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State Common Ownership and Bank Governance: Evidence from CEO Turnovers in China^{*}

By He Qing and Li Dongxu^{*}

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Abstract

Using hand-collected data of bank loans and CEO turnovers in China, we investigate whether common ownership would compromise creditors' governance role when their borrowers underperform. Unlike prior literature that documents the overall lack of bank monitoring on state-owned enterprises (SOEs) in China, we argue that such governance inefficiency exists only among the lending relationships where the banks and the firms share the same government agency (i.e., common state ownership). These effects are more pronounced among the firms with a board director appointed by the lending bank, with ownership in the bank's shares, and with political connections. Following forced CEO turnovers, local SOEs with common ownership enjoy less strict loan terms while those with no common state ownership face stricter loan terms. Overall, this paper sheds light upon the functions of state-owned business groups in emerging markets.

JEL Classification: G21, G30, G32, G38, K22

Keywords: Common ownership; lending relationship; SOE; CEO turnover; China

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1. Introduction

The existing literature has widely discussed the functions of business groups under common ownership (e.g., the Korean chaebols or the Japanese keiretsu), one issues that remains largely unexplored is the interactions between financial institutions and nonfinancial firms of the same business group. Does common ownership affect the governance role of creditors in forcing out underperforming CEOs? In this paper, we exploit a context of lending relationships in which the banks and their nonfinancial borrowers are ultimately controlled by the same owner. Nini, Smith and Sufi (2012) argue that creditors have disciplinary motives when the borrowers underperform. Under the circumstances of common ownership, however, such disciplinary motives may be weakened because the ultimate owner may not want their firms to default and thus make the banks tolerate more the borrowers' underperformance. Whether the banks would discipline the firms depends on the relative importance of these two competing motives.

To empirically address this issue, we investigate the lending relationships in China. Unlike the Korean chaebols and the Japanese keiretsu in which the common ownership is dominated by the founding families, the bank-firm relationships in China are deeply involved with common state ownership. The state government is the largest shareholder not only of the state-owned enterprises (SOEs), but also of the state-owned banks (such as the *Big Four*¹). Both SOEs and state-owned banks are run in a way that is often times politically desirable but not economically efficient (Li et al, 2008). State-owned banks may issue loans to SOEs under the commands from the state government². Since the SOEs' credits are endorsed by the government, the state-owned banks may discipline SOEs less than non-SOEs. Consequently, the common state ownership may render the lending relationships economically inefficient.

Previous research on the efficiency of bank relationships in China mainly focuses on the allocation of credit resources. Bailey et al (2011) document that substantial volumes of non-performing loans are concentrated among the state-owned banks, and poorly performing SOEs are the heaviest borrower. On the basis of these findings, this paper further examines after the bank relationships are established, whether the state-owned banks efficiently discipline the SOE borrowers. Particularly, what is the role of common state ownership in the lending relationships? Does it compromise the banks' monitoring efforts, or does it facilitate information transmission between the bank and the firm?

To investigate whether banks actively discipline their poorly performing borrowers, we evaluate the effect of bank loans on the sensitivity between a firm's profitability

¹ The *Big Four* stands for the biggest four commercial banks in the world (by total assets) according to the 2019 annual rankings by S&P Global Market Intelligence: the Industrial & Commercial Bank of China, the China Construction Bank, the Bank of China and the Agricultural Bank of China. These four banks are all owned by the Chinese central government.

² Podpiera (2006) finds that the state-owned commercial banks lend significantly more in less profitable provinces with lower enterprise profitability. He argues this result indicates the lending decisions of these banks have been policy driven. Berger et al (2009) find that the "Big Four" are by are the least efficient while the foreign banks are the most efficient. FitchRatings (2016) estimates that around 20% of bank loans in China are non-performing.

and CEO turnovers. Specifically, we use hand-collected datasets of bank loan covenants and CEO turnovers of Chinese listed firms, and we employ the standard Cox competing risk model to test the effect of loan intensity on the turnover-performance link. One unique advantage of our datasets is the diversity of lending banks. We classify the banks into four different types based on their ownership structure: the *Big Four* banks, the local state-owned banks, the joint-equity banks, and the foreign banks. The banks in each category are ultimately controlled by different entities, which allows us to identify the common state ownership and distinguish the disciplinary effects in different types of bank relationships.

In this paper, we document that underperforming CEOs are more likely to be forced out when the firm relies more on bank loans, but this effect would be neutralized when the firm and the bank are ultimately controlled by the same government. In other words, common state ownership weakens the disciplinary effects of banks on the governance of the underperforming borrowers. We argue that common state ownership can be one of the factors that explains the inefficiency of bank discipline in China. In our baseline tests, firms' underperformance is measured with the industry-adjusted profitability. The main results would be even more significant when we narrow our sample to firms close to bankruptcy, which is consistent with Nini, Smith and Sufi (2012) that creditors would actively discipline borrowers well outside of payment default states.

Second, we separately examine different types of bank loans. Even if common state ownership makes banks less monitor the borrowers, it is possible that such inefficiency can be alleviated by stricter loan covenants. To avoid credit default, firms can be more self-disciplined *ex ante*. We find that poorly performing borrowers are more likely to force out the managers when the firms have more short-term loans. This result suggests that the underperforming borrowers may be concerned about increased borrowing costs under frequent loan renewals, thus they are more motivated to improve governance. Similarly, the turnover-performance sensitivity is greater when the firms have more secured loans, suggesting that firms have greater incentives to improve governance to avoid default, which may incur stricter collateral requirements.

Next, we specifically examine the interactions between firms and banks of different types of state ownership. The results show that bank loan intensity would increase the forced turnover-performance sensitivity when a firm's lead lender is a joint-equity bank which has diversified ownership structure, while such effect is insignificant when the leader lender is a state-owned bank (either the *Big Four* or the local state banks). More interestingly, we find that the incremental effect of joint equity banks has significantly smaller magnitude on SOE borrowers than non-SOE borrowers. These results suggest that although joint-equity banks have greater monitoring motives than the state-owned banks towards underperforming companies, the bank discipline would to some extent weakened by government interventions.

This paper evaluates three potential channels through which the disciplinary effect of bank loans is weakened by common state ownership. First is the director appointment on the firms' board. Among the firms with common state ownership, we

examine the effect of bank directors on the turnover-performance sensitivity. The results show that, having board directors appointed by the lending banks neutralizes the negative relations between firm performance and the likelihood of forced CEO turnovers. These findings are consistent with He et al. (2016) that bank directors improve access to bank loans for Chinese listed firms, yet such bank financing fails to create firm value.

The second potential channel is firms' equity investment in their lending banks. It is possible that the corporations are important equity investors of the bank lenders, which results in the situation where state government concurrently are the ultimate controller of both the bank and the borrowing firms. Since firms have voting rights on the holding banks' decisions, when the firms underperform, they may have incentives to make the banks less exert monitoring efforts. Consistent with this argument, we find some results that for firms with at least 5% of ownership in the lending banks' equity, the disciplinary effect of bank loans on forced CEO turnovers becomes insignificant.

The third potential channel is through firms' political connections. In order to test if the managers with political connections are more likely to intervene with the discipline of lending banks, we manually collect the job experience of the underperforming CEOs and test if the CEOs' political connections affect the turnover-performance sensitivity. Although there is some evidence that firms with political connections indeed have less significant turnover-performance sensitivity, the effect of political connections does not hold significant when firms' loans are collateralized or have short maturity. Overall, the results from the mechanism tests suggest that common state ownership may neutralize bank discipline over underperforming firms, while the inefficiency can partly be offset by loans with stricter covenants.

Next, we examine firms' borrowing conditions subsequent to forced CEO turnovers. Using propensity-score-matching on a control sample without CEO turnovers, we find that after forced CEO turnovers, the local SOEs under common state ownership with the banks have decreased secured loan intensity but increased unsecured loan intensity, while those without common state ownership have increased short-term loan intensity. In other words, it seems that following forced CEO turnovers, the borrowing conditions become less strict for firms with common state ownership, but more stringent for those without common state ownership. These differences in loan term changes suggest banks' tradeoff between their uncertainty about the firms' new management and their reward to firms' following their discipline. More specifically, in bank relationships where the bank and the firm share the same ultimate owner, there is apparently less uncertainty about the firm's new management, but for those under no common state ownership, there might be increased uncertainty, so the loan terms may become stricter, consistent with the management risk argument in Pan, Wang and Weisbach (2018).

To address the endogeneity concern that CEOs of poor ability may choose not to borrow bank loans to avoid bank discipline, we follow Ozelge and Saunders (2012) and instrument bank loan intensity with the bank financing conditions in the regional market. It is reasonable to believe that the local bank financing is positively associated

with the firm level bank loan intensity, while the aggregate banking market should not affect the firm-specific CEO replacements except via the channel of the firm's own bank loans. Using six alternative instrumental proxies, we conduct two-stage least squares (2SLS) estimations not only for the overall sample, but also for the firms under common state ownership. The estimates remain similar to the main results, suggesting that the effects of bank loan intensity on the likelihood of forced CEO turnovers are likely to be causal. Specifically, the instrumented loan intensity tends to render the turnover-performance sensitivity stronger for the firms without common state ownership, while vice versa for the firms under common state ownership.

Overall, the findings in this paper indicate that common state ownership is the underlying factor that contributes to the inefficient governance role of lending banks in disciplining underperforming SOEs. One disclaimer is about the initiations of bank relationships. As we discussed earlier, under common state ownership, it is possible that state banks lend to the underperforming SOEs under the government's policy, whereas we do not reject the possibility that the poorly performing SOEs choose to borrow from state banks to avoid market discipline. Unfortunately, in our setting, we are unable to split the negotiating power during this two-sided matching process.

This paper contributes to the literature on the effect of common ownership on corporate policies. Based on a long theoretical literature on the implication of common ownership for firm interactions, the empirical tests have been emerging in recent years. Previous studies mainly investigate the effect of common ownership on the efficiency of product market competition. They emphasize that common ownership tends to induce anticompetitive behaviors, leading to less efficient markets (Azar 2012; He and Huang 2017; Azar, Schmalz and Tecu 2018). In this paper, we focus on corporate interactions *across* industries under the effect common ownership. The closest paper to ours is Lu et al. (2012) that examines the equity investment of Chinese firms in banks' ownership. They argue that non-SOEs in China hold significant ownership in banks to address the financing disadvantages. The non-SOEs that hold banks' equity shares tend to enjoy more favorable borrowing terms. Our paper adds to their study in three important ways. First, we examine that given common ownership, whether the bank efficiently monitors the underperforming firms, while Lu et al. (2012) discusses firms' motives to establish common ownership in order to weaken the bank discrimination *ex ante*. Second, Lu et al. (2012) only compares the differences between SOEs and non-SOEs, while we also examine the heterogeneities among the banks. We provide evidence that the disciplinary effect among these four types of banks varies significantly from one another. In addition, Lu et al. (2012) and our paper address different types of common ownership. Lu et al. (2012) examines the bank relationships where the firms hold the banks' equity shares, while we examine the cases where the firm and the bank share the same ultimate owner. We consider not only the cases of direct ownership control between the firm and the bank, but also the cases in which the bank and the firm are jointly controlled by the third party. The results in this paper not only complement Lu et al. (2012) that the direct ownership control of the bank and the firm weakens monitoring effect, but also discover other channels that weaken the monitoring effect (e.g. bankers on the

board, CEOs' political connections). Considering the large portion of SOEs and state-owned banks in China, we believe that our tests on the role of common state ownership shed broad light on the bank discipline in China.

This paper also adds to the research on the governance of business groups. Despite a long literature on the Chinese SOEs, less is discussed about the *cliques* formed among the SOEs. In this paper, we define the cliques in China as the SOEs that share the same government as the ultimate owner. This classification resembles the definition of the Korean chaebols and the Japanese keiretsu. Previous research on the governance of the Korean chaebols and the Japanese keiretsu often reaches mixed results on the efficiency of their internal discipline (Berglöf and Perotti 1994; Kim and Limpaphayom 1998; Bae et al 2002; Campbell and Keys 2002; Ferris et al 2003; Dow and McGuire 2009; Almeida et al 2011). Using the setting of bank-firm relationship, this paper examines the governance of state-owned business groups in China. Building on Nini et al (2012) that creditors would actively exert the role of external governance even when borrowers underperform, we provide further evidence that the banks' governance role might be weakened if they share the same ultimate owner with the borrowers. Also, there is some evidence that the underperforming firms still can be disciplined with stricter loan terms, such as short maturity or high collateral requirement, which is consistent with Bester (1985) and Chan et al (1987) that credit rationing will be reduced if banks choose collateral requirements and interest rate to screen investors' riskiness.

Finally, this paper adds to the literature on the access to external capital markets of SOEs in emerging markets. Prior empirical studies document that Chinese SOEs have preferential access to external financing (Bailey, Huang and Yang 2011; Megginson, Ullah and Wei 2014; Chen, Li and Tilmann 2019), but it still remains unclear about the functions behind the financing relationships. In terms of the lending banks, Garc ía-Herrero et al. (2009) document that better capitalized banks tend to be more profitable, while the largest banks, the *Big Four*, have been the main drag for the banking system in China. Building on the discussion in Schwert (2018) on the endogenous matching process between firms and banks, this paper complements this discussion by proposing common state ownership as an alternate factor that shapes the functions of bank-firm relationships. The findings in this paper also shed light on a better understanding of the credit markets in other emerging countries.

They find that underperforming firms tend to replace the managers if the firms are more bank dependent. Following this methodology

The remainder of the paper is structured as follows. Section 2 develops hypotheses on the effect of common state ownership on disciplinary role of banks in China. Section 3 introduces the sample and methodology. Section 4 describes the main results. Section 5 discusses the channels through which common state ownership may take effect on the banks' governance role. Section 6 addresses the endogeneity concern with instrumental variables and conducts a series of robust tests, and Section 7 concludes.

2. Related Literature and Hypotheses Development

Regarding creditors' role of corporate governance in the borrowers, Nini, Smith and Sufi (2012) argue that in efficient capital markets, creditors have motives to actively discipline the borrowers whose performance deteriorates. Ozelge and Saunders (2012) empirically test this argument by estimating the influence of bank loan intensity on the likelihood of borrowers' firing the underperforming managers. Under bank discipline, CEO replacements should become more sensitive to the borrowers' poor performance. Meanwhile, another strand of literature argues that common ownership may limit the efficiency of markets. For example, an emerging literature shows that the concentration of common ownership reduces competition in product markets (Azar 2012, 2017; Azar, Schmalz and Tecu 2018). In the Chinese lending markets where most of the commercial banks are state-owned, the lending decisions may be biased towards the state-owned companies. Lu et al (2005) attribute the biased lending as the reason for the mounting non-performing loans in China. In this paper, we particularly argue that the banks may share the same government with their borrowing firms as the largest shareholder, then the common state ownership reduces the conflict of interest between shareholders and creditors. In this case, the banks are less likely to exert efforts to intervene with the poorly performing borrower's governance. Hence, the common state ownership hypothesis predicts that:

H1: Common state ownership weakens the disciplinary effect of banks on the CEO replacements of underperforming borrowers.

Existing literature documents fruitful findings on the channels through which state ownership shapes the corporate governance in China. These channels can help us understand the role of common state ownership in the bank relationships of Chinese companies. There are mainly three channels that may facilitate the function of common state ownership. First is bankers in the boardroom He, Rui and Zhu (2016) documents that the presence of a banker on the board increases the firms' access to bank loans, yet the appointments are typically followed by declines in the appointing firms' stock performance, operating performance and increases in rent-seeking activities. They argue that these effects are driven by the state-owned companies, implying that under government endorsement, the bankers on the board of borrowers are less willing to make monitoring efforts. The second channel might be the borrowing firms' ownership in the lending banks' equity shares. Taboada (2011) argues that in countries with less developed institutional environments, credit allocations would become less efficient if the lending banks have greater blocks of shares held by their borrowers. The third channel might be political connections. Claessens et al (2008) document that politically connected firms have more preferential access to bank financing resources, while the politics-driven credit allocation induces significant costs of rent seeking in the capital market. Since under common state ownership, firms are more likely to establish these bank-firm channels (i.e., bankers on board, firms' ownership in the banks' equity shares, and political connections), we predict that the disciplinary effect of bank monitoring would be weaker in these scenarios:

H2: The weakening effect of common state ownership would be more pronounced among the firms with bankers in the boardroom, with shares in the bank's equity, and with political connections.

CEO turnovers significantly affect firms' costs of borrowing. Pan, Wang and Weisbach (2018) argue that CEO turnovers would incur investors' uncertainty about the quality of the new management team. They document that firms' borrowing costs significantly increase at the time of CEO turnovers and then decline over the first three years of the new CEO's tenure. Similarly, Deng et al. (2019) show that banks tend to issue loans with worsened terms due to the increase in uncertainty about new CEOs. Following this information uncertainty argument, it is expected that firms with CEO turnovers would encounter stricter borrowing covenants, such as shorter loan maturity, greater collateral requirements. On the other hand, information uncertainty may be less of concerns in bank relationships when the bank and the firm have the same owner. The banks would have fewer motives to monitor or discipline the underperforming firms. It is less likely for the banks to perform as harshly as those efficiency-oriented banks.

In addition, by forcing out underperforming managers, the borrowing firms may be more likely to negotiate with the lenders for better loan terms. Having successfully disciplined the governance of the borrowers, the banks more willing to agree on less stringent terms in order to save firms out of financial distress. Such agreements are more likely to be reached when firms have common state ownership with the banks, given the government's favoritism in capital allocations (Bailey, Huang and Yang 2011). Therefore, we expect that:

H3: Following forced CEO turnovers, firms with common state ownership would enjoy less strict loan terms, while the firms without common state ownership would encounter stricter loan terms.

3. Data and Methodology

3.1 Data

Our sample is composed of three datasets. First, we hand-collect the bank loan information of Chinese listed firm from their annual reports. Starting from 2007, the *China Securities Regulatory Commission (CSRC)* required that all listed firms should disclose the information about their major bank loans, including loan maturity, loan collateralization, and their five largest outstanding loans. We exclude the observations where the maturity date or the lender identity is missing. As a result, the time period of the data is from 2008-2018.

Second, we collect the CEO turnover information of Chinese listed firms and manually identify whether each turnover is forced or voluntary. The CEO turnover events are accessed via the *GTA Financial Research Database*. This dataset includes information about the CEO departure date and the announced reason for the departure.

Third, the financial information of the listed firms is collected from the *CSMAR Database*, and we complement the data with the information from the *WIND Database*. These two databases are widely used in empirical financial studies on Chinese listed firms. Following the standard practice of previous research on Chinese

public firms, we exclude firms in the financial industry and firms that are under special regulatory treatments (i.e. the “*ST stocks*”).

3.2 Classifying CEO turnovers: forced vs. voluntary

To examine banks’ governance role in the CEO turnover decisions in the borrowing firms, we must be able to distinguish the managers who are forced out rather than those who voluntarily resign. Following Huson et al (2001), Chang & Wong (2009) and Cao et al (2011), we first exclude turnovers due to takeovers, mergers, spinoffs, and interim CEO appointments. This leaves us an initial sample of 1,888 CEO turnovers in 1,227 listed firms. Then we use the reported reason for CEO departure to classify forced and voluntary CEO turnovers.

A CEO turnover is considered forced if it satisfies at least one of the three conditions. 1) the CEO was dismissed, assigned to a lower position (i.e. demotion), or resigned because of legal dispute; 2) the departing CEO is younger than 60 for males and 55 for females, and the announcement does not state that the CEO died, left due to poor health, or accepted another position elsewhere or within the firm; or 3) the CEO “retires” but leaves the job within six months of the “retirement” announcement. The CEO turnovers in condition 3) are reclassified as voluntary if the incumbent takes a CEO position in another firm or departs for business reasons that are unrelated to the firm’s activities, 0 otherwise. The selection procedure gives us 620 cases of forced CEO turnovers, among which 479 departing CEOs end up at a lower position, including 134 cases of taking a lower position in the same company and 345 of taking managerial positions in unlisted or smaller firms.

There are 121 cases in which we were unable to trace the final whereabouts of the departing CEO. Given the important role of managerial positions, it is unlikely that the post-departure information is unavailable if the departing CEO had taken up a better or comparable position. Thus, we classify these cases as forced CEO turnovers. There are two cases where the CEO departure involves a legal dispute. We classify these as forced turnovers. We also classify four cases as forced turnovers where early retirement (under 60 years old for men and 55 for women) is stated as the reason for the CEO departure. As a result, our sample has 620 forced turnovers, or 32.8% of all CEO turnovers in the sample. This proportion is similar to the estimates reported in Chang and Wong (2009) and Cao et al. (2011) for Chinese listed firms (30.98% and 31.01%, respectively).

The voluntary turnover group includes 1,036 cases where the departure reasons are retirement, contract expiring, change in the largest shareholder, resignation, health reasons, personal reasons,³ corporate governance reform, or completion of active duties. For the remaining 852 cases of CEO turnovers, we trace the destinations of the departing CEOs to assess whether the departure is truly forced or not. Indeed, there are 232 turnovers where the departing CEOs assumed a better position, including 65 posts as government officers, 119 as chairman or vice chairman of the company board, and 48 comparable managerial positions in the parent firm or another listed firm. As a result, there are 1,268 CEO turnovers are considered as voluntary, taking up 67.16% of the total sample of CEO turnovers. We report CEO turnover classifications in Table 1.

³ Sometimes personal reason is used as an excuse in CEO turnovers. In order to alleviate the concern, we reclassify personal reasons as an indicator of forced turnovers, and our main results are qualitatively similar.

Table 1 CEO turnover frequencies by departure reasons

Panel A: Reasons for turnover

Reasons for turnover	# of turnovers	Percentage points
1. Voluntary turnover	1,268	67.16
Retirement	46	2.44
Contract expiration	358	18.96
Change in controlling shareholders	8	0.42
Resignation	351	18.59
Health	43	2.28
Personal reasons	136	7.20
Corporate governance reforms	52	2.75
Completion of active duties	42	2.22
Promotion	232	12.29
2. Forced turnover	620	32.84
Demotion	479	25.37
Dismissed	14	0.74
Legal Dispute	2	0.11
Early Retirement	4	0.21
Details not provided	121	6.41
Total number of turnovers	1,888	100.00

Panel B: Frequencies of voluntary and forced CEO turnovers

Year	# of listed	# of firms with voluntary turnover	% of voluntary	# of firms with forced	% of forced turnovers
2008	1,266	177	15.54	105	8.29
2009	1,307	205	16.04	95	7.27
2010	1,348	193	16.55	93	6.90
2011	1,410	239	17.31	93	6.60
2012	1,411	214	17.32	101	7.16
2013	1,404	240	17.24	133	9.47
Total	8,146	1,268	15.57	620	7.61

The table reports the frequencies of CEO turnovers of Chinese listed firms during the period of 2008-2013. The CEO turnovers are categorized by the announced departure reasons. A CEO turnover is categorized as “forced” if it satisfies one of the following conditions: 1) the CEO is fired, forced out, or departed under the board’s decisions; 2) the CEO takes an early retirement, i.e. the departing CEO’s age is less than 60 for males and 55 for females, and the announcement does not report that the CEO dies, leaves due to poor health, or accepts another position outside or within the firm; 3) the CEO “retires,” but leaves office within six months of the retirement announcement. A CEO turnover is defined as “voluntary” if the manager takes a comparable position outside the firm or departs for business reasons that are unrelated to the firm’s activities. We identify three cases as voluntary turnovers in which the tenure of the departing CEO is no more than one year. We also classified four cases of early retirement as forced turnovers.

3.3 Methodology

The econometric specification employed in this paper is derived from a competing-risk model (CRM). The model accounts for the censoring problem embedded in prior

CEO turnover literature⁴. In our CRM model, we set up the turnover probability as a function of the CEO tenure, bank loan intensity, firm performance and other time-specific variables (He et al., 2010; Jenter and Kanaan, 2015). The CRM model is semi-parametric in the sense that we do not impose linearity assumption on the hazard functions. We estimate the sensitivity of a firm's industry-adjusted ROA (*IROA*) to the forced CEO turnovers and voluntary CEO turnovers respectively⁵, and then evaluate how this relation is affected by the firm's bank loan intensity.

Suppose that the departure of CEO i can be either voluntarily or forced. The time to departure t_i and the turnover type j are observable. j is an indicator variable that equals 0 if the CEO stays in his / her position, 1 if there is a voluntary turnover, and 2 if the CEO is forced out. For each type of turnover, there is a latent duration T_j , which is the CEO's tenure before the spell ends via type j . The actual departure date and turnover model can be interpreted as the realizations of random variables T and J , defined as follows:

$$\begin{aligned} T &= \min(T_j, j = 1, 2) \\ J &= \operatorname{argmin}_j(T_j, j = 1, 2) \end{aligned}$$

Hence, the hazard rate for a turnover of type j is defined as:

$$\lambda_j(t) = \lim_{dt \rightarrow 0} \frac{\Pr(t \leq T < t + dt, J = j | T \geq t)}{dt} \quad (1)$$

The overall hazard function is as follows:

$$\lambda(t) = \lambda_1(t) + \lambda_2(t) , \quad (2)$$

where $\lambda_1(t)$ and $\lambda_2(t)$ are the cause-specific hazard functions for voluntary and forced turnover respectively. We further use risk-specific hazard function with the Cox (1972) proportional hazard types. The Cox method flexibly accommodates for the probability of a currently employed CEO's departure over the next year. The CEO turnover is a function of CEO tenure, bank loans, and other control variables. The functional form is as follows:

$$\lambda_{ji}(t | x_{ji}(t), \beta_j) = \lambda_{0j}(t) \exp[x'_{ji}(t) \beta_j], \quad j = 1, 2 \quad (3)$$

where λ_{0j} is the baseline hazard function specific to type j hazard at time t , $x_{ji}(t)$ is a vector of time-dependent covariates for CEO i specific to type j hazard at time t , and β_j is the vector of unknown regression parameters to be estimated. The partial likelihood function for each specific hazard j is given by:

$$L_j(\beta_j) = \prod_{i=1}^{k_j} \frac{\exp[x'_{ji}(t_{ji}) \beta_j]}{\sum_{l \in R(t_{ji})} \exp[x'_{jl}(t_{ji}) \beta_j]} , \quad (4)$$

⁴ Previous studies using logit models to examine the effect of performance on CEO turnover includes (e.g. Huson et al., 2001; Parrino et al., 2003; Ozelge and Saunders, 2012). The logit models in these empirical settings may introduce biased estimates due to the censoring issues (Efron, 1977).

⁵ Jenter and Kanaan (2015) argue that managers are evaluated based on their performance relative to the industry level.

where k_j refers to the number of CEOs in specific hazard j , and $t_{j1} < \Lambda < t_{jk_j}$ denotes the k_j ordered failures of hazard j . $R(t_{ji}) = \{l | t_{jl} \geq t_{ji}\}$ is the set of CEOs that have not left their position at time t_{ji} . The likelihood function for the Cox CRM is:

$$L(\beta_1, \beta_2) = \prod_{j=1}^2 \prod_{i=1}^{k_j} \frac{\exp[x'_{ji}(t_{ji})\beta_j]}{\sum_{l \in R(t_{ji})} \exp[x'_{jl}(t_{ji})\beta_j]} \quad (5)$$

To investigate the sensitivity of CEO turnover to performance and loan intensity, $x_{ji}(t)' \beta_j$ is defined as follows:

$$x_{ji}(t)' \beta_j = \beta_{0j} + \beta_{1j} \text{Loan intensity}_{ji,t} + \beta_{2j} \text{IROA}_{ji,t} + \beta_{3j} \text{Loan intensity} * \text{IROA}_{ji,t} + \beta_{4j} \text{Controls}_{ji,t} + \varepsilon_{i,t} \quad (6)$$

Following Ozelge and Saunders (2012), we use the interaction term between *Loan intensity* and *IROA* to capture the impact of bank loans on the sensitivity of CEO turnover to firm performance. The governance power of lending banks is measured by *Loan intensity*, which is the ratio of total loan outstanding over the borrowing firm's total assets. We also compute the intensity of different types of loans, including the secured (unsecured) loan intensity, measured as the ratio of secured (unsecured) loans outstanding over the borrowing firm's asset (i.e. *secured*, *unsecured*), the short-term (long-term) loan intensity, measured as the ratio of short-term (long-term) loans outstanding over the borrowing firm's asset (i.e. *short-term*, *long-term*). We identify a firm's largest lender of bank loans based on the information disclosed in the firm's top-five largest loan contracts outstanding. A firm's largest lender is further categorized into the *Big Four* (state banks), the joint equity banks, the local state banks (local banks), and foreign banks.

We also include a series of control variable that are documented to be associated with a firm's CEO turnover. We measure firm risks by the stock return volatility over the 12 months before the CEO turnover, i.e. *Stock volatility*. We use the Market-to-Book ratio (*MTB*) to control for growth opportunities. This ratio is measured by market value of equity plus book value of debt over book value of total assets, and the logarithm of total assets to measure firm size. We include the percentage ownership of the largest shareholder, *Largest shareholder*, to control for the conflict of interest between block holders and minority shareholders, which is considered the main governance issue in emerging countries. *Board size* is the number of directors on board, and *Independent director* is the ratio of independent directors on board.

Finally, we control a set of CEO characteristics that are associated with CEO turnovers. *Duality* equals to one if the CEO is also the chairman of the board, 0 otherwise; *Tenure* is the annualized duration for the CEO in the position; *CEO shareholding* is the proportion of the equity held by the CEO; *Education* is a categorical variable from one to five (higher value indicates higher education). All explanatory and control variables are lagged by one year before the CEO turnover, and variable definitions are described in more detail in Appendix 1.

We present the summary statistics of the key variables in Table 2. All financial variables are winsorized at the 1st and 99th percentile. The average loan intensity for China's listed firms is 0.27. The secured loan and short-term loan ratios are 0.20 and 0.16, respectively. These numbers suggest that most bank loans are short-term and

borrowers are required to pledge collaterals to secure loans. More than half of firms borrow primarily from state-owned banks. Only a tiny proportion of listed firms use foreign banks as their main loan providers (0.96%).

Table 2 Summary statistics

Variable	# of	Mean	Std.	Min.	Median	Max.
<i>Loan intensity</i>						
Loan intensity	8,146	0.269	2.308	0.000	0.202	0.877
Secured loan	8,146	0.197	2.267	0.000	0.120	0.794
Unsecured Loan	8,146	0.071	0.346	0.000	0.010	0.499
Short-term loan	8,146	0.155	0.460	0.000	0.107	0.668
Long-term loan	8,146	0.113	2.258	0.000	0.030	0.564
<i>Bank type</i>						
Big Four	6,348	0.561	0.496	0.000	1.000	1.000
Joint Equity	6,348	0.352	0.477	0.000	0.000	1.000
Local	6,348	0.075	0.264	0.000	0.000	1.000
Foreign	6,348	0.100	0.300	0.000	0.000	1.000
<i>Financial variables</i>						
ROA	8,146	0.034	0.206	-0.329	0.033	0.282
IROA	8,146	0.000	0.206	-0.373	0.000	0.251
Stock volatility	8,146	52.188	31.766	0.000	48.384	121.523
Firm Size	8,146	21.726	1.399	18.466	21.635	25.720
MB	8,146	2.393	7.423	0.677	1.533	11.400
<i>Corporate governance</i>						
SOE	8,146	0.339	0.473	0.000	0.000	1.000
Largest	8,146	0.359	0.156	0.087	0.337	0.749
Board size	8,146	2.299	0.964	1.609	2.197	9.000
Independent	8,146	0.364	0.051	0.272	0.333	0.555
<i>CEO characteristics</i>						
Tenure	8,146	3.224	2.667	0.019	2.589	11.372
Education	8,146	3.519	0.808	1.000	4.000	5.000
Duality	8,146	0.149	0.356	0.000	0.000	1.000

This table describes the summary statistics for the key variables. All continuous variables are winsorized at the 1% and the 99% percentile. Variable definitions are in Appendix Table A1.

Figure 1 depicts the relation between CEO tenure and the probability of a firm's CEO turnover, i.e. the estimated survival function using the CRM model. Figure 1A shows that as a CEO's tenure extends, the probability of him / her leaving office increases, and the sharpest rise of CEO turnover comes in year seven, i.e. the hazard ratio of CEO turnover increases by about 56% from year seven to nine. Figures 1B and 1C show that the increase of hazard ratio in forced turnover is steeper than that in voluntary turnover. The hazard ratio for forced CEO turnovers increases from 0.023 to 0.05 (almost doubled) while that for voluntary CEO turnovers increase from 0.06 to 0.09 (up by 50%). Based on these facts, next we examine the factors that result in the differences between the hazard ratios of forced and voluntary CEO turnovers.

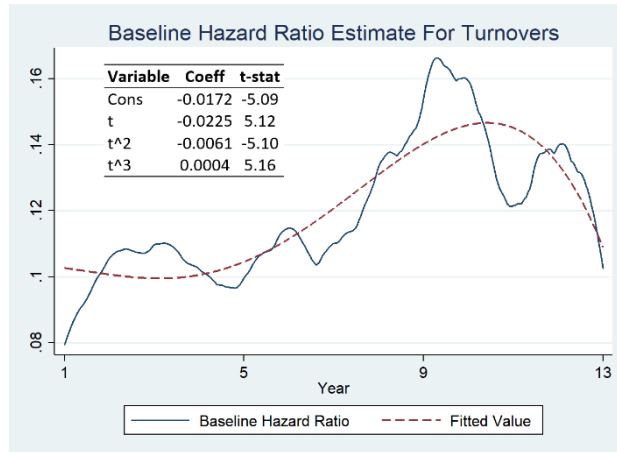


Figure 1A: Estimated hazard functions for overall CEO turnovers

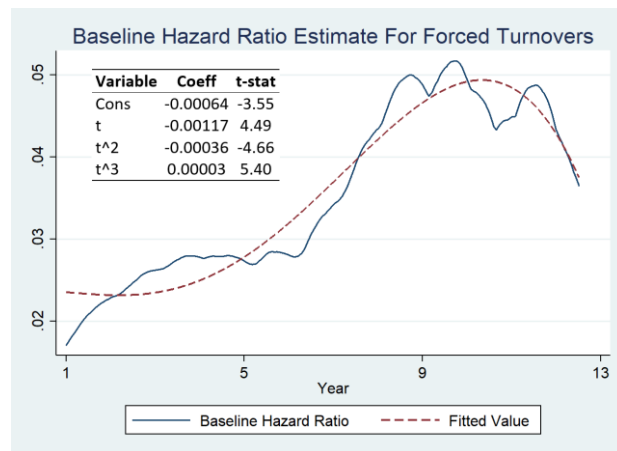


Figure 1B: Estimated hazard functions for forced turnovers

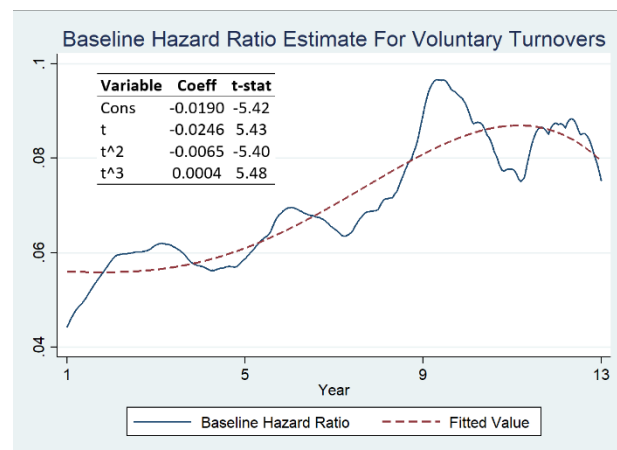


Figure 1C: Estimated hazard function for voluntary turnovers

4. Main Results

4.1 The effects of bank loans on CEO turnovers

We investigate the disciplinary effect of banks on poorly performing borrowers by testing how bank loans affect the sensitivity between firms' profitability and the likelihood of the firms' CEO turnovers. Under the bank discipline hypothesis, higher

loan intensity increases the sensitivity between firm performance and forced CEO turnovers. In our baseline tests, the bank loan intensity is measured with three alternative proxies, the firm's aggregate amount of bank loan ratios, the firm's secured bank loan ratios, and the short-term bank loan ratios. We present the estimation results in Table 3.

All four columns in Table 3 show that a firm's industry-adjusted ROA is negatively associated with the likelihood of forced CEO turnovers⁶, which is consistent with the long empirical studies on the relationship between CEO turnover and firm performance. However, the magnitude of coefficients, *IROA*, increases significantly when we include the *Firm × Bank State-owned* fixed effects into the regressions⁷. Specifically, in column (1), A 1% decrease in *IROA* is associated with a 1.1% higher probability of a forced CEO turnover ($=\exp [(-1.046) \times (-0.01)] - 1$) while in columns (2) - (4) the coefficient of *IROA* has greater magnitude. A 1% decrease in *IROA* is related to a 7.1% higher probability of a forced CEO turnover ($=\exp [(-6.847) \times (-0.01)] - 1$) when the *Firm × Bank State-owned* fixed effects are controlled. These results are closer to the estimates of the turnover-performance sensitivity reported in Jensen and Murphy (1990), which implies that the state ownership reduces the sensitivity between performance and CEO turnovers among Chinese listed firms.

In addition, in column (1) when *Firm × Bank State-owned FEs* are not controlled, there is no significant influence of bank loan intensity on the relationship between the firm's performance and the likelihood of forced CEO turnovers, which is inconsistent with the finding documented in Ozelge and Saunders (2012). However, when the effects of *Firm × Bank State-owned FEs* are controlled in column (2), the coefficient becomes significantly negative. For firms with an average level of bank loan intensity at 26.9%, a 1% decrease in *IROA* is associated with an 8.5% higher likelihood ($=\exp [(-6.847) \times (-0.01) + (-5.010) \times (-0.01) \times 0.269] - 1$) of forced CEO turnovers. The coefficients have greater magnitude when we use the ratio of secured loans (column 3) and short-term loans (column 4) to measure loan intensity. The results indicate that state ownership of both the banks and the firms weakens the disciplinary effect of bank loan intensity on the replacements of underperforming CEOs. Instead of controlling the fixed effects of *Bank × Firm* state ownership, in unreported tests, we investigate the effects of including only the state ownership of either the bank or the firm. The results show the coefficient of the interaction term, *IROA × Loan Intensity*, remains insignificant. These results suggest that it could be the common state ownership in the lending relationships that contributes to inefficiency of bank loans in disciplining forced CEO turnovers.

⁶ Nini, Smith and Sufi (2012) argue that creditors have incentives to monitor the underperforming borrowers even if the borrowers are not yet in the state of bankruptcy. Firms still can choose to strategically default and not pay off the debt. Therefore, we follow Ozelge and Saunders (2012) and use industry-adjusted ROA to indicate the borrower's underperformance. As robust tests, we also use firms' bankruptcy risk, measured with Z-score (Altman 1968), in the baseline regressions. The results remain similar (See Appendix Table A1).

⁷ We define the bank's state ownership using the ownership status of the bank that issues the biggest portion of the firm's bank loans (i.e. the lead bank lender or the main bank).

Table 3 The Effects of Bank Loan Intensity on CEO Forced Turnovers

	Forced CEO Turnover			
	Overall (1)	Overall (2)	Secured (3)	Short (4)
IROA	-1.031*** (-4.142)	-6.847*** (-6.372)	-6.919*** (-6.412)	-7.063*** (-6.547)
Loan Intensity	0.005 (0.881)	1.176*** (3.269)	1.121*** (2.963)	1.226*** (2.645)
IROA × Loan Intensity	-0.010 (-1.513)	-5.010** (-2.359)	-6.363*** (-2.754)	-6.008** (-2.235)
Stock Volatility	0.003** (2.299)	0.003** (2.314)	0.004 (0.982)	0.004 (1.071)
Firm Size	-0.195*** (-4.226)	-0.179*** (-3.902)	-0.224*** (-2.996)	-0.226*** (-2.986)
Market to Book Ratio	-0.015 (-1.558)	-0.014 (-1.507)	-0.107* (-1.794)	-0.111* (-1.836)
Largest Shareholder	0.494 (1.489)	0.511 (1.541)	0.710* (1.717)	0.678 (1.640)
Board Size	-0.014 (-0.300)	-0.013 (-0.290)	-0.041 (-0.639)	-0.043 (-0.671)
Independent Director	0.716 (0.800)	0.706 (0.787)	0.950 (0.931)	0.905 (0.884)
Duality	-0.101 (-0.764)	-0.132 (-0.711)	-0.064 (-0.382)	-0.056 (-0.338)
Education	0.104* (1.797)	0.116 (1.042)	0.108 (1.464)	0.103 (1.412)
Firm × Bank State-owned FE	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	8,140	6148	6148	6148
Log Likelihood	-4853.67	-3711.29	-3709.64	-3710.76

This table reports the estimates about the effects of bank loan intensity on the likelihood of an underperforming firm replacing its managers. The model follows Ozelge and Saunders (2012) using the standard Cox CRM model. Column (1) reports the results without controlling for the bank and the borrowing firm's state ownership. Column (2) reports the results controlling for the firm × bank state ownership. Column (3) reports the estimates about the fraction of secured loans. Column (4) reports the estimates about the fraction of short-term loans. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled in all four columns. Firm × Bank state ownership is controlled in columns (2) - (4). The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

In comparison, we examine whether bank loan intensity would affect the relations between firm performance and voluntary CEO turnovers. The results are presented in Appendix Table A2. Not surprisingly, the coefficients of the interaction term, *IROA* × *Loan Intensity*, is insignificant even when the *Firm* × *Bank State-owned* fixed effects are included. In addition, the sensitivity between voluntary CEO turnovers and bank loan intensity is significantly weaker than that of forced CEO turnovers⁸. Therefore, it

⁸ Ozelge and Saunders (2012) apply logit models to estimate the effects of bank loan intensity. This specification may lead to biased estimates due to the censoring problem argued in Efron

seems that bank loan intensity could effectively discipline the governance of underperforming borrowers, while in China, such effects may be compromised by the state ownership of both the lending banks and the borrowing firms.

4.2 The role of common state ownership

In order to investigate whether it is the common state ownership that contributes to the inefficiency of bank loans disciplining forced CEO turnovers, we check the identity of the ultimate controller for both the lending banks and the borrowing firms. For those that are ultimately owned by the same government, either the central government or the local government, we define that the parties in the lending relationship share common state ownership. The estimates about the effects of common state ownership on the relationship between loan intensity and forced CEO turnovers are presented in Table 4.

The results in Table 4 show that after controlling for the common state ownership in the lending relationship, the coefficient of the interaction term $IROA \times Loan\ Intensity$ becomes significantly negative. Also, the coefficient of the interaction term, $IROA \times Loan\ Intensity \times Common\ State\ Ownership$, is significantly positive, which reduces the magnitude of the coefficient, $IROA \times Loan\ Intensity$. These results are consistent with the argument that common state ownership weakens the banks' motives to monitor the underperforming firms. These results suggest that the common state ownership could be the reason that contributes the inefficiency of bank monitoring.

In column (2), when bank loans are measured with the ratio of secured loans, it is shown that the effect of common state ownership is less significant, both economically and statistically. It is likely that when bank loans are secured with collateralized assets, banks are less worried about borrowers' default risk because they can claim the assets once the default occurs. Therefore, the lending banks would have smaller monitoring incentives. In column (3), the coefficient of the triple interaction term is economically greater when firms' loan intensity is measured with short-term loans. It is possible that when lending relationships are plagued with common state ownership, short-term loans are less effective disciplining the underperforming borrowers. Controlling the common state ownership helps estimates the disciplinary effect that short-term loans should have on replacing the underperforming CEOs.

(1977). In this paper, we use the standard competing risk model to do the estimations. In Appendix Table A3, we conduct the estimations using the multinomial logit models. The results are very similar.

Table 4 The Effect of Common State Ownership on CEO Forced Turnovers

	Forced CEO Turnover		
	Overall (1)	Secured (2)	Short (3)
IROA	-	-	-4.834***
	(-4.105)	(-3.617)	(-3.286)
Loan Intensity	1.135	1.200	1.267
	(1.605)	(.521)	(1.010)
IROA × Loan Intensity	-9.330**	-	-11.585**
	(-2.434)	(-2.308)	(-1.992)
IROA × Loan Intensity × Common State	5.665**	3.667*	7.989**
	(1.997)	(1.821)	(1.978)
Common State Ownership	2.350	9.691	7.700
	(0.387)	(1.482)	(0.891)
IROA × Common State Ownership	6.299**	4.824*	11.992***
	(2.385)	(1.924)	(2.845)
Loan Intensity × Common State Ownership	5.956	5.003	4.346
	(1.135)	(1.310)	(0.997)
SOE Borrower	0.124	-0.053	-0.056
	(1.157)	(-0.422)	(-0.476)
State-owned Banks	-0.598	0.045	-0.686
	(-1.234)	(0.131)	(-1.326)
Stock Volatility	0.003	0.002	0.003
	(1.490)	(0.771)	(1.564)
Firm Size	-	-	-0.180***
	(-3.066)	(-3.077)	(-2.853)
Market to Book Ratio	-0.007	-0.006	-0.005
	(-0.665)	(-0.612)	(-0.505)
Largest Shareholder	0.897**	0.919**	0.887**
	(2.414)	(2.464)	(2.387)
Board Size	-0.022	-0.024	-0.028
	(-0.378)	(-0.409)	(-0.465)
Independent Director	0.377	0.449	0.307
	(0.390)	(0.462)	(0.314)
Duality	-0.088	-0.071	-0.109
	(-0.563)	(-0.452)	(-0.682)
Education	0.066	0.063	0.073
	(0.961)	(0.922)	(1.062)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	6148	6148	6148
Log Likelihood	-3787.81	-3778.95	-3784.39

This table reports the results about the effect of common state ownership on the sensitivity between bank loan intensity and CEO forced turnovers. The model follows the same specification as in Table 3, except that we include the variable, *Common State Ownership*, and its interactions with the main independent variables, *IROA* and *Loan Intensity*. *Common State Ownership* is an indicator of 1 if the lending bank and the borrowing firm share the same government as the ultimate shareholder. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled in all columns. The standard errors of coefficients are

clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

Another interesting result in Table 4 is that, the interaction term, $IROA \times Common\ State\ Ownership$, has significantly positive coefficient, which cancels out the negative relation between firm performance, $IROA$, and forced CEO turnovers, suggesting that there might be alternative channels beyond bank discipline through which common state ownership affect forced CEO turnovers. These results are in line with the argument for the results in Table 3 that, the state ownership of both the firm and the bank weakens the sensitivity between firm performance and forced CEO turnovers (see columns (1) and (2) in Table 3). The results in Table 4 make it more clear that it is the *common* state ownership that weakens the sensitivity.

4.3 Common ownership and different types of lending banks

Considering the diverse types of the commercial banks in China, we examine the identity of banks in the lending relationships and examine their monitoring effects upon the firms with common ownership. For each firm, we identify as the lead bank lender the bank that accounts for the largest portion of the firm's bank loans. The lead banks are classified into four types: the *Big Four* Banks, the local state banks, the joint-equity banks, and the foreign banks. The firms are classified by whether they share common ownership with the lead bank lender. We attempt to find out which combinations of the banks and the firms make efficient monitoring and which do not. If banks efficiently monitor the underperforming borrowers, it is expected that when the bank loan intensity would increase the sensitivity between firm performance and the likelihood of forced CEO turnovers.

The estimates about the effect of different types of bank lenders on forcing out the underperforming CEOs are presented in Table 5. The firms that do not have a lead bank lender are considered as the benchmark in the regressions.⁹ Column (1) shows that for firms that do not share common ownership with the lead banks, the sensitivity between firm performance ($IROA$) and the likelihood of forced CEO turnovers is greater than that of the firms with common ownership with the lead banks, both statistically as well as economically, which suggests that for firms with common ownership, the turnover decisions of CEOs depend less on the firm's profitability.

Interestingly, column (1) shows that for firms that do not share common ownership with the lead bank, higher bank loan intensity significantly increases the sensitivity of the turnover-performance relationship, irrespective of the lead bank's state ownership, while in column (2), such incremental effects become less significant, both statistically and economically. More precisely, for firms under common ownership with the leading bank, the discipline of bank loans on forced CEO turnovers becomes insignificant when the lead bank is state-owned (either the *Big Four* banks or the local state-owned banks). Even though the disciplinary effect of bank loans holds significant when the lead bank is a joint-equity bank or a foreign bank, the

⁹ A firm may not have a lead bank lender either because the firm has zero bank loans, or because the firm's bank loans are evenly from different types of banks, which makes it difficult to identify the type of the lead bank.

disciplinary power is still undercut by more than half if the firm and the bank are controlled by the same ultimate owner. The results imply that it is the common ownership, rather than simply state ownership, that weakens the monitoring effect of bank loans. In other words, the findings in Table 5 suggest that although state-owned banks less monitor the borrowers with common state ownership, they seem to be actively monitoring those without common state ownership. Also, the non-state-owned banks are actively monitoring the underperforming borrowers, while they appear to be less active if the borrower and the bank are under common ownership. These results extend our understanding about the inefficient bank discipline in China.

Table 5 Common Ownership and Different Types of Lending Banks

Forced CEO Turnover		
Common Ownership	No	Yes
	(1)	(2)
IROA	-0.741*** (-3.661)	-0.482* (-1.717)
Big Four bank × IROA	-0.053* (-1.823)	0.289 (0.298)
Joint-equity bank × IROA	-0.667*** (-2.836)	-0.259** (-2.264)
Local bank × IROA	-0.101* (-1.739)	0.109 (0.265)
Foreign bank × IROA	-0.036** (-2.223)	-0.013* (-1.667)
Big Four bank	-0.142 (-0.536)	0.409 (1.141)
Joint-equity bank	0.135* (1.843)	0.063 (1.234)
Local bank	-0.235 (-0.846)	0.588 (0.707)
Foreign bank	0.036 (1.058)	0.002 (0.237)
Stock volatility	0.002** (2.265)	0.005*** (2.875)
Firm size	-0.172*** (-2.660)	- (-2.817)
Market to book ratio	-0.009 (-0.904)	-0.167 (-1.440)
Largest shareholder	0.608 (1.330)	0.955* (1.647)
Board size	-0.387 (-1.234)	-0.034 (-0.435)
Independent director	0.911 (0.707)	2.206 (1.254)
Duality	-0.032 (-0.181)	0.251 (0.884)
Education	0.047	0.183

	(0.551)	(1.491)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	2020	4128
<u>Log Likelihood</u>	<u>-2265.72</u>	<u>-1030.95</u>

This table reports the results about the effect of loan intensity on CEO forced turnovers when the lead bank lender is of different types of ownership. Column (1) includes borrowers that do not share common ownership with the firms' lead bank lender. Column (2) includes borrowers that do. For each firm, we identify as the lead bank lender the bank that issues the largest amount of loans, and the bank types include the Big Four, the joint-equity banks, the local-state owned banks, and the foreign banks. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled in all columns. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

It is important to point out that although we pin down common ownership as the real source of the inefficiency in bank monitoring, we do not reject the findings in prior studies that overall the bank relationship involved with state ownership is less efficient than that without state ownership (Bailey et al. 2011). For example, we show in column (2) that when the firm's lead bank is a joint-equity bank which does not share common ownership, higher bank loan intensity still significantly improves the forced turnover-performance sensitivity, although to a less extent than when they do not share common ownership. To test the *overall* effect of state ownership, we present in Appendix Table A4 and A5 respectively on the effect of bank loan intensity for different types of firms and banks. The results show that the monitoring effect of bank loans is significant when the lender is a joint-equity or a foreign bank, or when the borrower is a non-SOE, but insignificant when either the bank or the firm is state-owned, consistent with the prior research on the inefficiency of bank monitoring in China.

One may concern about the measure of firms' performance. From the perspective of the banks, the firms' bankruptcy risk is far more important than bad performance. In our paper, we show that the disciplinary effects of bank loans increase with the firm's profitability getting more below the industry average, which is consistent with the idea by Nini, Smith and Sufi (2012) that creditors would actively monitor the borrowers well outside of payment default states. Intuitively, using firms' bankruptcy risk in place of industry-adjusted profitability would only reinforce our argument about the disciplinary effect of bank loans. We use bankruptcy risk¹⁰ as the alternative of firm performance and present the results in Appendix Table A6. As expected, the effects of bank loans become even more pronounced for the firms with high probability of default.

5. Mechanisms

5.1 Bankers in the boardroom

¹⁰ A firm's bankruptcy risk is measured with the Z score (Altman 1968) and the O score (Ohlson 1980) following Hillegeist et al (2004). A firm is likely to go bankrupt if the Z-score is below 0.8 or the O-score is below 2.8.

We next examine the channel through which common state ownership weakens the monitoring efforts of banks over underperforming borrowers. Kaplan and Minton (1994) argue that banks play an important monitoring and disciplinary role in corporate governance. They find among Japanese firms that appointments of bank directors on the board are more likely among the firms with poor stock performance and earnings losses. However, He et al (2016) document that in China, bankers appointed on the board are normally followed with declines in the firms' operating performance as well as market reactions. They argue that bank directors can be the channel through which corporate insiders expropriate financial resources instead of creating firm value.

To examine whether, for the firms of common ownership, recruiting a banker in the boardroom may either save the firm from the discipline of bank loans or expose the firm to greater monitoring of the bank. We check the professional background of the firms' board directors. The dummy, *Bank Director*, is equal to one if at least one of the board directors used to work for the bank that issues loans to the firm. The results are presented in Table 6. The coefficients of the triple interaction term, $IROA \times Loan Intensity \times Bank Director$, are significantly positive, which essentially cancels out the negative relations between *IROA* and the likelihood of forced CEO turnovers. The results are consistent with He et al (2016) that in China where the insider expropriation issues are severe, bankers on the underperforming borrowers' board tend to weaken the governance role of the lending banks. Therefore, it is possible that banker appointments on the underperforming borrower's board can be the channel through which common ownership weakens the monitoring and disciplinary effect of the lending banks.

Table 6 Bankers in the Boardroom

	Forced CEO Turnover		
	Overall (1)	Secured (2)	Short (3)
IROA	-5.985*** (-7.386)	-5.438*** (-6.894)	-5.451*** (-6.512)
Loan Intensity	1.296*** (5.033)	1.275*** (4.478)	1.467*** (4.187)
IROA \times Loan Intensity	-0.632 (-0.531)	-1.191 (-0.895)	-0.196 (-0.122)
IROA \times Loan Intensity \times Bank	5.885** (2.535)	5.345** (2.081)	6.133* (1.651)
Bank Director	0.577*** (4.748)	0.597*** (4.921)	0.580*** (4.729)
IROA \times Bank Director	2.786*** (3.687)	2.615* (1.782)	3.262* (1.932)
Loan Intensity \times Bank Director	0.216 (0.412)	0.798* (1.792)	-6.388 (-0.792)
SOE Borrower	0.116 (1.034)	-0.023 (-0.425)	-0.081 (-0.491)

State-owned Banks	-0.528 (-1.051)	0.065 (0.133)	-0.667 (-1.328)
Stock volatility	0.002 (1.504)	0.002 (1.414)	0.002 (1.552)
Firm size	-0.219*** (-4.764)	-0.206*** (-4.428)	-0.210*** (-4.433)
Market to book ratio	-0.011 (-1.080)	-0.010 (-0.979)	-0.009 (-0.923)
Largest shareholder	0.059 (0.554)	0.074 (0.685)	0.054 (0.505)
Board size	0.939*** (2.919)	0.895*** (2.772)	0.942*** (2.916)
Independent director	0.037 (1.237)	0.029 (0.934)	0.037 (1.221)
Duality	-1.165 (-1.381)	-1.128 (-1.336)	-1.165 (-1.380)
Education	0.138 (1.064)	0.102 (0.786)	0.139 (1.075)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	4128	4128	4128
Log Likelihood	-5645.35	-5639.85	-5644.81

Among the bank relationships under common ownership, this table reports the estimates about the effect of bank loan intensity on CEO forced turnovers when the borrowing firms' board has at least one director appointed by the lending banks (a dummy named *Bank Director*). Column (1) measures loan intensity using the overall amount of loans. Column (2) measures loan intensity using the amount of secured loans over total assets. Column (3) measures loan intensity using the amount of short-term loans. All other variable definitions are in Appendix 1. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

5.2 Borrowers' shareholdings of the lending banks

The ownership structure of banks can also affect the efficiency in capital allocation. Taboada (2011) argues that in countries with higher levels of corruption, more domestic blockholder ownership of banks negatively affect the efficiency in credit allocations. Following this spirit, we test, among the listed firm in China where the institutional environment is less well-developed, whether the inefficient monitoring of banks results from the fact that the lending banks are essentially owned by the borrowing firms. We use an indicator of one if at least one of the firm's lending banks have equity shares controlled by the borrowing firms. The estimates about the role of owning banks' share are presented in Table 7.

The results show that, after controlling for firms' investment in the lending banks' equity shares, bank loan intensity significantly increases the sensitivity between firm performance and forced CEO turnovers (See the negative coefficients of $IROA \times Loan Intensity$ in Table 7). The coefficients of the triple interaction term, $IROA \times Loan Intensity \times Bank Investment$, are significantly positive, which suggest that owning the equity voting shares of the lending banks can help the underperforming borrowers less monitored by the lending banks. As a consequence, the incompetent CEOs are less

likely to be forced out. In addition, the coefficients of the interaction term, $IROA \times Bank\ Investment$, are positive, which also weakens the sensitivity between firm performance and forced CEO turnovers. The results indicate that there might be alternative channels through which the underperforming firms get away with bank monitoring. Being an owner of the lending bank overall weakens the firm's corporate governance. Note that these results appear inconsistent with Wang et al (2020) that bank ownership improved the corporate governance of borrowing firms, probably because in our setting, we test the disciplinary effect of bank loans particularly on firms under common ownership with the banks. It might be the common ownership of banks that explain the inefficient bank discipline over the underperforming firms.

Table 7 Borrowers' Ownership in the Lending Banks

	Forced CEO Turnover		
	Overall (1)	Secured (2)	Short (3)
IROA	-6.223*** (-4.764)	-5.886*** (-4.464)	-5.837*** (-4.344)
Loan Intensity	1.032*** (3.483)	0.963*** (2.989)	1.274*** (3.247)
IROA \times Loan Intensity	-6.238* (-1.761)	-8.490** (-2.069)	-6.127 (-1.530)
IROA \times Loan Intensity \times Bank	6.266* (1.906)	8.232** (1.965)	10.337** (2.180)
Bank Investment	0.673 (1.081)	0.749 (1.471)	1.233 (1.038)
IROA \times Bank Investment	0.878*** (4.679)	0.876*** (4.647)	0.881*** (4.655)
Loan Intensity \times Bank Investment	9.538 (1.396)	-5.547 (-0.595)	-5.716 (-0.431)
SOE Borrower	0.114 (1.127)	-0.046 (-0.475)	-0.080 (-0.496)
State-owned Banks	-0.528 (-1.144)	0.067 (0.143)	-0.656 (-1.301)
Stock volatility	0.002 (1.382)	0.002 (1.237)	0.003* (1.679)
Firm size	-0.222*** (-3.781)	-0.224*** (-3.818)	-0.216*** (-3.513)
Market to book ratio	-0.009 (-0.951)	-0.009 (-0.933)	-0.008 (-0.834)
Largest shareholder	0.042 (0.325)	0.030 (0.236)	0.043 (0.340)
Board size	1.073*** (2.931)	1.042*** (2.849)	1.053*** (2.863)
Independent director	0.037 (0.622)	0.041 (0.675)	0.047 (0.743)
Duality	-0.673	-0.629	-0.639

	(-0.671)	(-0.626)	(-0.637)
Education	-0.161	-0.130	-0.158
	(-1.065)	(-0.858)	(-1.051)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	4128	4128	4128
Log Likelihood	-3976.89	-3973.76	-3975.84

Among the bank relationships under common ownership, this table reports the estimates about the effect of bank loan intensity on CEO forced turnovers when the borrowing firm is among the top ten shareholders with at least 5% ownership of the lending banks (a dummy named *Bank Investment*). Column (1) measures loan intensity using the overall amount of loans. Column (2) measures loan intensity using the amount of secured loans over total assets. Column (3) measures loan intensity using the amount of short-term loans. All other variable definitions are in Appendix 1. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

5.3 Borrowers' political connections

It has been widely acknowledged in prior studies that state ownership is closely associated with government-related benefits, where political connections help firms to attain key resources such as bank loans, tax benefits and IPO (Claessens et al 2008; Piotrovski and Zhang 2012). Sapienza (2004) argues that the lending behavior of state-owned banks is affected by the political connections of the firms in the local area. The stronger the political party in the area where the firm is borrowing, the lower the interest rates charged and state-owned banks charge lower interest rates than do privately owned banks, even if firms are able to borrow more from privately owned banks. To evaluate if the firms' political connections is the mechanism through which the underperforming manager get away with the monitoring of lending banks, we investigate the job experience of the manager. A manager is considered politically connected if she worked at a government agency. Among the firms with common ownership with their lending banks, we interact this indicator with the firm's bank loan intensity and investigate whether it would weaken the disciplinary effect of bank loans.

The estimates about the role of CEO's political connections are shown in Table 8. The results in column (1) suggest that political connections would not only weaken the sensitivity between firm performance and the likelihood of forced CEO turnovers, but also weaken the disciplinary effect of bank loan intensity on the replacement of underperforming CEOs (the coefficient of the interaction term, $IROA \times Loan Intensity \times Political Connection$, is positively significant at 0.634). Interestingly, in columns (2) and (3), the coefficients of the triple interaction term are not significant, suggesting that secured loans and short-term loans may be effective at disciplining the governance of the under-performing firms. As suggested by the significantly negative coefficients of $IROA \times Loan Intensity$ in columns (2) and (3), higher ratios of secured loans and short-term loans increase the sensitivity between firm performance and the likelihood of forced CEO turnovers, which is consistent with the argument that collateralization and frequent needs of debt refinancing would incentivize the borrowers to better discipline themselves under greater pressure of payment default (Boot et al 1991; Boot and Thakor 1994; Diamond 2004; Graham et al, 2008; Freixas

and Rochet 2008). However, the insignificance of the triple interaction term, $IROA \times Loan\ Intensity \times Political\ Connection$, in columns (2) and (3) imply that the disciplinary effect of loan collateralization and short loan maturity may be cancelled out by the effect of the managers' political connections. Therefore, the results in Table 8 indicate that the manager's political connections can partly explain the channel through which common ownership weaken the disciplinary effect of bank loans. These results also explain the baseline results that bank monitoring is less efficient when the borrowers are loaded with secured loans and short-term loans (see columns 2 and 3 in Table 4).

Table 8 Borrowers' Political Connections

	Forced CEO Turnover		
	Overall (1)	Secured (2)	Short (3)
IROA	-1.371*** (-3.620)	-1.961*** (-4.380)	-1.748*** (-5.148)
Loan Intensity	0.005 (0.961)	-0.007 (-0.905)	0.498*** (4.999)
IROA \times Loan Intensity	-0.005 (-0.302)	-0.395* (-1.686)	-0.128*** (-3.348)
IROA \times Loan Intensity \times Political	0.634*** (3.808)	0.002 (0.086)	0.011 (0.106)
Political Connection	-0.517*** (-3.459)	-0.507*** (-3.384)	-0.511*** (-3.424)
IROA \times Political Connection	0.381*** (2.838)	0.002 (0.086)	0.011 (0.106)
Loan Intensity \times Political Connection	-0.038 (-0.169)	-0.018 (-0.299)	0.151 (0.234)
SOE Borrower	0.115 (1.144)	-0.024 (-0.445)	-0.083 (-0.497)
State-owned Banks	-0.528 (-1.021)	0.067 (0.147)	-0.670 (-1.367)
Stock volatility	0.003** (2.123)	0.003** (2.425)	0.003** (2.359)
Firm size	-0.198*** (-4.776)	-0.203*** (-5.090)	-0.186*** (-4.529)
Market to book ratio	-0.068 (-1.200)	-0.157*** (-2.865)	-0.176*** (-3.470)
Largest shareholder	-0.013 (-1.567)	-0.017 (-1.573)	-0.015 (-1.016)
Board size	0.110 (1.189)	0.089 (0.956)	0.108 (1.172)
Independent director	0.526* (1.823)	0.528* (1.829)	0.569** (1.964)
Duality	-0.011 (-0.240)	-0.012 (-0.267)	-0.011 (-0.252)
Education	0.913	0.802	0.908

	(1.212)	(1.049)	(1.208)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	4128	4128	4128
Log Likelihood	-4825.36	-4818.93	-4813.87

Among the bank relationships under common ownership, this table reports the estimates about the effect of loan intensity on CEO forced turnovers when the borrowing firms' CEOs are politically connected to the government. *Political Connection* is defined as 1 if the CEO used to work for the central or the local governments, 0 otherwise. Column (1) measures loan intensity using the overall amount of loans. Column (2) measures loan intensity using the amount of secured loans over total assets. Column (3) measures loan intensity using the amount of short-term loans. All other variable definitions are in Appendix 1. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

One alternative concern is that managers' political connections can be disrupted by the political turnovers in China. When new politicians take over a region, firms in the region would lose their original personal connections to the government. In this case, the manager's political connections would not save firm from the monitoring from the lending banks. Also, the newly installed politician would have greater incentives to force out the underperforming managers. To examine the validity of this argument, we exclude firm years where there are turnovers of the head of the provincial government and redo the estimations. The results in Appendix Table A7 show that removing the firm years with political turnovers indeed remove the effect of political connections. The coefficients of the interaction term, $IROA \times Loan\ Intensity$, become negative, which strengthens the sensitivity between firm performance and forced CEO turnovers. These results are consistent with Piotrovski and Zhang (2012) that political connections can be a channel through which firms exploit government-related benefits.

6. Robustness

6.1 Instrumental variables

As discussed in Ozelge and Saunders (2012), firms' *Loan Intensity* is endogenously determined. It is possible that CEOs of poor ability choose not to borrow bank loans in order not to be disciplined by banks. Also, there could be other unobservable factors that jointly affect the CEOs' replacement (such as the CEOs' personality). To address these endogeneity concerns, we follow Ozelge and Saunders (2012) and instrument each firm's bank loan intensity with the level of aggregate bank financing conditions in the region. It is reasonable to believe that the aggregate conditions of local bank financing are positively associated with the firm level bank loan intensity, while the aggregate banking market should not affect the firm-specific CEO turnover decisions except through the channel of the firm's own bank loan intensity.

Following Ozelge and Saunders (2012), regional conditions of bank financing is measured by the multiplication between loan demand and loan supply. The loan demand is measured by firms' one-year lagged working capital deficit and capital expenses. The loan supply is measured with the survey data about bankers' attitudes towards the lending conditions in their local region. The three indexes, *BankLoanApprIndex*, *MonPolPercIndex*, and *CashNetSupply* are available in the

CSMAR Survey Database. We use these six alternative measures of instrumental variables multiplying these two set of variables and then conduct 2-Stage Least Square (2SLS) estimations. We run the 2SLS estimations not only for the overall sample, but also respectively for the relationships with common ownership, for the SOEs and non-SOEs. The estimates are presented in Table 9.

Table 9 Instrumental Variables

	Firm Type				
	Full Sample	Non-SOE	SOE	Common Ownership	
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Second Stage</i>					
IROA	-0.376** (-2.18)	-1.645** (-2.103)	-0.342* (-1.710)	-0.086** (-2.071)	-1.060** (2.035)
Loan Intensity	0.795 (1.550)	0.787* (1.693)	1.233* (1.851)	3.786*** (2.586)	1.324 (1.043)
IROA * Loan Intensity	-0.168 (-0.823)	-4.203** (-1.989)	-0.258 (-1.004)	-9.847** (-1.996)	1.164** (2.466)
Stock volatility	-0.000 (-0.210)	-0.002 (-0.881)	0.001 (0.691)	-0.005 (-1.608)	0.001 (1.021)
Firm size	-0.028 (-1.058)	0.001 (0.033)	-0.080** (-2.265)	0.143** (2.064)	-0.111* (-1.835)
Market-to-book ratio	-0.004 (-0.750)	-0.004 (-0.815)	-0.018 (-0.591)	-0.001 (-0.162)	-0.002 (-0.403)
Largest shareholder	0.234 (1.235)	0.659* (1.924)	0.178 (0.788)	0.327 (1.240)	0.088 (0.238)
Board size	-0.008 (-0.237)	-0.042 (-0.632)	-0.003 (-0.051)	0.026 (0.486)	0.036 (0.714)
Independent director	-0.083 (-0.169)	0.497 (0.582)	-0.264 (-0.443)	-0.356 (-0.533)	-1.026 (-0.959)
Duality	0.002 (0.021)	-0.116 (-1.089)	0.158 (1.364)	-0.072 (-0.607)	0.022 (0.151)
Education	0.006 (0.183)	0.011 (0.230)	-0.013 (-0.274)	-0.005 (-0.113)	-0.105 (-1.396)
Tenure	0.015* (1.726)	0.000 (0.027)	0.026** (2.350)	0.006 (0.510)	0.050*** (2.750)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.112	0.101	0.321	0.176	0.181
Observations	5,248	2,138	3,074	2,433	1,658
<i>Panel B: First Stage</i>					
	Loan Intensity				
CapEx×BankLoanApprIndex	0.123** (2.263)	0.033** (2.162)	0.044** (2.619)	0.028** (2.356)	0.075* (1.791)
CapEx×MonPolPercIndex	0.274** (2.225)	0.013** (2.027)	0.119* (1.724)	0.063** (2.347)	0.207* (1.956)

CapEx×CashNetSupply	3.627** (2.208)	0.027** (2.004)	1.574* (1.717)	0.757** (2.312)	2.840** (1.983)
WC	0.050***	0.051***	0.064***	0.004*	0.043***
Deficit×BankLoanApprIndex	(8.689)	(5.756)	(5.789)	(1.746)	(4.046)
WC	0.118***	0.117***	0.142***	0.008*	0.106***
Deficit×MonPolPercIndex	(9.159)	(5.996)	(5.423)	(1.751)	(4.538)
WC Deficit×CashNetSupply	1.594*** (9.303)	1.588*** (6.078)	1.897*** (5.356)	0.118* (1.833)	1.441*** (4.624)
Stock volatility	-0.000 (-0.191)	0.000 (0.096)	0.000** (2.180)	-0.000 (-0.432)	-0.000 (-0.257)
Firm size	0.018*** (4.804)	-0.002 (-0.197)	0.021*** (7.665)	0.040*** (12.639)	0.025*** (7.459)
Market-to-book ratio	-0.007*** (-8.989)	- (-6.360)	- (-5.780)	- (-3.610)	- (-3.813)
Largest shareholder	-0.100*** (-3.569)	-0.053 (-0.849)	- (-4.430)	- (-3.241)	-0.022 (-0.864)
Board size	-0.001 (-0.282)	-0.005 (-0.543)	-0.001 (-0.311)	0.003 (0.570)	-0.002 (-0.455)
Independent director	0.069 (0.903)	0.180 (1.041)	0.020 (0.380)	-0.074 (-1.164)	0.116 (1.529)
Duality	-0.008 (-0.665)	-0.000 (-0.018)	0.029*** (2.881)	-0.001 (-0.091)	-0.012 (-1.132)
Education	0.003 (0.627)	0.000 (0.009)	0.008** (1.991)	-0.005 (-1.119)	0.011** (2.166)
Tenure	-0.002 (-1.620)	-0.005 (-1.568)	0.001 (1.135)	-0.001 (-1.044)	0.001 (0.687)
Constant	-0.086 (-1.013)	0.280 (1.395)	-0.136** (-2.150)	- (-7.024)	- (-3.760)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
F statistics	17.369	6.844	41.260	15.114	10.732
AR weak instrument test	60.90 (0.000)	26.65 (0.000)	84.10 (0.000)	8.15 (0.000)	9.10 (0.000)
Observations	5,248	2,138	3,074	2,433	1,658

This table reports the estimates of a probit model of forced CEO turnover with instrumental variables. Following Ozelge and Saunders (2012), loan intensity is instrumented by loan demand multiply loan supply. Loan demand is measured by lagged working capital deficit and capital expenses. Loan supply is proxied by *BankLoanApprIndex*, *MonPolPercIndex*, and *CashNetSupply*, which are proxies for bankers' attitudes towards the lending conditions of their local region. Panel A presents the estimates in the second stage and Panel B presents the estimates for the results in the first stage. All other variable definitions are in Appendix 1. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

Panel A of Table 9 presents the results of the second stage estimation and Panel B presents the results of the first stage estimation. The estimates of the first stage regressions in Panel B confirm our notion that the firm level bank loan intensity is positively associated with the regional conditions of bank financing. Specifically, the association is more pronounced when working capital deficit is used as the instrument to proxy for firms' demand for bank financing. These results are consistent with Peterson and Rajan (1994) that firms with more trade credit paid late are more likely in greater demand for bank financing¹¹. In Panel A, the second stage results show similar patterns to the baseline results that the estimated level of bank loan intensity overall do not have significant effects on the performance-forced CEO turnover relationship (column 1), while for the bank relationships of non-SOEs, higher estimated bank loan intensity would increase the sensitivity between firm performance and the likelihood of forced CEO turnovers (column 2). More importantly, the results in columns (4) and (5) show that for the firms without common state ownership, loan intensity significantly increases the performance-forced CEO turnover sensitivity, while for the firms under common state ownership, higher bank loan intensity cancels out the negative relation between IROA and the likelihood of forced CEO turnovers ($-1.060+1.164=0.104$, not statistically different from zero). Overall, these results are consistent with our main argument that it is the common state ownership that wipes out the disciplinary effect of bank loans on the CEO replacement decisions of underperforming firms.

6.2 Firms' bank loan terms following forced CEO turnovers

Do firms enjoy more favorable loan terms when they follow the discipline of the lending banks and force out the underperforming managers? On the one hand, CEO turnovers incur uncertainty to lenders about the new management team, which may increase the firms' borrowing costs (Pan et al. 2018), so the firms may face more stringent terms of bank loans. On the other hand, management uncertainty may be less of a concern in bank relationships where the bank has sufficient knowledge about the operations of the borrowing firm. This might be especially true when the bank relationship is under common ownership. It is possible that when firms force out the underperforming managers it is reasonable for the bank to believe that the borrower's performance may increase in the future. Thus, firms with forced CEO turnovers are more likely to successfully negotiate with the banks and access more lenient terms of borrowing, while for those without forced CEO turnovers, the lending banks may punish the underperforming firms with stricter loan terms.

To empirically answer the question about firms' borrowing conditions subsequent to forced CEO turnovers, we investigate firms' intensity in different types of loans. We examine loan intensity because as suggested in Peterson and Rajan (1994), bank discipline takes effect through the amount of loan issuances rather than through loan pricings. We construct two matched samples of firms and test the implication of CEO replacements for bank loan credits. The treated group includes firms with forced CEO

¹¹ The data is not available for firms' trade credits that are paid late. Instead, we use firms' working capital deficit as the alternative to proxy for firms' demand for bank financing.

turnovers while the control group includes the firms with no CEO turnovers in the same event year with the treated group. The firms in both groups should be in the same industry and are matched based on the log of total assets in the year before the CEO turnover. We measure the three years average of firms' bank loan intensity before and after each turnover event.

We present the changes in bank loan intensity following forced CEO turnovers in Table 10. In Panel A, we report the overall estimates irrespective of the state ownership. It shows that compared with the control group, in the three years following forced CEO turnovers, the treated group has reduced secured loan intensity but increased unsecured loan intensity. Also, the treated group's short-term loan intensity increases. In Panel B, we pin down the identity of firms that encounter these loan term changes.

The results in Panel B suggest that the reduction in secured loans and the increase in unsecured loans are driven by the bank relationships where the lender and the borrower are concurrently controlled by the same local government (columns 2 and 3). Similarly, following forced CEO turnovers, the SOE borrowers in general have significant drops in secured loan intensity while increases in unsecured loan intensity of almost the same magnitude. These results suggest that since the bank relationship is under common state ownership, there is much less uncertainty about the new management team. Therefore, there isn't evidence about tightened loan terms for firms with common state ownership. Instead, it is likely that state-owned banks follow the government's command and issue less strict loan terms after the SOEs fire the underperforming managers.

However, for firms with no common state ownership, there is some evidence that firms have increased intensity in short-term loans, and this effect is more pronounced when the lead lender is a joint-equity bank (column 4). To the extent that shorter loan maturity implies more frequent external monitoring and higher refinancing costs, this result supports Pan, Wang and Weisbach (2018) that due to the borrowers' increased information uncertainty after CEO turnovers, the lenders may issue stricter terms.

Table 10 Firms' bank loan intensity following forced CEO turnovers

Panel A: Loan change around a forced CEO turnover					
	Loan intensity	Secured	Unsecured	Short	Long
Treated	0.105	-0.107	0.212	0.058	0.056
Control	0.087	-0.083	0.171	0.034	0.049
Difference	0.017	-0.025**	0.050***	0.025***	0.007
	(1.485)	(-2.491)	(3.329)	(2.793)	(0.828)

Panel B: Firm types, bank types, and loan change					
	Loan intensity	Secured	Unsecured	Short	Long
	(1)	(2)	(3)	(4)	(5)
Central Common	-0.089	-0.053	-0.044	-0.064	-0.008
	(0.061)	(0.049)	(0.061)	(0.044)	(0.042)

Local Common	-0.170 (0.123)	-0.019** (2.098)	0.014** (2.123)	-0.105 (0.089)	-0.081 (0.084)
No State Common	0.007 (0.040)	0.076 (1.032)	0.034 (0.040)	0.030** (2.029)	-0.039 (0.027)
SOE	0.023 (0.037)	-0.032** (-2.030)	0.031** (2.037)	0.013 (0.027)	-0.013 (0.025)
Joint Equity	0.030 (0.038)	0.031 (0.030)	0.001 (0.038)	0.059** (2.028)	-0.033 (0.026)
Local	0.020 (0.062)	0.001 (0.050)	0.001 (0.062)	-0.006 (0.046)	0.049 (0.043)
Big Four	-0.052 (0.076)	0.076 (0.061)	-0.147 (1.076)	0.039 (0.055)	-0.003 (0.051)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observation	491	490	490	488	488
Adj. R-squared	0.034	0.061	0.077	0.055	0.057

This table reports estimates of firms' changes in bank loan intensity following forced CEO turnovers. The outcome variables are loan intensity, secured loan intensity (*secured*), unsecured loan intensity (*unsecured*), short-term loan intensity (*short*), and long-term loan intensity (*long*). For every firm with forced CEO turnovers ("treated"), we find a firm without a CEO turnover ("control") but the firm has same likelihood of forced CEO turnovers in the same year. We apply the standard CRM to identify the control group. Panel A shows the overall difference between the treated group and the control group. Panel B shows estimates about the difference in bank loan intensity among groups of different state ownerships. *Central (Local) Common* indicates that the bank and the firm are both owned by the central (local) government. *No State Common* indicates that the bank and the firm do not share the same government as the ultimate owner. All variable definitions are in Appendix Table A1. Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

6.3 Firms' information uncertainty following forced CEO turnovers

One may concern that CEO turnovers may lead to increased uncertainty about the competence of the new management and there would be increased uncertainty about the firm's prospect. These uncertainties may increase the firms' borrowing costs (Pan, Wang and Weisbach 2018). For example, Deng et al (2019) examine US firms and find that firms with increased uncertainty would experience worsened bank loan covenants. To examine whether such relations may also occur to firms in China, following Dechow and Dichey (2002), we calculate firms' information uncertainty measured with the accrual estimation errors around CEO turnovers. Panel A of Table 11 presents the t-statistics for the change in information asymmetry from pre-turnover to post-turnover periods. Panel B presents the estimates of the change in information uncertainty specifically for the bank relationships under state ownership.

Table 11 Firms' information uncertainty following forced CEO turnovers

Panel A Change in information uncertainty from pre- to post- turnover periods

	Δ Information uncertainty	
	Mean	Median
Full sample	0.0014	0.0003
Forced	0.0069	0.0037
Voluntary	0.0066	0.0014
Difference (Forced – No turnover)	0.0003 (0.385)	0.0023 (0.757)
Matched	0.0062	0.0024
Difference (Forced - Matched)	0.0007 (0.808)	0.0013 (0.938)

Panel B Change in information uncertainty by state ownership

	Δ Info. Uncertainty		DID in information uncertainty
	Forced	Voluntary	(Forced - Voluntary)
State-owned banks	0.018** (2.399)	0.005 (0.704)	0.017** (2.425)
SOEs	0.012* (1.652)	0.008 (1.335)	0.012* (1.663)
State-owned banks × SOEs	-0.017 (-1.408)	-0.013 (-1.398)	-0.018 (-1.296)
Constant	-0.004 (-0.777)	0.003 (0.649)	-0.010* (-1.845)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adj. R-squared	0.082	0.070	0.093
Observations	429	745	429

This table reports estimates about firms' information uncertainty around CEO turnovers. Following Dechow and Dichev (2002), information uncertainty is measured with the accrual estimation errors. Δ Information Uncertainty is defined as the change of information uncertainty in the one year around CEO turnovers. For every forced CEO turnover ("forced"), we match a firm with a voluntary CEO turnover ("matched"). Student's t-test is implemented to examine if the two mean values are equal, Wilcoxon rank-sum test is implemented to examine if the two median values are equal on unmatched data, and Wilcoxon signed-rank test is implemented to examine if the two the medians are equal on the matched data. The probability of rejecting the equality is reported in parentheses in panel A and the t values are reported in panel B. The standard errors of coefficients are clustered at the firm level. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

In terms of the changes in information uncertainty, Panel A shows insignificant differences between the firms with forced CEO turnovers and those with voluntary CEO turnovers. This result suggests that having forced CEO turnovers do not induce

more information uncertainty than having voluntary CEO turnovers. Panel B shows that for bank relationships under common state ownership, there is no significant change in the firms' information asymmetry. This insignificance should not be surprising because it is possible that when both the bank and the firm are concurrently controlled by the same state government, they are able to have access to more information about the successor of the firm. After all, the upcoming managers ought to be politically appointed by the government. Then, the absence of information uncertainty under common state ownership should not affect the loan covenants.

In addition, there is some evidence that firms would have increased information uncertainty if the lending relationship is between a state-owned and a non-state-owned entity. Specifically, for non-SOE borrowers with forced CEO turnovers, their increases in information uncertainty would be 1.8% more than the increases in SOE borrowers. For non-state-owned banks, the increases in the borrowers' information uncertainty would be 1.2% higher for SOE borrowers than for non-SOEs. One possible explanation of these differences is that, the source of information uncertainty following forced CEO turnovers in China is about the sustainability of bank relationship between state-owned and non-state-owned parties. The forced CEO turnovers may in nature be a disruption to the political connections embedded in the bank relationship, which might be particularly important for the parties operated in the Chinese capital markets.

6.4 Alternative measures of borrowers' performance

This paper uses the industry-adjusted ROA to proxy for firms' underperformance. In Table 5, we show similar results when firms' underperformance is represented by the firms' bankruptcy risk. Following Nini, Smith and Sufi (2012) that creditors would have monitoring incentives even when borrowers are well outside the state of financial distress, we use four alternative measures to define firms' underperformance as the placebo tests, i.e., whether the firm has one-year or two-year consecutively negative ROA, and whether the firm has one-year or two-year consecutively negative stock returns. The results are presented in Table 12.

The estimates in Table 12 show that when firm performance is measured with ROA, for the borrowers with positive ROA (columns 1 and 3), there is no significant relation between firm performance and forced CEO turnovers, and there is no effect of bank loan intensity on this relation either. But for the borrowers with negative ROA (columns 2 and 4), these firms have greater chance of replacing the underperforming CEOs, and such relations become more pronounced when the firm has greater bank loan intensity. The effect of bank loan intensity on the performance – forced CEO turnover sensitivity remains similar when firm's underperformance is represented by stock returns. These results overall confirm the robustness of the baseline results. Note that the disciplinary effect of bank loans on the likelihood of forced CEO turnovers is significant only when the fixed effects of common ownership of the bank and the firm are controlled. In our unreported analysis, the coefficients of the interaction term become insignificant when we do not control for the common ownership in the bank-firm relationships.

Table 12 Alternative Measures of Borrowers' Performance

Performance Measures	Forced CEO Turnover							
	One-year ROA		Two-year ROA		One-year RET		Two-year RET	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Performance	0.445 (1.127)	1.916*** (7.348)	0.319 (0.747)	2.397*** (6.345)	-0.871*** (-3.295)	4.820*** (3.640)	-0.903*** (-3.239)	4.255*** (3.122)
Loan intensity	0.044 (0.649)	0.832*** (4.688)	0.018 (1.112)	0.767*** (2.885)	-0.000 (-0.092)	1.952*** (3.309)	0.000 (0.076)	2.059*** (3.553)
Perf. × Loan Intensity	1.885 (0.725)	0.476*** (2.766)	0.737 (1.224)	0.950** (1.980)	-0.023 (-1.498)	4.594** (1.993)	-0.024 (-1.552)	5.694* (1.934)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Common Ownership FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log Likelihood	-1150.41	-3207.94	-1443.03	-1950.02	-2723.60	-656.89	-2746.49	-642.11
Observations	4,079	4,024	3,976	2,539	5,023	1,126	5,077	1,072

This table reports the estimates of the standard Cox CRM model under forced CEO turnover with alternative measures of the borrowers' performance. Column (1)/(2) includes firms with one-year positive/negative ROA. Column (3)/(4) includes firms with positive/negative ROA in two consecutive years. Column (5)/(6) includes firms with one-year positive/negative annual returns. Column (7)/(8) includes firms with positive/negative annual returns in two consecutive years. All other variable definitions are in Appendix 1. The control variables are the same as the ones included in the baseline regressions (see Table 3). The fixed effects of industry, year, and common state ownership in the lending relationships are controlled. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

7. Conclusion and Discussion

Regarding the role of banks in disciplining underperforming borrowers, the existing literature documents that state ownership would negatively interfere with the efficiency of bank monitoring. This paper extends this literature through the lens of the ownership structure underlying the bank relationship. Specifically, we examine whether common state ownership between the bank and the firm compromise the monitoring mechanism during the lending process.

This paper has four main findings. First, firms' reliance on bank financing increases the sensitivity between firm performance and forced CEO turnovers, but this effect does not hold if the bank and the firm share common state ownership. Second, the weakening effect of common state ownership is more pronounced among the firms

with political connections, with a banker in the boardroom, and with ownership in the banks' equity. Third, the inefficiency induced by common state ownership can be partly offset by strict loan covenants such as short maturity and collateralization. Finally, following forced CEO turnovers, the underperforming borrowers tend to have less stringent loan terms than those without CEO turnovers, suggesting that underperformers may use manager replacements to sustain the borrowing conditions in the bank relationship.

The results in this paper shed light upon a series of issues regarding the efficiency of bank discipline in the capital markets that are deeply intertwined with government interference. For example, besides CEO turnover decisions, would bank discipline also be reflected in firms' other governance-related operations? Using earnings management as one example, we calculate firms' levels of earnings management following Jones (1991) and Dechow et al (1995) and report the estimates of these additional tests in Appendix Table A8. The results show that when firms' realized earnings beat the analyst forecast, bank loans do not seem to have significant influence on firms' earnings management. But when firms perform poorly (i.e., $Meet_exp=0$), bank loan intensity significantly decreases earnings management, which is consistent with the findings using US data by Ahn and Choi (2009). However, these coefficients are significant only when the firms and the banks do not share common state ownership. These results are consistent with the notion that banks have disciplinary motives on the underperforming borrowers, but these motives are reduced under common state ownership.

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Appendix 1 Variable Definitions

This table includes the detailed definitions of key variables in the regression models.

Variable	Definition
Dependent variable	
Forced turnover	Equals 1 if 1) the CEO was dismissed, assigned to a lower position (i.e., demotion), or resigned because of legal dispute; 2) the departing CEO is younger than 60 for males and 55 for females, and the announcement does not report that the CEO died, left due to poor health, or accepted another position elsewhere or within the firm; or 3) the CEO “retires” but leaves the job within six months of the “retirement” announcement. The CEO turnovers in the third group are reclassified as voluntary if the incumbent takes a CEO position in another firm or departs for business reasons that are unrelated to the firm’s activities, 0 otherwise.
Explanatory variables	
Loan Intensity	Bank loan intensity, the ratio of bank loan amount to lagged total assets
Secured (Unsecured)	Proportion of secured (unsecured) loan amount to lagged total assets
Short (Long)	Proportion of short-term (long-term) loan amount to lagged total assets, i.e. (short-/long-term) loans have a maturity less (more) than one year).
IROA	Industry adjusted EBIT over total assets, i.e. (EBIT – industry average of EBIT) / total assets. Industry classifications follows the GTA Database.
SOE Borrower	An indicator of one if the borrowing firm is ultimately owned by a government entity, zero otherwise.
State-owned Banks	An indicator of one if the lead bank lender of the borrowing firm is either a <i>Big-Four</i> bank, or a commercial bank ultimately owned by a local state government, zero otherwise. The lead bank lender is defined as the bank that takes up the biggest

	portion of the firm's bank loans.
Stock volatility	Standard deviation of a firm's daily stock returns (winsorized at the 1% and the 99% level) in the 12 months before CEO turnovers
Firm Size	Natural logarithm of total assets
Leverage	The ratio of total liabilities over total assets
MB	Market-to-Book ratio. Total book value of liabilities plus the market value of equity over the book value of total assets
SOE	Whether the actual controller of the company is a state-owned enterprise or state-owned organization
Largest shareholder	Proportion of equity ownership held by the largest shareholder
Board size	Natural logarithm of number of directors on board
Independent director	Proportion of independent directors on board
Tenure	Annualized duration of CEO in his or her position
Education	Categorical value ranging from 1 to 5; increases with level of education
Duality	Equals 1 if CEO is also chairman of the board, 0 otherwise.

Appendix Tables

Appendix Table A1 CEO Forced Turnovers in Financially Distressed Firms

Using Z-score as an alternative of firm performance, this table reports the estimates about the effects of bank loan intensity on the likelihood of a distressed firm replacing its managers. Firms' financial distress is measured with the Z-score developed by Altman (1968). Column (1) reports the results without controlling for the bank and the borrowing firm's state ownership. Column (2) reports the results controlling for the firm \times bank state ownership. Column (3) reports the estimates about the fraction of secured loans. Column (4) reports the estimates about the fraction of short-term loans. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled in all four columns. Firm \times Bank state ownership is controlled in columns (2) - (4). The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

	CEO Forced Turnover			
	Overall	Overall	Secured	Short
Z score dummy	1.979*** (3.446)	6.563* (1.698)	6.503** (2.425)	-6.409 (-1.068)
Loan intensity	0.005 (0.881)	1.197*** (3.336)	1.119*** (3.083)	1.326*** (2.913)
Z score dummy \times Loan intensity	-0.358 (1.007)	6.814** (1.990)	6.575*** (2.813)	6.077** (2.165)
Stock volatility	0.002** (2.235)	0.005*** (2.785)	0.002 (1.552)	0.006*** (2.795)
Firm size	- 0.172*** (-2.666)	- 0.317*** (-2.837)	- 0.234*** (-3.209)	- 0.295*** (-2.588)

Market-to-book ratio	-0.009 (-0.911)	-0.136 (-1.457)	-0.002 (-0.214)	-0.196 (-1.647)
Largest shareholder	0.608 (1.330)	0.955 (1.047)	0.606 (1.059)	0.802 (1.445)
Board size	-0.387 (-1.584)	-0.012 (-0.435)	-0.322 (-1.555)	-0.027 (-0.360)
Independent director	0.911 (0.707)	2.208 (1.254)	0.839 (0.671)	2.153 (1.253)
Duality	-0.032 (-0.171)	0.251 (0.854)	-0.066 (-0.333)	0.320 (1.210)
Education	0.045 (0.551)	0.183 (1.409)	0.179 (0.699)	0.219 (1.317)
Firm × Bank State-owned FE	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	4,128	2,012	4,128	2,012
Log Likelihood	-2295.32	-1061.13	-2254.18	-1033.25

Appendix Table A2 The Effect of Bank Loan Intensity on CEO Voluntary Turnover

This table reports the estimates of the effects of bank loan intensity on the CEO voluntary turnovers. The effects are estimates using the standard Cox CRM model. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

	CEO Voluntary turnover		
	(1)	(2)	(3)
IROA	-0.403** (-2.015)	-0.392** (-2.119)	-0.369** (-2.040)
Loan intensity	-0.182 (-0.740)	-0.123 (-0.614)	-0.121 (-0.602)
IROA × Loan intensity	0.052 (0.724)	0.029 (0.488)	0.028 (0.472)
Stock volatility	0.000 (0.115)	0.000 (0.333)	0.001 (0.480)
Firm size	- (-6.096)	-0.258*** (-7.265)	-0.249*** (-6.856)
Market-to-Book Ratio	-0.005 (-1.507)	-0.005 (-1.641)	-0.005 (-1.555)
Largest shareholder		1.427*** (5.151)	1.442*** (5.222)
Board size		0.087*** (4.470)	0.087*** (4.458)
Independent director		0.944 (1.334)	0.917 (1.296)
Duality			0.196** (2.070)

Education			-0.005 (-0.104)
Firm × Bank State-owned	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	8,140	8,140	8,140
Log Likelihood	-9981.45	-9948.52	-9945.00

Appendix Table A3 Estimates of multinomial logit model

This table reports the estimates of a multinomial logit model. The model estimates the effects of bank loans on the sensitivity between a firm's performance and CEO turnovers. The logit regressions redo the same tests covered in Tables 3. Columns (1) and (2) examine the different effects of bank loans on forced CEO turnovers vs. voluntary ones. Columns (3)-(6) examine the role of bank loan intensity in SOEs vs. non-SOEs. Columns (7) - (14) examine the effect of bank loan intensity on CEO turnovers when the borrowing firm has different types of lead lending banks. Panel A (B, C) measures loan intensity using the aggregate (secured/short-term) amount of bank loans scaled by the firm's one-year lagged total assets. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

	Full Sample		Firm Types				Bank Type							
	Forced	Voluntary	Non-SOEs		SOEs		Big Four		Joint Equity		Local Bank		Foreign Bank	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Panel A: Loan Intensity														
IROA	-1.263*** (-2.798)	-0.358* (-1.786)	-2.952*** (-3.582)	-0.273 (-1.184)	0.092 (0.146)	-0.523 (-0.823)	-1.197 (-0.800)	-0.899* (-1.652)	-4.021* (-1.915)	0.182 (0.964)	-2.025 (-0.911)	-2.335** (-2.213)	-3.951** (-2.406)	1.952 (1.165)
Loan	0.004 (0.700)	-0.221 (-1.290)	1.198*** (4.181)	-0.074 (-0.531)	0.085 (1.342)	-0.929*** (-2.541)	0.014 (0.480)	-0.547* (-1.750)	0.752* (1.710)	0.182 (0.674)	1.632 (0.978)	0.384 (0.456)	-0.255 (-0.192)	-2.148* (-2.123)
IROA × Loan	-0.033 (-1.741)	0.025 (0.558)	-0.907*** (-2.644)	-0.006 (-0.164)	3.514 (1.428)	3.291 (1.049)	0.691 (0.580)	0.777 (0.723)	-3.144 (-1.232)	0.459 (0.298)	3.973 (1.148)	-1.344 (-0.262)	-5.026* (-1.854)	2.525* (1.959)
Log likelihood	-5494.16		-3636.94		-1802.73		-2193.94		-1266.76		-226.35		-454.83	
Observations	8146		5383		2763		3247		1962		382		657	
Panel B: Secured Loan Intensity														
IROA	-1.914*** (-3.055)	-0.262 (-1.361)	-2.902*** (-3.493)	-0.121 (-0.602)	0.103 (0.171)	-0.495 (-0.781)	-0.854 (-0.685)	-0.813* (-1.746)	-6.006*** (-3.632)	0.087 (0.512)	-3.555** (-2.162)	-1.827 (-1.564)	-4.022** (-2.205)	2.019 (0.969)
Secured	-0.008 (-1.002)	-0.356* (-1.677)	1.331*** (5.030)	-0.184 (-0.807)	0.112 (1.009)	-0.975** (-2.169)	-0.004 (-0.260)	-0.432 (-1.325)	0.833* (1.659)	0.149 (0.448)	1.666 (1.032)	0.518 (0.574)	0.432 (0.462)	-2.434** (-2.177)
IROA × secured	-0.467* (-1.787)	0.410 (1.382)	-0.750** (-2.147)	0.629 (1.734)	4.631 (1.066)	5.264 (0.964)	0.015 (0.027)	0.472 (0.605)	-1.621 (-0.722)	2.194 (1.222)	1.656 (0.550)	-1.911 (-0.309)	-5.132* (-1.703)	4.291 (1.302)
Log likelihood	-5490.54		-3632.01		-1799.83		-2184.27		-1260.57		-224.32		-458.77	
Observations	8146		5383		2763		3347		1962		382		657	
Panel C: Short-term Loan Intensity														
IROA	-1.940*** (-2.802)	-0.317 (-1.513)	-2.931*** (-3.742)	-0.242 (-1.064)	0.162 (0.260)	-0.522 (-0.825)	-1.192 (-0.722)	-0.784 (-1.621)	-4.207* (-1.918)	0.209 (1.119)	0.017 (0.013)	-3.006** (-2.419)	-5.317*** (-2.901)	1.360 (0.903)
Short	0.542*** (2.707)	-0.214 (-1.255)	1.261*** (4.468)	-0.176 (-1.000)	1.819*** (3.429)	-0.522 (-0.949)	0.981*** (2.781)	-0.402 (-1.068)	0.805 (1.634)	0.170 (0.595)	1.026 (0.489)	-0.086 (-0.085)	0.346 (0.359)	-1.515 (-1.257)
IROA × Short	-0.133** (-2.322)	0.033 (0.667)	-0.891** (-2.296)	0.018 (0.385)	0.743** (2.233)	2.546 (0.693)	0.249 (1.098)	1.022 (1.069)	-3.274 (-1.310)	-1.554 (-0.524)	7.134* (1.825)	0.939 (0.173)	-4.778** (-2.092)	2.131 (1.391)

Log likelihood	-5488.85	-3635.96	-1797.29	-2189.17	-1265.46	-224.43	-451.94
Observations	8146	5383	2763	3347	1962	382	657

Appendix Table A4 Banks of different state ownerships

This table reports the estimates of the effect of bank loan intensity in subsamples by the types of the firm's lead lending bank. Firms' lead lending bank is defined as the bank corporation with the largest fraction of bank loans issued to the borrowing firm. Column (1) shows the estimates for the firms whose lead lender is the *Big Four*. Column (2) shows the estimates if the main lenders are joint-equity banks (*Joint*). Similarly, it is the local state banks (*Local*) and foreign banks (*Foreign*) in columns (3) and (4). All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

Overall Loan	Forced CEO Turnover			
	Big Four (1)	Joint (2)	Local (3)	Foreign (4)
IROA	-6.513*** (-5.895)	-7.229*** (-4.226)	-9.270 (-1.629)	-4.106*** (-2.980)
Loan Intensity	-0.004 (-0.754)	0.332 (0.686)	1.582 (0.654)	-1.133 (-1.109)
IROA × Loan Intensity	-0.026 (-0.480)	-3.551** (-2.090)	1.935 (0.369)	-3.985* (-1.803)
Stock volatility	0.002 (0.615)	0.002 (0.937)	0.017* (1.710)	0.019*** (3.474)
Firm size	-0.128* (-1.840)	-0.105 (-0.821)	0.248 (0.789)	-0.338** (-2.259)
Market-to-Book Ratio	0.004 (0.382)	-0.086 (-1.265)	0.127*** (3.189)	-0.300** (-2.357)
SOE	0.182 (0.993)	0.067 (0.282)	-0.871 (-1.235)	-0.851** (-2.498)
Largest shareholder	1.348*** (2.593)	0.159 (0.251)	-3.152 (-1.508)	1.680* (1.946)
Board size	-0.042 (-0.410)	-0.004 (-0.040)	0.045 (0.222)	-0.243 (-1.420)
Independent director	0.027 (0.018)	0.362 (0.188)	1.369 (0.340)	-1.514 (-0.488)
Duality	-0.106 (-0.475)	0.293 (1.126)	0.040 (0.041)	-0.414 (-1.205)
Education	0.119 (1.198)	0.018 (0.142)	1.023 (1.562)	-0.108 (-0.594)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	3,345	1,960	381	657
Log likelihood	-1652.07	-860.93	-113.01	-476.62

Appendix Table A5 Borrowers of different state ownerships

This table reports the estimates of the effect of bank loans in state-owned enterprises (SOEs) vs. non-SOEs. All variable definitions are described in Appendix Table A1. Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

	Forced CEO Turnover	
	Non-SOEs (1)	SOEs (2)
IROA	-1.145*** (-4.977)	-0.439 (-0.358)
Loan intensity	0.339*** (3.841)	-0.010 (-1.458)
IROA × Loan	-0.138*** (-2.921)	-0.139 (-0.639)
Stock volatility	0.005*** (3.196)	0.002 (0.925)
Firm size	-0.186*** (-3.394)	-0.220*** (-2.776)
Market-to-Book	-0.016 (-1.516)	-0.066 (-0.828)
Largest shareholder	1.023** (1.994)	0.250 (0.593)
Board size	0.040 (0.823)	-0.150 (-1.040)
Independent director	2.424* (1.654)	-0.628 (-0.565)
Duality	-0.233 (-1.482)	0.255 (1.099)
Education	0.084 (1.199)	0.096 (0.939)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	5,378	2,762
Log Likelihood	-2920.38	-1494.25

Appendix Table A6 Common Ownership and Different Types of Lead Bank Lenders

This table reports the results about the effect of loan intensity on CEO forced turnovers when the lead bank lender is of different types of state ownership. Columns (1) and (3) include borrowers that do not share common ownership with the firms' lead bank. Columns (2) and (4) include borrowers that do. *Bankruptcy Risk*, is an indicator of one if a firm is highly probable to default. A firm's bankruptcy risk is measured with the Z score (Altman 1968) and also the O score (Ohlson 1980) following Hillegeist et al (2004). A firm is likely to go bankrupt if the Z-score is below 0.8 or the O-score is below 2.8. All variable definitions are described in Appendix Table

A1. Year and industry fixed effects are controlled in all columns. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

Measure of Bankruptcy Risk	Forced CEO Turnover			
	Z-Score		O-Score	
	No	Yes	No	Yes
Common Ownership	(1)	(2)	(3)	(4)
Bankruptcy risk	0.979*** (3.446)	0.563* (1.698)	0.503** (2.425)	0.409* (1.680)
Big Four bank × Bankruptcy risk	0.069** (2.165)	-0.290 (-0.253)	0.045** (2.166)	-0.031 (-0.044)
Joint-equity bank × Bankruptcy risk	0.814** (1.990)	0.305** (2.488)	0.575*** (2.813)	0.177** (2.161)
Local bank × Bankruptcy risk	0.090* (1.750)	-0.269 (-0.215)	0.064* (1.677)	-0.019 (-0.017)
Foreign bank × Bankruptcy risk	0.038** (2.073)	0.013* (1.705)	0.032* (1.831)	0.007 (1.418)
Big Four bank	0.135 (0.527)	-0.414 (-1.518)	0.056 (0.251)	-0.821 (-1.523)
Joint-equity bank	-0.083 (-0.493)	-0.161 (-0.740)	-0.100 (-0.547)	-0.203 (-0.874)
Local bank	0.237 (0.857)	-0.594 (-1.238)	0.041 (0.135)	-0.686 (-1.326)
Foreign bank	-0.032 (-0.244)	-0.002 (-0.036)	-0.021 (-0.198)	-0.002 (-0.079)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	2012	4128	2012	4128
Log Likelihood	-2265.72	-1030.95	-2278.24	-1031.16

Appendix Table A7 The Effect of Political Turnovers

This table reports the estimates about the effect of bank loan intensity over forced CEO turnovers considering the political turnovers of provincial governors. This subsample test only includes the firm years when there is a governor turnover on the province level. All other variable definitions are in Appendix 1. Heteroscedasticity robust t-statistics are presented in parentheses, and are clustered at firm levels. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels.

	CEO Forced Turnover		
	Overall	Secured	Short
	(1)	(2)	(3)

IROA	-7.966*** (-6.939)	-7.501*** (-6.265)	-7.142*** (-5.893)
Loan Intensity	1.275*** (4.300)	1.271*** (3.989)	1.361*** (3.456)
IROA × Loan Intensity	-3.959 (-0.999)	-7.972** (-2.244)	-5.522* (-1.839)
SOE Borrower	-0.061 (-0.580)	-0.052 (-0.431)	-0.075 (-0.478)
State-owned Banks	-0.535 (-1.056)	0.419 (0.137)	-0.506 (-1.036)
Stock volatility	0.002 (0.844)	0.002 (0.684)	0.002 (0.950)
Firm size	-0.092* (-1.671)	-0.092 (-1.638)	-0.092 (-1.603)
Market-to-Book Ratio	-0.014 (-1.593)	-0.013 (-1.524)	-0.014* (-1.703)
Largest shareholder	0.968*** (2.789)	0.926*** (2.625)	0.968*** (2.773)
Board size	-0.042 (-0.610)	-0.044 (-0.627)	-0.045 (-0.644)
Independent director	0.732 (0.829)	0.725 (0.820)	0.697 (0.789)
Duality	-0.034 (-0.231)	0.006 (0.040)	-0.037 (-0.255)
Education	0.001 (0.022)	0.000 (0.002)	-0.000 (-0.003)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	5,166	5,166	5,166
Log Likelihood	-3050.01	-3046.42	-3050.61

Appendix Table A8 Borrowers' Earnings Management

This table reports the estimates of the bank loans' effects on the borrowers' earnings management. The tests follow the same specification as in the baseline regressions, except that firms' performance is measured with *MissExp* is an indicator that equals one if the realized earning per share (EPS) is below the median of the analyst forecasts and zero otherwise. Earning management is calculated using the modified Jones model (Jones 1991, Dechow et al 1995). Year and industry fixed effects are controlled. The standard errors of coefficients are clustered at firm levels. ***, **, and * indicate the coefficient significance at the 1%, 5%, and 10% levels.

Common Ownership	Earnings Management	
	No	Yes
	(1)	(3)

MissExp	-0.001 (-0.056)	-0.001 (-0.054)
Loan Intensity	-0.057*** (-4.605)	-0.038 (-1.183)
MissExp ×Loan Intensity	-0.057*** (-4.595)	0.042 (0.738)
SOE Borrower	0.156 (1.035)	-0.028 (-0.423)
State-owned Banks	-0.535 (-1.056)	0.049 (0.137)
Stock Volatility	-0.005** (-2.179)	-0.005** (-2.209)
Firm Size	-0.002** (-2.863)	-0.002** (-2.903)
Market-to-Book ratio	-0.009*** (-2.969)	-0.009** (-2.913)
Largest Shareholder	0.032** (2.194)	0.031* (2.084)
Board Size	-0.003*** (-3.089)	-0.003*** (-3.153)
Independent Director	-0.067* (-1.867)	-0.066* (-1.830)
Duality	0.014*** (3.861)	0.014*** (3.877)
Education	0.004 (1.345)	0.004 (1.333)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	4,084	4,084
R-squared	0.045	0.046
