections that is more direct than the idea of general political connections with the government. Second, we also include the independent directors' connection, which is broader than that of executives. Our findings complement previous studies by providing evidence that bank connections have a stronger effect than political connections on reducing collateral. We also add to the literature on the financial implications of political connections. While Sapienza (2004) and Faccio (2006, 2010) argue that connections with the government, whether voluntary (political connections) or involuntary (government ownership), will help firms access financial assistance from the government in the form of subsidies and loan supports, we expand their studies by using firms' collateral as a direct and explicit proxy for this government-based benefit in terms of reduced collateral requirements.

Third, we add to the literature on the borrower-lender relationship and its financial implications on credit market outcomes. Using U.S. firms as the sample, Engelberg et al. (2012) find that pre-existing personal relationships between the respective management of firms and banks relate to lower interest rates due to better information flow. In particular, they focus on the firm-bank personal relationship achieved if the respective managers have

previously worked together. In the spirit of Engelberg et al. (2012), we construct an alternative for firm-bank relationship, namely bank connection, if the firm's management worked or is currently working as management of a bank. We argue that in China, with its underdeveloped institutional systems and the extensive government intervention in the financial system, entrepreneurial firms face discrimination by state-owned banks, who tend to award their loans to state-owned enterprises (SOEs). Entrepreneurial firms therefore are likely to use their existing bank relationship and/or develop new ones with banks to seek rents from the institutional environment, as well as justify their existence. Using entrepreneurial firms as the sample, we document that a closer connection with banks facilitates access to bank loans with favourable terms in the form of lower collateral requirements. Our evidence also adds to another strand of literature on relationship banking, which argues that banks have an incentive to develop closer relationships with borrowers to facilitate monitoring, which can overcome moral hazards and adverse selection, and then to reduce the requirement for collateral (Jimenez and Saurina, 2004; Menkhoff, Neuberger and Rungruxsirivorn, 2012)². Last, because China has a concentrated ownership structure that is similar to those outside the U.S., our findings can suggest some international implications.

The rest of the paper proceeds as follows: Section 2 discusses the institutional background and develops the hypotheses; Section 3 describes the data methodology; Section 4 discusses the empirical results and additional tests; and Section 5 concludes.

2. Institutional background and development of hypotheses

In this section we describe the institutional background in China that is related to our study, and develop corresponding hypotheses based on existing theories and China's institutional system.

2.1 Institutional background

2.1.1 Banking industry and bank lending decisions

In the late 1970s, the Chinese government launched a significant reform of the banking industry³. In the early 1980s, the government established four wholly state-owned banks (the Big Four), which took control of all the lending functions of the People's Bank of China (the

² However the measures for relationship banking used in the existing literature are often arbitrary. For example, Chang, Liao, Yu and Zheng (2010) use the frequency of borrowing and the duration of lending and state ownership as proxies, while Bharath, Dahiya, Saunders and Srinivasan (2011) and Menkhoff, Neuberger and Rungruxsirivorn (2012) focus on previous lending record.

³ During this period, China also initiated economic reform aimed at transforming from a planned to a market-oriented economy.

central bank). In 1994, three wholly state-owned policy banks⁴ were established and took over policy lending from the Big Four banks. In 1996, joint stock commercial banks and city banks began to emerge.

Originally, bank loans mainly took the form of credit loans, which were granted at low interest rates and without any guarantees or collateral. Such loans were one of the causes of a higher ratio of non-performing loans (NPLs). As this market-oriented economic reform deepened, banks became increasingly aware of loan risks, and from the 1990s they increasingly demanded guarantees or collateral. Indeed, according to a survey of 13 domestic banks between 2000 and 2005, the average collateral of secured loans increased from 22% to 32% of all loans granted (Yang and Qian, 2008), of which land or buildings became the most acceptable form of collateral. Banks also demanded the equivalent value of fixed assets as collateral before granting loans, especially to privately controlled firms (Yeung, 2009).

In addition, there was discrimination in granting these bank loans in favour of SOEs over entrepreneurial firms (Wei and Wang, 1997, Cull and Xu, 2003), with state-owned banks often lending to SOEs for political, employment and taxation purposes rather than profitability. As Yeung (2009) discussed, for these banks (Big Four SOCBs, policy banks, joint stock commercial banks and city banks), the decision of whether to grant loans was often determined by unofficial assessment criteria. SOEs tended to receive loans without pledging the necessary collateral because of state ownership, while entrepreneurial firms were expected to pledge collateral by securing their fixed assets to the equivalent value of the collateral required. In other words, banks made a rational decision to bias their lending against entrepreneurial firms based on the higher risks and higher transaction and risk-evaluation costs.

2.1.2 Corruption in China

Corruption is acknowledged to be an international phenomenon, especially in developing and emerging economies with underdeveloped financial systems, weak legal protection of investors and severe government intervention. Shleifer and Vishny (1993) argue that the structure of government institutions and the political process are very important determinants of the level of corruption. In particular, weak governments that do not control their agencies experience very high corruption levels. International evidence confirms that political decentralization could impede coordination and exacerbate incentives for officials at different levels to ‘overgraze’ the common bribe base (Fan et al., 2009), and state ownership of media

⁴ These are State Development Banks, the Agricultural Development Bank of China and the Export and Import Bank of China.

is associated with high levels of bank corruption (Houston et al., 2011). In China, despite more than three decades of economic reform, the government exercises absolute control over the institutional and financial systems, and corruption acts as the proverbial grease for the bureaucratic wheels of an otherwise unmotivated banking system (Chen et al., 2013).

According to a Transparency International survey in 2003, China's corruption-perception index ranked in the lower half, with a score of 3.5 (on a scale of 1 to 10, with lower scores indicating greater public perceptions of corruption); while in 2012, this index (now calculated on a scale of 1 to 100) increased to 39, it was still in the lower half. For example, Mr Jinhua Zhou, a former administrator in Fujian Province, took \$16 million in bribes in exchange for the awarding of industrial and commercial contracts under his control. China's financial sector is also beset by corruption. Kickbacks for loan approvals are routine. For example, in 2012 eight top executives of the Agricultural Bank of China in Beijing were discovered taking bribes of around 10 million RMB for arranging a 0.7 billion RMB loan. Chen et al. (2013) also report that the average loss for the banks in each corruption case is 18 million RMB.

2.1.3 Economic stimulus package

The global financial crisis hit China hard, and induced a domestic-economy slowdown in second half of 2008. In response to the financial crisis, on 5 November 2008, the Chinese government announced a 4 trillion RMB (about \$586 billion) economic stimulus package – constituting 12.5% of total GDP in spending from the fourth quarter of 2008 through 2010. The economic stimulus package refers specifically to investment spending. Of the total 4 trillion RMB plan, the central government made a commitment to directly fund 1.18 trillion RMB of the investment, or 30% of the overall program, with the remainder to be funded by banks and local governments. Eventually the central government's input to the stimulus totalled 1.6 trillion RMB, more than originally planned. Meanwhile, the local governments actively echoed the central stimulus program, which accounted for 70% to 75% of budgetary expenditures on fixed investment.

Bank lending was the main source for investment spending in the stimulus package. Since the announcement of the central government's stimulus package, bank credit has grown at an explosive pace due to the confluence of explicit policies designed to ease provision of credit. The urgency and politicization of the stimulus sent banks a powerful signal that they were expected to rapidly ramp up lending. Moreover, government and political leaders' directions effectively eliminated all personal responsibility for the lending decisions, suggesting that bank loan officers would not be held accountable for loans they made, so long

as the loans supported the investment plan (Naughton, 2009; Wong, 2011)⁵. In particular, new bank credit grew by 4.2 trillion RMB in 2008 and more than doubled to 9.6 trillion RMB in 2009, although it fell slightly to 8 trillion RMB in 2010.

2.2 Hypothesis development

2.3.1 Bank connections and corruption

In this paper, we derive bank connection from the literature on political connection. We argue that bank connection is a far more important institutional setting and offers a direct measurement for easier access to bank loans, particularly for emerging markets.

Political connection is a common phenomenon across the world, especially in countries with weak financial institutions and concentrated ownership structures (Faccio, Masulis and McConnell, 2006). As a voluntary approach to connecting with the government, political connections can facilitate a firm's rent seeking and assistance from the government (Chen, Li, Su and Sun, 2011). In particular, Faccio, Masulis and McConnell (2006) find that for financially distressed firms, politically connected firms are more likely to be bailed out by the government than non-politically connected firms. Meanwhile, a large amount of evidence from both developed and emerging markets shows that political connections matter through preferential access to bank finance, and can affect the credit market and terms of the loan contract (Claessens, Feijen and Laeven, 2008; Li, Meng, Wang and Zhou, 2008; Bliss and Gul, 2012). Among them, Qi, Roth, and Wald (2010) provide evidence that politically connected firms are regarded as a lower level of risk and relate to a higher bond rating and lower cost of borrowing.

However, bank connection is a more direct measurement that facilitates borrowers' rent seeking. Along the lines of definitions for political connection, we define that a firm is connected with a bank if one of the top executives is working or used to work as the governor of a bank or bank branch (defined in detail later). Normally, there are two ways by which bank connections may help firms access bank loans with lower collateral. On one hand, bank-connected executives can communicate directly with bank executives to secure a bank loan with fewer collateral requirements. On the other hand, connections with the banks can help firms overcome market failure and avoid social and political discrimination, and in turn, obtain secured bank loans. This means that creditors are likely to require less collateral on their lending to bank-connected firms than non-connected firms. In other words, bank connections can alleviate creditors' concerns over losses on these loans. Therefore, we expect

⁵ For example, the governor of Guangxi province encouraged banks' enthusiasm for disbursing loan funds and speeding up bank loan disbursement through every means possible.

that collateral requirements are lower for firms with bank connections. Thus, we construct our first hypothesis as follows:

H1: Collateral requirements are lower for firms with bank connections

For our next hypothesis, we investigate the mechanism through which bank connection works with respect to corruption. In China, a salient feature is the dominant state ownership of the banking sector, and the prudential policy that imposes direct control on banks' lending decisions. Due to the vulnerabilities presented by an underdeveloped legal system, the vibrant non-state sector and its growth depend largely on informal financing based on relationship and unconventional governance (Allet et al., 2005; Firth et al., 2009). As China's banking sector is beset by corruption, a recent strand of literature champions the view that corruption helps improve credit allocation efficiency and non-state sector growth in the context of emerging markets, specifically those in which legal protection is insufficient or unreliable (Chen et al., 2013). We argue that through bribery, entrepreneurial firms are able to secure bank credit and obtain favourable loan terms in the form of reduced collateral. Here, we consider the interacted effect of bank connection and corruption on collateral, and we argue that bank connections facilitate corruption, and corruption is exactly the channel through which bank connection affects collateral. In other words, bank connection provides a channel through which briber gives bribery to the bank officials who control the interest. Empirically, we expect that the relationship between bank connection and collateral to become stronger with increased corruption. This evidence is consistent with the view of rent seeking, rather than expertise provision or monitoring. Thus, we construct our hypothesis as follows:

H2: Bank connections facilitate corruption, and corruption strengthens the relationship between bank connections and collateral requirements.

2.3.2 Economic stimulus package

Taking on the new angle of government intervention, we further extend our hypothesis relating to the effect of the government's economic stimulus package. Over the whole period of the package, China's central and local governments have been trying to achieve social and political goals by promoting firm investments and economic growth in business activities through their majority ownership in SOEs. In addition, with the enforcement of the stimulus package and with the support of both central and local governments, a huge bank credit has been increased rapidly as politically driven lending at the firm level for investment. Because of government favouritism, SOEs were playing a critical role with a substantial increase in investment which is mostly complained as 'the state owned firms advances and non-state retreats'. In other words, since the enforcement of the economic stimulus package, most of

the funds have been injected to SOEs for investment, and the private sector has been hampered in its development (Wong, 2011). We investigate whether this will worsen the private sector financing environment, and bank connection will have more critical effects on collateral after the economic stimulus package. Bank connections facilitate rent seeking, which can reduce collateral; after the economic stimulus package, this effect in entrepreneurial firms became stronger because connected entrepreneurial firms had more incentives to seek rents from the banking sector, as they were competing for loan resources from state-controlled borrowers. On the other hand, in a bribery scenario, bribers bid for more credit allocation and offer the highest bribe in exchange for rent creation (Chen et al., 2013). In this sense, after the economic stimulus package, when capital allocation becomes driven by policy and fewer bank loans are available for entrepreneurial firms, we expect that the benefits of reducing collateral through corruption will be eliminated to some extent, as the corrupt officials can award limited contracts. Consistent with our discussion above, we hypothesise as follows:

H3a: The negative relation between bank connections and collateral requirements becomes stronger for post-economic stimulus package period.

H3b: The corruption effect on bank connections and collateral association becomes weaker for the post-economic stimulus package period.

3. Data and variables

3.1 The sample selection and classification of bank loans

We commence our sample with comprehensive data from all the listed entrepreneurial firms on both the Shanghai and Shenzhen stock exchanges from the Chinese Stock and Market Accounting Research database (CSMAR)⁶. We combine the data from the balance sheet, income statement and corporate governance sub-datasets between 2006 and 2009 because information on a firm's loan balance is available during this period. The database provides detailed information on loan balance with respect to loan type⁷, lender type and other contractual terms. Our manual data gathering process begins with a sample of 42,431 observations for loan balance, from which we identify the credit, guaranteed and collateralized loan balance. We then sum each loan balance for each firm for each year to get one firm-year observation of total credit, guaranteed and collateralized loan balance. Finally,

⁶ This database has also been used by previous studies in China (Fan, Wong and Zhang, 2007).

⁷ The loan type refers to whether the loan is realized, secured by credit, or secured by collateral or third-party guarantee, etc.

we gather 5,263 firm-year observations. From this total population we exclude 106 firm-year observations flagged with ST and *ST, because they denote special treatment due to irregularity in the financial reporting, and negative profit for two or three consecutive years. We also exclude 152 firm-year observations in the financial industry because of their unique accounting standards. Finally, we delete 100 firm-year observations with missing observations on main variables used in our analysis and 75 firm-year observations with no outstanding loans. Finally, to remain consistent with our previous discussion of sample selection, we further exclude every firm with the state listed as the ultimate controlling shareholder. Our final sample consists of 640 listed firms and 1,973 firm-year observations.

Table 1 summarizes the distribution across different types of bank loans identified during our sample period. In the full population, we identify the following types of bank loans: (1) credit loans, (2) secured loans (including guaranteed loan, pledged loan and mortgage loan), (3) on-balance sheet loans (including project financing and note discounting), (4) off-balance sheet loans (including a letter of credit, note acceptance and entrust loan) and (5) other types of bank loans. Among these types of loans the database does not specify exactly what is secured to obtain the loan, so we manually search for information from the firms' annual reports and quarter reports on whether the loan has been secured by the securities and tangible assets of borrowers or third parties. We then classify these loans into guaranteed loans, pledged loans and mortgage loans. Among these types of bank loans, we further calculate the collateralized loan amount by summing the pledged loans and mortgage loans.

We further divide all the bank loans into short-term and long-term loans. From Table 1, we find that the amount of credit loans awarded to state-controlled firms is 2,542 million RMB (the sum of 1,172 and 1,370 million RMB), almost eight times more than the 312.9 million RMB ($189.9 + 123$) awarded to entrepreneurial firms (Table 1); this indicates that state-controlled firms are more likely to obtain credit loans due to the government's implicit guarantee. We divide secured loans into guaranteed, pledged and mortgage loans. Across the firm ownership structure we find that the requirement for collateral is lower for state-controlled firms and higher for entrepreneurial firms. In particular, the ratios of both short-term and long-term collateralized loans are 15.99% ($5.37\% + 10.62\%$) and 40.1% ($13.5\% + 26.6\%$) respectively for state-owned enterprises, compared with 24.61% ($4.76\% + 19.85\%$) and 46.7% ($19.4\% + 27.3\%$) for entrepreneurial firms. It is interesting to note that collateral is even required for short-term loans. One reason could be that long-term loans that mature within one year with collateral pledged are classified as short-term loans in our summary. The other reason could be that our sample covers the post-crisis period, during which the

requirement for collateral was increased by banks in response to higher credit risks. We also identify on-balance sheet and off-balance sheet loans. These types of loans make up a relatively lower proportion of the total outstanding loans in both state-controlled firms and entrepreneurial firms. We further notice that short-term loans account for less than 50% of total loan amount, and compared with previous studies, our updated summary confirms that state-owned enterprises are more likely to take out long-term loans (Firth, Lin, Liu and Wong, 2009) while pledging lower collateral. In entrepreneurial firms we find that short-term loans are the main source of financing, accounting for nearly two-thirds of the total amount of loans. Moreover, the total amount of loans is lower than that for state-owned enterprises. Overall, the figures in Table 1 support the argument that entrepreneurial firms are treated unfavourably in state-dominated financial markets (Li, Meng, Wang and Zhou, 2008).

Table 1. Distribution and classification of bank loans for SOEs and entrepreneurial firms⁸

	Short term		Long term	
	Amounts	Percentage	Amounts	Percentage
Panel A: State-owned enterprises				
Credit loan	1,172	18.18%	1,370	18.1%
Secured loan				
1. Guaranteed loan	503	7.80%	538	7.1%
2. Pledged loan	346	5.37%	1,020	13.5%
3. Mortgage loan	685	10.62%	2,019	26.6%
On-balance sheet loan				
1. Project financing	874	13.56%	0	0
2. Note discounting	649	10.07%	18.7	0.2%
Off-balance sheet loan				
1. Letter of credit	141	2.19%	0	0
2. Note acceptance	102	1.58%	0	0
3. Entrust loan	313.7	4.87%	474	6.3%
Others	1,662	25.78%	2,140	28.2%
Total	6,447.7	100.00%	7,580	100.0%
Panel B: Entrepreneurial firms				
Credit loan	189.9	7.85%	123	10.0%
Secured loan				
1. Guaranteed loan	270.6	11.18%	192	15.6%
2. Pledged loan	115.2	4.76%	239	19.4%
3. Mortgage loan	480.2	19.85%	337	27.3%
On-balance sheet loan				
1. Project financing	448	18.51%	0	0
2. Note discounting	103	4.26%	0	0
Off-balance sheet loan				
1. Letter of credit	33.9	1.40%	0	0
2. Note acceptance	69.1	2.86%	0	0
3. Entrust loan	216	8.93%	58.5	4.7%
Others	494	20.41%	283	23.0%
Total	2,419.8	100.00%	1,232.5	100.0%

Note: all values in million RMB.

3.2 Collateral

⁸ In Table 1, we report the distribution and classification of bank loans for SOEs for a comparison to entrepreneurial firms. However, for the rest of the paper we only use entrepreneurial firms as our sample for empirical analysis.

Our main measurement for firm collateral is the ratio of total loans collateralised to total loans outstanding at the end of each year. In additional tests we consider alternative measures such as:

$$\text{Collateral} = \text{Collateralized loans} / \text{Total loans outstanding}$$

The literature also uses other proxies for collateral, such as the collateral required on a typical loan (Cull and Xu, 2005), asset collateralizability (Binsbergen, Graham and Yang, 2010) and collateral presence (Jimenez, Salas and Saurina, 2006). In the additional tests we consider these alternative measures.

3.3 Bank connections

To further examine the mitigating effects of bank connections, we collect data on the career paths and former working experience of each firm's top executive⁹ and independent director by searching press and online news resources, and combine this information with the executive resumes provided by the CSMAR database. Consistent with our discussion above, we identify a relationship that is more direct and relevant for influencing bank lending: the bank connection. The definition of corporate-bank connection in our study follows the spirit of the definition of political connection derived from Faccio (2010). We assert that a company is defined as connected to a bank if at least one person in the top management team (including the Chairman of the board, CEO, CFO, executive directors or independent directors) and the largest shareholders were or are currently the governor or managers of a bank. In our definition, we consider all the banks, including the Big Four banks, joint commercial banks and foreign banks at different levels, such as headquarters, branches and sub-branches. To avoid potential selection bias, we also consider the executive bank connection and independent director connection separately in the following empirical analysis.

We summarize and compare these observations in Table 2. Panel A shows the four categories of relationship (bank connections, political connections, no connections and both bank and political connections) for both top executives and independent directors. We find there are 192 observations where executives have bank connections and 149 observations where independent directors have bank connections. In addition, there are 70 observations where only executives have bank connections and 41 observations where only independent directors have bank connections. In Panel B, we further merge the information reported in Panel A to directly show the distributions of bank connections and political connections in

⁹ The top executive includes the CEO, Chairman, and other executive directors.

detail. For example, in row 1, ‘Bank connections’, the figure of 150 indicates there are 150 observations of firms with bank connections only. There are 915 observations of political connection: 330 where both executives and independent board have political connections, 310 where only independent board members have them and 275 where only executives have them.

Table 2. Distribution of top-executive and independent-director connections

Panel A: Distribution of connections interactions between top executives and independent directors					
Independent director	Bank connections	No connections	Political connections	Both connections	Total
Top executives					
Bank connections	39	70	83	0	192
No connections	41	720	310	8	1,079
Political connections	69	275	330	9	683
Both connections	0	3	16	0	19
Total	149	1,068	739	17	1,973
Panel B: Distribution for each category					
	Observations	Percentage			
Bank connections	150	7.60%			
Broad bank connections	338	17.13%			
No connections	720	36.49%			
Political connections	915	46.38%			
Broad political connections	1,128	57.17%			
Both connections	36	1.82%			
Total	1,973	100%			

Note: The values in the above table are the observations in each interaction group. Both connections mean at least one of the top executives or independent directors has both bank connection and political connection. Bank connections include firm year observations with bank connected executives or independent directors only. Broad bank connections include all firm year observations if the firm has bank connections and both connections. Political connections include firm year observations with politically connected executives or independent directors only. Broad political connections include all firm year observations if the firm has political connections and both connections.

3.4 Corruption

Following Cai et al. (2011) and Chen et al. (2013), we choose entertainment and travel costs (ETCs) as the proxy for corruption. In Chinese firms’ accounting books, ETCs are a fudge item used to build relationships (Cai et al., 2011). In practice, ETCs include expenses for meals, gifts, touring and transportation and the normal travelling expenses required by firms in their normal business operations. Besides legitimate business travel and other expenses, ETCs are commonly used as an accounting category to reimburse any expenditures used to bribe government officials, clients and suppliers, or simply to account for implicit CEO pay and managerial excesses. As our sample only includes listed entrepreneurial firms, implicit CEO pay and managerial excesses should be immaterial as a component of ETCs, which mainly consists of grease money, protection money and normal business expenditures (Chen et al., 2013). Empirically, we scale ETCs by sales in the regression analysis.

3.5 Control variables

To address and isolate the effect of ownership structure on the requirements for collateral, we include a set of control variables that have already been shown to exert potential effects on collateral. We control for firm characteristics, loan characteristics and corporate governance so they are consistent with arguments by Jimenez, Salas and Saurina, (2006) and Chen, Lobo, Wang and Yu (2011). All variables are defined in Table 3.

Table 3. Variable definitions

Variable name	Variable definition
<i>Panel A: Collateral and ownership structure</i>	
Collateral	Collateralized loans / Total loans
Bank connections	A dummy variable equal to 1 if the firm has bank connections only
ETCs	Entertainment and travel costs / Sales
Political connections	A dummy variable equal to 1 if the firm has political connections only
ESP	A dummy variable equal to 1 for post-economic stimulus package period and 0 otherwise
<i>Panel B: Firm characteristics</i>	
Firm size (Size)	Natural log of firm total assets
Cash-flow volatility	The volatility of cash flows for previous three years
Return on assets (ROA)	Net income / Total assets
Board size (Board)	Natural log of total number of directors on the board
Independent director (Indep)	Ratio of independent directors to total directors
Leverage (Lev)	Total debts / Total assets
Tangibility (Tang)	Net property, plant and equipment / Total assets
Sales growth (Sales)	Growth rate of sales for each year
Prime rate (Prime)	Prime lending rate set by the People's Bank of China
Debt structure (Structure)	Bank loans / Total debts
Cost of debt financing	(Interest expenses + capitalized interest) / Total debts
Guarantee	Guaranteed loans / Total debts

4. Empirical results

4.1 Summary statistics

Table 4 provides the summary statistics for our sample, including all the variables we will use for the univariate and multivariate tests. The results show that the mean (median) of the collateral ratio is 35.47% (35.25%), which is higher than 26.2% (13.1%), the mean (median) value of collateral reported by Chen, Lobo, Wang and Yu (2011) for the period between 2001 and 2006. The average ETCs-to-sales ratio is 1.38%, comparable to the 1.50% reported by Cai et al. (2011) and 1.14% by Chen et al. (2013). We also notice that the board size in China averages 8.73, of which 3.15 are independent directors. The average proportion of independent directors is 36.08%, which is slightly higher than the requirements of the China Securities Regulatory Commission (CSRC) that independent directors must account for at least one-third of the total numbers on boards for all listed firms. In Panel C, we summarise the collateral year by year over the period 2006 to 2009. Obviously, we find that the ratio of total loans pledged has been increasing, especially after 2007 when China was hit by the global financial crisis, after which banks began to require more collateral.

Table 4. Summary statistics

	Mean	Median	Observations
<i>Panel A: Collateral and ownership structure</i>			
Collateral	35.47%	35.25%	1,973
ETCs / Sales	1.38%	0.67%	1,973
Bank connections	7.6%	0	1,973
Political connections	46.38%	0	1,973
<i>Panel B: Firm characteristics</i>			
Firm size (Size) in millions	2,360	1,270	1,973
CF volatility	8.42	9.56	1,973
Return on assets (ROA)	4.45%	4.52%	1,973
Board size (Board)	8.73	9	1,973
Independent director (Indep)	3.15	3	1,973
Leverage (Lev)	44.73%	45.55%	1,973
Tangibility (Tang) in millions	1,410	715	1,973
Sales growth (Sales)	108%	106%	1,973
Prime rate (Prime)	3.07%	3.25%	1,973
Debt structure (Structure)	9.97%	2.58%	1,973
Cost of debt	8.49%	8.49%	1,973
Guarantee	26.20%	5.12%	1,973
<i>Panel C: Collateral sorted by year</i>			
	Year	Collateral	
	2006	32.00%	
	2007	35.78%	
	2008	36.45%	
	2009	39.85%	

4.2 Bank connections and collateral

In this section we examine the association between corporate bank connection and collateral requirement using both univariate and multivariate analyses. In Table 5 Panel A, we present the difference tests of collateral requirements and other firm characteristics across firms with and without bank connections. This table shows that the collaterals are significantly lower in firms with a close connection with the bank, whereas the values of other variables are higher in bank-connected firms, except for cash-flow volatility, return on assets (ROA) and cost of debt. When we place them together we find that bank connections help firms to seek rents from the governments and benefit from favourable loan terms in the form of lower collateral requirement (Collateral), as well as higher leverage level (Leverage), higher bank loan ratio (Debt structure) and lower interest rate (Cost of debt). We also find from the univariate tests that bank connections can also bring firms lower cost of debt and higher guaranteed loans. In Panel B, we further split total bank connections into bank connection through top executives and shareholders (Exe_bank) and through independent directors (Indep_bank), and compare the collateral difference in each of these groups with that in the group with no connections. In particular, the average collateral requirements in Exe_bank and Indep_bank firms are 32.98% and 35.02%, which are significantly lower than 38.25% in the no-connection firms (t-test values are -3.38 and -3.23, respectively).

Table 5. Difference tests between firms with and without bank connections

	Bank connection	No bank connection	Difference tests
Panel A: Comparison between bank connection and no bank connection			
Collateral	34.55%	38.25%	-3.70%**(-2.74)
Firm size (million)	2,460	2,330	130(0.62)
CF volatility	8.23%	8.48%	-0.25%(-0.78)
Return on assets	3.32%	4.82%	-1.50%**(-2.48)
Board size	8.89	8.68	0.21** (2.37)
Independent director	3.23	3.12	0.11*** (3.61)
Leverage	47.95%	43.67%	4.28%*** (4.15)
Tangibility (million)	1,450	1,400	50(0.35)
Sales growth	119%	105%	14% (1.36)
Debt structure	11.42%	9.49%	1.93%** (2.34)
Cost of debt	8.37%	8.52%	-0.15%*** (-2.65)
Guarantee	27.84%	25.66%	2.18%** (2.26)
Panel B: Difference tests			
	Exe_bank	Indep_bank	No connection
	32.98%	35.02%	38.25%
Exe_bank vs. No connection	-5.27%*** (-3.38)		
Indep_bank vs. No connection	-3.23%** (-2.55)		

** and *** indicate significance at the 5% and 1% level, respectively.

To complement our univariate tests, we also conduct a regression analysis by estimating the following equation:

$$\begin{aligned}
Collateral_{it} = & \alpha_0 + \alpha_1 Bank_{it} + \alpha_2 Size_{it} + \alpha_3 Tangibility_{it} + \alpha_4 Sales_{it} \\
& + \alpha_4 Leverage_{it} + \alpha_5 Structure_{it} + \alpha_6 Cost_{it} + \alpha_7 Guarantee_{it} \\
& + \alpha_8 Volatility_{it} + \alpha_9 ROA_{it} + \alpha_{10} Board_{it} + \alpha_{11} Indep_{it} \\
& + \alpha_{12} Prime_{it} + \varepsilon_{it}
\end{aligned} \tag{1}$$

where *Collateral* is the fraction of collateralized loans; *Bank* is a dummy variable equal to 1 if the firm is connected to banks and 0 otherwise; *Size* is the log of firm total assets; *Tangibility* is the log of firm's tangible assets; *Sales* is the firm's sales growth rate; *Leverage* is the ratio of total debt to total assets; *Structure* is the ratio of bank loans to total debt; *Cost* is the interest rate charged on total debt; *Guarantee* is the fraction of guaranteed loans; *Volatility* is the standard deviation of the cash flow of the previous three years; *ROA* is the return on assets; *Board* is the log of total number of directors on boards; *Indep* is the ratio of independent directors to total directors; and *Prime* is the prime lending rate. We also include industry and year dummy variables to control for industry and year fixed effects. The results of the effect of bank connection on collateral are reported in Table 6.

Across the three specifications we find that bank connection is negatively related to the collateral required, especially the estimates from column 1, which show that the coefficient on the bank connection is -0.05 and statistically significant at the 5% level (t-value is -2.26). This result indicates that the average amount of collateral requirement is 5% lower for firms with bank connections, while everything else is held constant. Hence, the effect of bank

connection on collateral is economically and statistically significant. In addition, we categorise bank connection into executive and independent-director bank connection, and input each of them into the regression. In particular, executive bank connection includes connection through both the top executive and the largest shareholder. The results are reported in columns 2 and 3 of Table 6. The estimates from the two specifications in columns 2 and 3 provide further evidence to support our conjecture, while the estimated coefficient on the *Exe_bank* dummy is -0.07, which is significant at the 1% level (t-value is -2.61), and the estimated coefficient on the *Indep_bank* dummy is -0.03, which is significant at the 5% level (t-value is -2.06). This result indicates that the average amount of collateral required is significantly lower in firms with a close connection with the bank, either through executives or independent directors, than in firms with no bank connection. These estimated results are consistent with our hypothesis H1 that bank connections facilitate rent seeking from the banking sector, resulting in lower collateral requirements. Another concern of this regression analysis is that there are several firm-year observations with both executive and independent-director bank connections. Repeating our analysis when excluding these groups of firms yields similar results to those reported in Table 6.

Consistent with the extant literature¹⁰, we also find similar effects for the control variables. For example, the assets and tangible assets of larger firms are associated with significantly lower collateral, which suggests they are able to access bank loans at a lower cost due to a larger supply of securities on their loans. Moreover, the level of leverage and fraction of long term loans as part of a firm's total debt is positively related to collateral in the loan, which indicates that the collateral required is higher when creditors realise the firm is already levered. Moreover, as Menkhoff, Neuberger and Rungruxsirivorn (2012) discuss with regards to emerging markets, third party guarantees and interest rates are substitutes for the use of collateral. On this basis we consistently observed negative coefficients for these two control variables, which indicate that they are substitutes for collateral. With regards to the corporate governance variables, we find that the effects of the number of directors and the ratio of independent directors on the board are insignificant, respectively.

Table 6. The effect of bank connection on collateral

Dependent variable is the collateral			
Bank	-0.05**(-2.26)		
Exe_bank		-0.07***(-2.61)	
Indep_bank			-0.03**(-2.06)
Firm size	-0.07***(-3.38)	-0.08***(-3.50)	-0.07***(-3.19)
Tangibility	-0.10***(-5.70)	-0.10***(-5.19)	-0.09***(-4.93)

¹⁰ See Jimenez, Salas and Saurina (2006), Chen, Li, Su and Sun (2011) and Menkhoff, Neuberger and Rungruxsirivorn (2012) for detailed discussions of the effects of control variables on collateral in loans.

Sales growth	-0.01*(-1.64)	-0.01*(-1.69)	-0.01*(-1.71)
Leverage	0.36*** (8.67)	0.34*** (8.30)	0.34*** (8.38)
Debt structure	0.52*** (10.26)	0.52*** (10.56)	0.53*** (10.84)
Cost of debt	-0.03*** (-4.91)	-0.03*** (-4.79)	-0.03*** (-4.68)
Guarantee	-0.22*** (-10.67)	-0.23*** (-11.04)	-0.23*** (-11.03)
CF volatility	0.65*** (3.08)	0.65*** (3.48)	0.65*** (3.41)
ROA	-0.05(-0.55)	-0.05(-0.55)	-0.05(-0.51)
Board size	-0.02(-0.45)	-0.02(-0.43)	-0.02(-0.49)
Independent director	-0.05(-0.31)	-0.05(-0.28)	-0.02(-0.15)
Prime rate	-0.12*** (-7.55)	-0.12*** (-7.53)	-0.12*** (-7.61)
Constant	0.59** (2.30)	0.60** (2.29)	0.63** (2.40)
Industry fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
Adjusted R ²	0.33	0.36	0.35
Observations	1,973	1,973	1,973

The dependent variable is the fraction of collateralized loans. Bank is a dummy variable equal to 1 for bank-connected firms and 0 for non-bank-connected firms. Exe_bank is a dummy variable equal to 1 for bank-connected firms with an executive bank connection. Indep_bank is a dummy variable equal to 1 for bank-connected firms with an independent-director bank connection. Definitions of all the other variables are as in Table 3.

T-statistics are in parentheses, computed using the White (1980) heteroscedasticity robust standard error, clustered by the firm.

*, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.3 Bank connections, corruption, and collateral

In this section we consider the mechanism through which the bank connection works to attenuate collateral requirement, namely corporate bribery or corruption. The definition of corporate corruption in our study follows the spirit of the argument derived from Cai et al. (2011) and Chen et al. (2013). In particular, we use the ratio of ETCs to sales as the proxy for corruption for the regression estimation.

We conduct the regression analysis to examine the effect of corruption on the association between bank connections and collateral by including a set of control variables which may have a potential effect on a firm's requirement for collateral. To do so, we extend our equation (1) by adding an extra variable, corruption, and interact with Bank connection dummy variable. Table 7 provides the results of this regression analysis. The coefficients on corruption variable are all negative and insignificant (t-values are -0.62, -0.77 and -0.76) across three specifications. When we turn to the *Bank* dummy, *Exe_bank* dummy, and *Indep_bank* dummy, and the interactive terms between these dummy variables and corruption, we find negative coefficients on these terms which are consistent with the univariate tests and our main hypotheses. Specifically, from column 1 the estimated coefficient of *Bank* dummy is -0.05 and -3.42 for *Bank* dummy and corruption interaction term, which is significant at the 5% and 1% level respectively (t-values are -2.17 and -2.72, respectively), suggesting that the average collateral pledged is 5% lower than that in non-bank-connected firms. In addition, the coefficient of interaction between *Bank* dummy and corruption is -3.42 (t-value is -2.72),

indicating that an increase of one-standard-deviation in corruption reduces the average requirement for collateral by 3.42% for bank-connected firms while the effect is insignificant in non-bank-connected firms (insignificant estimated coefficient on *Corruption* variable). This result is consistent with our conjecture that bank connection is effective in reducing collateral requirements through corruption, and bank connection is the bridge through which corruption works. Our results also support the argument by Chen et al. (2013) that in China where the legal and financial systems are underdeveloped, corruption plays a role in improving efficiency and aids in entrepreneurial firm growth, through informal external finance based on relationship.

To be consistent with the regression reported in Table 6, we rerun the regression by splitting bank connection into executive bank connection and independent director bank connection and report the results in column 2 and 3 in Table 7. For example in column 2, we find that the estimated coefficients on *Exe_bank* and *Exe_bank*Corruption* are both negative and significant (t-values are -2.23 and -2.62, respectively). This result is consistent with the one when we focus on the bank connection in column 1, suggesting that an increase in one-standard-deviation in corruption reduces average collateral requirement by 3.80% in executive bank-connected firms, and again this effect is insignificant in non-connected firms. In column 3 where we turn to focus on independent director bank connection, we find that the estimated coefficients on *Indep_bank* is marginally significant at the 10% level (t-value is -1.80), and the estimated coefficients on *Indep_bank*Corruption* is negative while insignificant (t-value is -0.95), indicating that the reducing collateral of corruption through independent directors bank connection is insignificant.

To be consistent with the univariate difference tests between sub-samples in Table 5, we rerun the regression with three sub-samples, and these results are not reported in this paper. The first one includes firms with executive bank connections and independent director bank connections only, by excluding the firm-year observations without connections. The second one includes firms with bank connections and no connection only, by excluding the firm-year observations of independent director bank connections. From these two regressions, we find the coefficients for both bank connections and interactive terms between bank connections and corruption are negative and statistically significant. The third one includes firms with independent director bank connections and no connections only, without including firm-year observations of bank connections. The results from this regression suggest that the coefficient for *Indep_bank* is marginally negative, which is complementary to the finding of our results in Table 8. However the coefficient of the interactive term between *Indep_bank* and

corruption is negative but not statistically significant. This result indicates that independent director bank connection could reduce the requirement for collateral but is not as strong as executive bank connections.

Overall, our results indicate that on average, corporate bank connections through top executives and largest shareholders are more effective than that through independent directors, and have a direct impact on reducing the collateral, which means that the requirement for less collateral is associated with bank connection in emerging markets, at least in the context of China. Moreover, our results propose an explanation to the coexisting of weak legal system and high private sector growth in China. We offer support to Chen et al. (2013) and extend to find that bank connection is the channel through which corruption is exercised to improve capital allocation efficiency. We argue that the effect of borrower-lender relationship differs substantially across countries. In particular, this relationship in developed countries, such as U.S., acts to alleviate information asymmetry (facilitate information flow) or reduce monitoring costs which benefits firms with favoured loan terms. However, in emerging market with underdeveloped financial and legal system, such as China, firm's bank connection acts primarily to facilitate rent seeking from the banking sector by obtaining favoured loan terms. Here, though evidence from both developed and emerging markets supports the view that close borrower-lender relationship relates to lower collateral requirements, our results on corruption effect provide a supporting evidence for the view of rent seeking. We argue that if bank connection works the same way in China as that in developed countries to reduce the monitoring costs, corruption's effect should be either significant in reducing collateral in non-bank connection firms or insignificant in all types of firms. The result in China shows that corruption works in bank-connected firms, suggesting that bank connection is the channel through which corruption is used to seek rents from the banking sector, and entrepreneurial firms pay bribes to officials as a means of rent seeking. In other words, our results also support Allen et al. (2005) argument that in emerging market, entrepreneurial firms' growth depends on informal external financing based on relationship.

Table 7. The effect of corruption on bank connection-collateral association

Dependent variable is the collateral			
Bank	-0.05**(-2.17)		
Bank*Corruption	-3.42***(-2.72)		
Exe_bank		-0.06**(-2.23)	
Exe_bank*Corruption		-3.80***(-2.62)	
Indep_bank			-0.03*(-1.80)
Indep_bank*Corruption			-2.59(-0.95)
Corruption	-0.13(-0.62)	-0.25(-0.77)	-0.24(-0.76)
Firm size	-0.07***(-3.24)	-0.07***(-3.47)	-0.07***(-3.36)
Tangibility	-0.10***(-5.64)	-0.10***(-5.22)	-0.09***(-5.12)
Sales growth	-0.01*(-1.79)	-0.02(-1.52)	-0.01*(-1.74)

Leverage	0.37*** (8.81)	0.34*** (8.43)	0.34*** (8.44)
Debt structure	0.51*** (10.20)	0.51*** (10.37)	0.51*** (10.51)
Cost of debt	-0.03*** (-4.84)	-0.03*** (-4.74)	-0.03*** (-4.77)
Guarantee	-0.22*** (-10.55)	-0.23*** (-10.95)	-0.23*** (-11.01)
CF volatility	0.52*** (2.99)	0.65*** (3.42)	0.64*** (3.45)
ROA	-0.06 (-0.62)	-0.05 (-0.50)	-0.06 (-0.61)
Board size	-0.02 (-0.47)	-0.02 (-0.46)	-0.01 (-0.40)
Independent director	-0.03 (-0.21)	-0.06 (-0.43)	-0.03 (-0.22)
Prime rate	-0.12*** (-7.47)	-0.12*** (-7.55)	-0.12*** (-7.55)
Constant	0.64** (2.49)	0.63** (2.40)	0.62** (2.39)
Industry fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
Adjusted R ²	0.34	0.34	0.34
Observations	1,973	1,973	1,973

Dependent variable is the fraction of collateralized loans. Bank is a dummy variable equal to 1 if the firm is connected with the banks and 0 otherwise. Exe_bank is a dummy variable equal to 1 if the firm is connected through top executives and largest shareholders. Indep_bank is a dummy variable equal to 1 if the firm is connected through independent directors. Definitions of all the other variables are reported in Table 3.

T-statistics are in parentheses, computed using the White (1980) heteroscedasticity robust standard error, and are clustered by firm.

*, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4.4 Economic stimulus package

In this section we investigate the effect of economic stimulus package (ESP) on the association between bank connection and collateral. To conduct a regression analysis, we empirically create a new variable *ESP*, which is equal to 1 for the post-ESP period and 0 for the pre-ESP period. We also interact the *Pack* dummy with the bank connection to examine the effect of the ESP on the association between bank connection and collateral. The results of this regression are provided in Table 8 column 1. We further examine the effect of corruption before and after the economic stimulus package, so we also estimate the regression by adding *Corruption* and interaction terms with *Bank* and *ESP*, and report the result in column 2 in Table 8.

The initial results show that the bank connections across both specifications are consistently negatively related to collateral. As Table 8 shows, our results also indicate that the coefficients of the *ESP* dummy are negative and statistically significant at the 10% level in column 1 (t-value is -1.92). In particular, the estimated coefficient of the *ESP* dummy shown in column 1 is -0.02 which indicates that the average collateral on loans after the economic stimulus package is approximately 3.75% lower than that before the ESP. In addition, the estimated coefficient of the interactive terms between the bank connection and *ESP* dummy is negative and statistically significant (the coefficient is -0.04, and t-value is -1.89). These results indicate that after the economic stimulus package, the average collateral difference between firms with and without bank connections is dropped by nearly 4%. These results are consistent with our hypothesis H3a in that bank connection matters stronger in

reducing the requirements for collateral after the ESP. Then, we turn our concerns to column 2 where we test that whether the corruption effect differs before and after the economic stimulus package. As can be seen from column 2 in Table 8, we find that the estimated coefficients on *Bank*Corruption* and *Corruption* are both negative and consistent with those reported in Table 7, indicating that corruption is effective in reducing collateral and obtaining favoured loan terms, but only through bank connections. More important, we find that the estimated coefficient on *Bank*ESP*Corruption* is positive and statistically significant at the 1% level (coefficient is 4.70 and t-value is 2.77). This result suggests that after the announcement of the economic stimulus package, the effect of corruption on reducing collateral requirements through bank connections has been attenuated, which support our hypothesis H3b. For the sake of brevity, we do not report the results by dividing bank connection into executive bank connection and independent director bank connection. In general, the unreported results suggest that executive bank connection matters more than that of independent director bank connection.

As with the economic stimulus package announced in 2008, bank lending decisions and loan capital allocations have been driven by the political and prudential policy imposed, which are hugely secured for SOEs. Overall, these estimates indicate that economic stimulus package, a form of government intervention, adversely affects the efficiency of banking sector which sufficiently eliminates the ameliorating effect of corruption on efficiency.

Table 8. The effect of bank connection, corruption on collateral during economic stimulus package

Dependent variable is the collateral		
Bank	-0.03***(-2.76)	-0.10**(-2.47)
Bank*ESP	-0.04*(-1.89)	-0.08***(-2.85)
ESP	-0.02*(-1.92)	-0.02*(-1.80)
Corruption		-0.16(-0.62)
Bank*Corruption		-6.65***(-4.19)
Bank*Corruption*ESP		4.70*** (2.77)
Firm size	-0.06***(-3.49)	-0.07***(-3.25)
Tangibility	-0.09***(-5.09)	-0.09***(-4.94)
Sales growth	-0.01**(-2.04)	-0.01**(-2.15)
Leverage	0.32*** (7.76)	0.32*** (7.99)
Debt structure	0.53*** (10.60)	0.52*** (10.58)
Cost of debt	-0.03***(-4.97)	-0.03***(-4.93)
Guarantee	-0.23***(-11.28)	-0.23***(-11.17)
CF volatility	-0.67***(-3.50)	-0.63***(-3.35)
ROA	-0.06(-0.59)	-0.08(-0.87)
Board size	-0.02(-0.63)	-0.02(-0.50)
Independent director	-0.06(-0.39)	-0.02(-0.15)
Prime rate	-0.10***(-7.10)	-0.10***(-7.12)
Constant	0.56** (2.15)	0.58** (2.29)
Industry fixed effects	Included	Included
Year fixed effects	Included	Included
Adjusted R ²	0.34	0.35
Observations	1,973	1,973

Dependent variable is the fraction of collateralized loans. ESP is a dummy variable equal to 1 for post-ESP period and 0 for pre-ESP period. Definitions of all the other variables are reported in Table 3. T-statistics are in parentheses, computed using the White (1980) heteroscedasticity robust standard error, and is clustered by firm.

*, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4.7 Additional tests

4.7.1 Bank lending efficiency

In this section, we conduct additional tests to examine how bank connections and corruption affect bank lending efficiency. From the previous analysis, we conclude that bank connections and corruption together help firms seek rents from the banking sector in the form of lower collateral requirements. However, whether the existence of bank connections and corruption can improve bank lending efficiency remains unanswered. Thus, in this section, we follow the spirit of Firth et al. (2009) and Chen et al. (2013) to examine the effect of bank connections and corruption on lending efficiency, where efficient bank lending is reflected by a positive relation between bank loan and firm profitability (Firth et al., 2009). Empirically, we estimate the following regression:

$$\begin{aligned} Finance = & \alpha_0 + \alpha_1 ROS_{it-1} + \alpha_2 Bank_{it} + \alpha_3 Corruption_{it} + \alpha_4 Age_{it} \\ & + \alpha_5 Size_{it} + \alpha_6 Employee_{it} + \alpha_7 Indep_{it} + \alpha_8 Duality_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

where *Finance* is the proxy for bank financing. We apply *Access to bank loan* and *Bank loan size* as the measurements in each respective regression. *Access to bank loan* is a dummy variable if the firm has at least one loan from a bank, and *Bank loan size* is the ratio of amount of bank loan to firm total assets. *ROS* is return on sales, calculated as the ratio of net income to total sales; *Age* is the log of number of years of the firm since it has been established; *Employee* is the log of number of employees; and *Duality* is a dummy variable equal to 1 if the CEO is also the Chairman on the board and 0 otherwise. All the other variables are as defined in equation (1). We also include industry and year fixed effect in the regression estimation. The results are reported in Table 9 below.

In Table 9, columns 1 to 3 report the results where we use *Access to bank loan* as the dependent variable, while columns 4 to 6 report the results using *Bank loan size* as the dependent variable. As can be seen from Table 9 across six specifications, the estimated coefficients on *ROS* are all positive and statistically significant, indicating that on average firm performance is a main determinant for a firm to get access to bank loans, and for lenders being willing to extend credit to financially healthier firms, consistent with Firth et al. (2009). The estimated results from using two alternative dependent variables are generally similar, and some interesting evidence evolves. In particular, in column 2, we add *Bank* and

Corruption, and interaction terms between them and *ROS*. The estimated coefficients on *Bank* and *Bank*ROS* are both positive and significant at the 5% level (t-values are 2.45 and 2.19, respectively). These results suggest that firms' bank connections help rent seeking when the firms go to access the bank loans, and bank lending is more efficient in bank-connected firms. When we turn to *Corruption* and *Corruption*ROS*, we also observe positive but insignificant coefficients on these variables, indicating that bribery itself is not able to explain access to bank loans and lending efficiency. In addition, in column 3, where we add the interaction term between *Bank*, *Corruption* and *ROS*, the significant and positive coefficient on *Bank*Corruption*ROS* reveals that bank-connected firms that devote more to bribery are more likely to be favoured by lenders and have a higher probability of obtaining bank loans. When we use *Bank loan size* as the dependent variable, the estimated results from columns 4 to 6 are similar to those in columns 1 to 3. As for the other control variables, we obtain the expected coefficients consistent with earlier studies (Chen et al., 2013). Our additional test results on bank lending efficiency suggest that capital allocation is efficient to some extent for the private sector, while bank connections, and corruption through bank connections, can improve lending efficiency, reflected by a stronger relationship between bank loans and firm profitability. Overall, our findings corroborate studies by Firth et al. (2009) and Chen et al. (2013) and propose an explanation for the coexistence of a vibrant non-state sector and a weak legal system. We further argue that in an emerging market where private-sector firms experience political and financial discriminations in securing external financing, bank connections and corruption facilitate rent seeking and are more likely to improve bank lending efficiency and private sector growth.

Table 9. Regression between bank connection, corruption and bank loan financing

Dependent variable	Access to bank loan				Bank loan size	
ROS	0.46*** (5.73)	0.46*** (5.70)	0.36*** (4.30)	0.26*** (4.01)	0.16*** (4.71)	0.16*** (4.73)
Bank		0.43** (2.45)	0.63** (2.25)		0.02*** (3.13)	0.03*** (4.12)
Bank*ROS		0.33** (2.19)	0.25** (2.12)		0.50** (2.30)	0.42** (2.21)
Corruption		1.44 (0.76)	0.83 (0.50)		0.10 (1.02)	0.05 (0.45)
Corruption*ROS		0.05* (1.83)	0.02 (1.18)		0.06* (1.93)	0.03 (1.21)
Bank*Corruption*ROS			1.97** (2.42)			1.38*** (2.67)
Age	-0.01 (-0.35)	-0.01 (-0.36)	-0.01 (-0.39)	-0.01 (-0.75)	-0.01 (-0.92)	-0.01 (-0.89)
Size	0.50*** (3.86)	0.49*** (3.83)	0.49*** (3.82)	0.02*** (3.06)	0.02*** (4.64)	0.02*** (4.43)
Employee	0.08 (1.75)	0.08 (1.75)	0.08 (1.71)	0.01 (0.38)	0.01 (0.20)	0.01 (0.28)

Indep	2.46 (1.48)	2.47 (1.49)	2.36 (1.42)	0.08 (1.21)	0.10** (1.98)	0.10* (1.83)
Duality	0.10 (0.79)	0.09 (0.77)	0.06 (0.45)	0.01 (1.39)	0.01*** (3.07)	0.01*** (3.14)
Constant	6.69** (2.49)	6.60** (2.46)	6.75** (2.52)	-0.14 (-1.36)	-0.11* (-1.76)	-0.11* (-1.64)
Industry fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Adjusted R ²	0.09	0.09	0.08	0.17	0.22	0.23
Observations	1,973	1,973	1,973	1,973	1,973	1,973

Access to bank loan is a dummy variable equal to 1 if a firm has at least one bank loan. *Bank loan size* is the ratio of amount of bank loans to firm total assets. *ROS* is return on sales. *Age* is the log of number of years since firm establishment. *Employee* is the log of number of employees. *Duality* is a dummy variable equal to 1 if the CEO is also the Chairman on the board. Definitions of all the other variables are as in Table 3.

T-statistics are in parentheses, computed using the White (1980) heteroscedasticity robust standard error, and are clustered by firm.

*, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.7.1 Endogeneity issue

One potential concern we have with our previous results on the association between bank connection and collateral is the endogeneity of bank connection, which has been noted by most previous studies, though our results are not identical (i.e. Chen et al., 2011b). On one hand, some bank officials might have resigned their original positions and sought posts in better-performing entrepreneurial firms for their monetary and reputational concerns. On the other hand, the top executives in firms with better firm performance have a higher probability of being nominated as members of government entities. Here, bank connection may be endogenously determined by some of the firm-specific characteristics in our regression. We attempt to address the endogeneity issue by applying a natural experimental method where we use the economic stimulus package as the exogenous policy variable where the bank connection is mostly frozen. None of the entrepreneurial firms could forecast the announcement of the economic stimulus package, and there was not enough time for non-bank-connected firms to appoint a bank-connected executive or an independent director to seek rents from the government and share the capital allocation from the economic stimulus package. In fact, we check the appointment of a new executive or independent director three months before the announcement of ESP, and we do not find any of these cases involves the appointment of a bank-connected executive or independent director. In other words, the economic stimulus package is an exogenous shock with respect to individual firms. Empirically, we again use the *ESP* dummy variable, which equals 1 for firm-year observations falling in the period after the economic stimulus package and 0 otherwise. We run the same regression reported in Table 8 but using our new sample by including the firm-

year observations falling in the year before and the year of the announcement. The sample size is now reduced from 1,973 to 909.

The results, reported in Table 10, are consistent with our earlier analyses and support the view that bank connection is negatively related to collateral, and corruption works in bank-connected firms. In particular, the estimated coefficients on bank connection, ESP dummy, Bank*ESP, and Bank*Corruption are consistently negative, and significantly related to collateral. Moreover, the estimated coefficient of Bank*ESP*Corruption is positive, indicating that government intervention impedes the efficiency of the banking sector, and the corruption effect has been reduced.

Table 10. The effect of bank connection and corruption on collateral during the economic stimulus package: Natural experiment

The dependent variable is collateral		
Bank	-0.06**(-2.26)	-0.11**(-2.48)
Bank*ESP	-0.07**(-2.55)	-0.10***(-2.85)
ESP	-0.03*(-1.86)	-0.02*(-1.86)
Corruption		-0.03(-0.24)
Bank*Corruption		-6.09***(-3.48)
Bank*Corruption*ESP		4.09**(1.98)
Firm size	-0.08***(-3.04)	-0.07***(-2.79)
Tangibility	-0.09***(-4.02)	-0.09***(-3.87)
Sales growth	0.01(0.85)	0.00(0.86)
Leverage	0.32***(-5.41)	0.32***(-5.42)
Debt structure	0.51***(-7.13)	0.51***(-7.12)
Cost of debt	-0.04***(-3.99)	-0.04***(-3.90)
Guarantee	-0.25***(-10.05)	-0.25***(-9.85)
CF volatility	-0.77***(-3.65)	-0.73***(-3.47)
ROA	-0.13(-0.89)	-0.17(-1.17)
Board size	-0.02(-0.43)	-0.01(-0.28)
Independent director	0.03(0.13)	0.07(0.37)
Prime rate	-0.07***(-3.48)	-0.08***(-3.45)
Constant	-0.07(-0.20)	-0.03(-0.10)
Industry fixed effects	Included	Included
Year fixed effects	Included	Included
Adjusted R ²	0.34	0.35
Observations	909	909

The dependent variable is the fraction of collateralized loans. Definitions of all the other variables are as in Table 8.

T-statistics are in parentheses, computed using the White (1980) heteroscedasticity robust standard error, and are clustered by firm.

*, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

In addition, we also try to address this endogeneity issue by using the propensity-matching method. By taking the bank-connected firms as our treatment sample, we construct a control sample. A potential match in the control sample is any firm-year observation not identified as bank-connected from the same industry as the connected firm. From the set of potential matches we select a firm-year observation with the same market capitalization as each observation from the treatment sample or, if no such match exists, a firm that is the

closest, with no more than a 2% deviation. If still no match exists, the firm is dropped from the matching process. This procedure results in a matched sample of 478 firm pairs where the treatment and control samples have the same propensity to build bank connections. We then run the same regression as in Table 8, using this newly constructed sample. Consistent with our regression tests in section 4.3 with different samples, we repeat the propensity-matching method to control for the endogeneity issue. The unreported results, broadly similar to those using the full sample, are not reported here.

4.7.2 Other tests

Our analysis naturally relates to political connection, which has been examined extensively (Claessens et al., 2008; Li et al., 2008; Faccio, 2010; Bliss and Gul, 2012). These studies provide evidence for the link between political connection and the terms of loan contracts. For example, using a thousand firms in 47 countries, Faccio (2010) points out that politically connected firms are more levered and face a lower cost of debt financing than non-politically connected firms, and Qi et al. (2010) echo that politically connected firms are regarded as a lower level of risk, which relates to a higher bond rating and lower cost of borrowing. Therefore, we are concerned whether our findings about the bank-connection effect will be overridden by the effects of political connection. To address this issue, we identify politically connected firms, based on a definition derived from Fan et al. (2007) and Faccio (2010). In particular, a firm is defined as politically connected if the Chairman of the board, CEO, largest shareholder or other top executives is a member of any of government-related entities (such as the NPC, CPPCC etc.). Empirically, we create a dummy variable, *Political*, equal to 1 if the firm is politically connected and 0 otherwise. For the regression analysis, we add *Political* and respective interaction terms in each equation. The general results show that political connection has a weaker effect in reducing collateral than bank connection does. Some of the firm-year observations may have both bank connection and political connection, so we repeat our regression analysis by excluding these observations to avoid the overlapping effects; this repetition yields results that are relatively consistent with those obtained earlier.

In addition, and consistent with the findings of Claessens et al., (2002) and Lemmon and Lins (2003), excess control rights entrench large shareholders, while cash-flow rights give them an incentive to exercise effective monitoring. Boubakri and Ghouma (2010) and Lin et al. (2011) provide supporting evidence that divergence between control rights and cash-flow rights is positively related to cost of borrowing, while cash-flow rights are negatively related to cost of borrowing. To supplement the effect of largest-shareholder ownership, and to check

the validity of our results, we repeat our regression analysis by adding a control-ownership wedge in each regression and interact with the Bank connection dummy variable. The untabulated results show a negative coefficient on the interaction between control-ownership wedge and bank connection, and a positive coefficient for control-ownership wedge; both are statistically significant. These results suggest that bank connection still matters after considering the excess control rights of the largest shareholders. To supplement the incentive effect of cash-flow rights, we repeat the above analysis by replacing the control-ownership wedge with cash-flow rights; we find that the estimated coefficient on cash-flow rights and bank-connection interaction is negative and statistically significant.

We further check the robustness of our results by applying alternative measures of collateral. For example, we follow Cull and Xu (2005), Binsbergen, Graham and Yang (2010) and Jimenez, Salas and Saurina (2006) and use the natural log of collateralized loans and the ratio of the sum of plant, property, equipment and inventory to total assets, and use the collateral dummy as an alternative proxy for collateral. Overall, our results from the multivariate regression using these alternative measures of collateral indicate that bank connection is significantly negatively related to the requirement for collateral, which facilitates corruption in the context of China.

5. Conclusion

The objective of this study is to examine the financial and economic implications of bank connections and corruption on collateral requirements. We use data from China's listed firms and bank connections as proxy for the rent seeking by firms, and find that bank connection relates to a lower collateral requirement. Our results are a supplement to the fact that favoured loan terms can be granted through political connections, which encourages rent seeking from banks.

We also find that collateral is negatively related to corruption, and that this association is more pronounced if a firm is connected with the banks through its top executives, large shareholders or independent board members. These bank connections have more impact than general political connections in terms of reducing collateral and facilitating corruption. In particular, we document that executive bank connections matter more than independent-director bank connections. We further find that the economic stimulus package reduces the compensation required by creditors on funds lending in the form of lower pledged collateral, and further weakens the negative relation between bank connection and collateral. Moreover, we also provide evidence that a negative relationship between corruption and collateral is

weakened by the economic stimulus package. Our results in considering the endogeneity issue are robust, since we have applied both a natural experimental method and a propensity-matching method. Various aspects of the test specification have also been changed, and alternative measures of connection and collateral have been applied.

Overall, we argue that in an emerging market, where the financial and legal system is underdeveloped, legal protection for creditors and investors is weak and institutionally created rent opportunity is prevalent, bank connections can be a substitute for legal protection to seek rents from banks, and corruption is effective in improving banking efficiency and helping the non-state sector seek rents. Our findings confirm the value of political connections in emerging markets.

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