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Political motives of excess leverage in state firms

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Abstract

This study explores the political motives behind the enormous indebtedness of Chinese state firms. To measure the excess leverage of state firms, the difference between actual and predicted values, we balance the samples of private and state firms by matching and using the former sample to generate an out-of-sample prediction for the latter. Our results suggest that the excessive indebtedness of state firms positively relates to regional unemployment pressure and economic pressure faced by municipal politicians. These effects are more pronounced in local state firms and when local officials have stronger promotion incentives. Our paper provides evidence that government control leads to significant political influence over the real decisions of firms.

JEL code: G30 G32 G34

Keywords: excess leverage, state firms, political motives, unemployment and economic pressure

1. Introduction

State firms are managed to pursue a wide range of objectives beyond profit maximation, such as promoting domestic investment, reducing unemployment, and even redistributing wealth (e.g., Shleifer and Vishny 1994). The theoretical literature suggests that given the substantial control over resources, politicians are incentivized to leverage their authority over state firms to direct benefits in exchange for crucial political support. This involves strategically allocating resources to align with their political goals (Shleifer and Vishny, 1997; Shleifer, 1998). Due to the government support, state firms usually enjoy improved credit ratings and cheaper external financing compared to private firms (e.g., Kornai, 1979; Borisova and Megginson, 2011; Borisova et al., 2015). These financing advantages may lead to an uneven credit distribution between state and private sectors, potentially favoring state firms (e.g., Dewenter and Malatesta, 2011; Sanchez-Ballesta and Garcia-Meca, 2011; Shailer and Wang, 2015; Faccio, 2016; Li et al., 2020). However, there is little empirical evidence pertaining to what drives the credit wedge between state firms and non-state firms. In this study, we investigate whether state firms have excess leverage and explore the underlying political motivations behind it.

Our empirical investigation employs data from China, a country that provides a unique laboratory for exploring our research question. Its state sector is one of the world's largest, employing approximately 20% of the total workforce and accounting for 30%-40% of GDP. Due to the underdeveloped state of the bond market, Chinese firms rely heavily on bank loans for external financing, with state-owned banks dominating the banking system and favoring state firms (Chen et al., 2011). However, the rapid expansion of China's overall debt-to-GDP ratio has raised concerns among many observers, as it reached 250% in 2018, far above the average ratio of 75% for countries with similar level of development.[1] The liabilities of Chinese state-owned enterprises (SOEs) account for the majority of this debt, amounting to 115% of GDP,[2] posting a significant risk to financial stability. The government has urged state firms to deleverage to mitigate the risk. To effectively address the mounting debt, it is essential to understand the reasons behind it.

State firms are often used by politicians as a tool to remain in power and meet their political goals. Under China's highly centralized political system, government officials are evaluated on a wide range of political targets, such as stability, economic growth, fiscal revenue, and

[1] See more details at https://www.internationalinvestment.net/opinion/4001647/china-debt, accessed April 10, 2023.
[2] See more details at https://www.reuters.com/article/china-debt-moodys/ballooning-state-firm-debt-poses-contingent-risk-to-china-moodys-idUSL3N1872L0, accessed April 10, 2023.

pension coverage, and are promoted to higher political ranks based on their performance in meeting these targets (Gu et al., 2020). To explore whether the excess leverage in state firms is linked to political motives, we focus on regional unemployment and output and the associated targets faced by politicians. The first set of targets is related to the employment rate, which reflects social stability. Politically connected firms with state ownership or political ties can be directed to expand their labor and avoid mass layoffs (e.g., Dewenter and Malatesta, 2001; Bertrand et al., 2018; Li et al., 2020). This excess employment can harm firm performance (Zhang et al., 2013; Ma et al., 2023), but state firms may receive more policy favors, such as lower taxes, more government subsidies, preferential treatments in competition for contracts, and softer budget constraints (e.g., Wang and Wang, 2013). This allows state firms to access credit more easily and borrow more than non-state peers to finance excess employment.

The second set of targets relates to local economic performance. The empirical literature has well documented a strong relationship between local gross domestic product (GDP) growth and political promotion (Li and Zhou, 2005; Yao and Zhang, 2015; Chen and Kung, 2016). In China's decentralized economic system, each local government sets an economic growth target (GDP growth) to comply with central government initiatives. Failing to meet the target can hinder local officials' political promotions. To alleviate this political pressure, local politicians have strong incentives and power to subsume state firms into their economic agenda and provide them with more investment and financing opportunities to stimulate the economy. As a result, these state firms can borrow more than non-state peers to finance their investments and business.

To test our hypotheses, we utilize a sample of Chinese firms between 2003 and 2017. We start our analysis by quantifying the leverage difference between state firms and their non-state peers. We first balance both samples by employing the propensity scores matching method to identify a group of matched state and non-state firms and then follow Gao et al. (2013) to predict the expected leverage of state firms based on matched non-state peers. The difference between the actual and predicted values is then calculated as the excess values. The presence and magnitude of excess leverage in state firms help us to identify how state firms would behave if they were non-state firms. On average, we find evidence of excess leverage (over- rather than underleveraged) in state firms, implying that such firms would take much lower leverage if they were private. The Chinese government provides guarantees against state firms' debt default and relaxes state firms' budget constraints through better access to finance. At the

same financial quality, state firms have a lower risk premium required by creditors and borrow more than non-state peers, which leads to excess leverage.

Next, we estimate whether political motives drive the excess leverage observed in state firms. Our results show that both unemployment pressure and economic pressure faced by municipal politicians are positively associated with excess leverage in state firms. Furthermore, we find that state firms with more labor and higher investment expenditures are more likely to take greater indebtedness, particularly in regions with stronger political pressure and when government officials have stronger promotion incentives. Local officials are more likely to intervene with state firms by expanding employment and investment to lower the unemployment rate and boost local economic growth when they face greater political pressure. State firms, in turn, receive benefits (e.g., better access to credit) and can accumulate excess debts to cover their political labor costs and finance their investments. Our results also suggest that the positive effects of political pressure to borrow more are more pronounced in local state firms, particularly during the period when local officials have stronger promotion incentives.

Finally, we consider potential solutions to mitigate the excess leverage in state firms. Since 2006, Chinese listed firms have experienced staggered reforms focusing on standardizing equity incentive systems and corporate governance structures.[3] This study also investigates whether corporate governance rules/mechanisms can reduce the excess leverage in state firms. Managerial ownership is negatively associated with over-indebtedness, particularly among SOE-controlled firms. The evidence suggests that managerial ownership provides strong incentives for managers to manage the firm excess leverage more effectively.

Our study contributes to the existing literature on state firms in two important ways. First, earlier studies have primarily focused on the impact of state ownership on leverage (e.g., Li et al., 2009; Bliss and Gul, 2012; Boubakri and Saffar, 2019). In these works, the ownership variable is treated as endogenous, and the identification strategies rely on either privatization reform (e.g., Dewenter and Malatesta, 2001; Li et al., 2009) or instrumental variables (e.g., Shailer and Wang, 2015). We instead employ the propensity score matching approach to explicitly measure the "excess leverage" in state firms compared to otherwise similar non-state firms.

Second, our study enriches the growing literature linking politics to firms' real decisions. Recent studies have examined whether politicians manipulate government-owned bank lending

[3] In 2006, State-owned Assets Supervision and Administration Commission of the State Council and the Ministry of Finance issued the "Notice on issuing the trial measure for implementing equity incentive plan in state-owned listed companies", aiming at standardizing the equity incentive system.

(Carvalho, 2014), expand employment in politically connected firms (Bertrand et al., 2018), or influence SOEs' investment decisions (Alok and Ayyagari, 2020) to impact voting behaviors around elections. In democratic countries, politicians who fail to achieve their objectives can be replaced by citizens through an election. However, in authoritarian countries like China, citizens have little control over the actions of politicians, as their political mobility is determined by higher-tier governments based on performance. Our study extends this strand of literature by exploring how politics influences firms' leverage decisions through the lens of regional political pressures/targets. We find that state firms increase factors of production, attract excessive capital and overemploy, when facing political pressure to increase regional output or employment.

The rest of the paper proceeds as follows. Section 2 discusses the literature on agency costs, political costs, and excess leverage in state firms as well as hypothesis development. Section 3 describes the data collection procedure and summary statistics. Section 4 presents the main results and is followed by a summary and the conclusions in Section 5.

2. Literature Review and Hypothesis Development

2.1 Implicit guarantees and soft budget constraints

The literature has mainly offered two channels through which state ownership affects corporate leverage. First, the government usually imposes implicit guarantees against debt default of state firms (Faccio et al., 2006). It is unlikely that the government will allow state firms to fail, as some of them have established monopolistic positions in key "strategic" industries or are directed to pursue political and social objectives, such as low unemployment, domestic investment, and wealth redistribution (Shleifer and Vishny, 1994; Borisova et al., 2015). When state firms suffer huge financial losses, debtholders may expect that the government will prop up the firm and satisfy their claims. Such guarantees are likely to reduce the perceived default risk of state firms, which further decreases the risk premiums required by investors. Second, a government can relax the budget constraints of state firms through government subsidies, tax concession, better access to credit and other supports (Kornai, 1979). Preferential access to credit can further enable state firms to obtain more external financing. As a result, state firms are offered lower credit costs relative to non-state firms. These favors, in turn, encourage state firms to further build up mounting financial leverage.

The implicit guarantees and soft budget constraints arguments have received extensive empirical support. For example, Sanchez-Ballesta and Garcia-Meca (2011) find that Spanish

state firms benefit from easier financing conditions through the state financial agency and are backed up by the government. Dewenter and Malatesta (2001) find that European state firms have significantly higher leverage than private firms due to government guarantees, while similar results are obtained in Malaysian firms (Bilss and Gul, 2012). Privatized firms face a higher cost of bond financing as the government guarantee diminishes (Borisova and Megginson, 2011), whereas they also benefit from the soft budget constraint associated with different levels of state ownership (Boubakri and Saffar, 2019). Furthermore, studies on Chinese firms (e.g., Li et al., 2009; Shailer and Wang, 2015; Zhang, 2020; Dong et al., 2021) also provide the support that companies under government control are usually more leveraged than private peers and receive higher credit ratings due to implicit government guarantees.

2.2 Agency problems and political costs in state firms

Compared to private firms, state firms face more complex agency relationships due to political control. First, the nominal owner (the principal) of state firms are citizens of a country, while politicians, as the agent, are tasked with social and economic objectives (Ding et al., 2007; Cuervo-Cazurra et al., 2014). However, politicians are not contractually controlled by citizens. At most, in a democratic country, politicians who fail to achieve their objectives can be replaced by citizens through an election. In China, the mobility of politicians is controlled by higher-tier government officials. In this case, citizens have little control over the misbehavior of politicians, which results in a principal-agent problem. Politicians are eager to remain in power and seek political achievements but lack incentives to be accountable to the principal (citizens) in pursuing better performance.

Second, politicians appoint the manager of state firms, which can breed other agency problems in state firms. For one thing, managers in Chinese state firms are assessed by government officials and are likely to be promoted to party leadership positions in the firm or in the government (Cao et al., 2019). Under this promotion system within state firms, managers care about their own career progression and are incentivized to act in the interests of government-controlling shareholders (Jiang and Kim, 2020). In this case, these managers will maximize political and social values, such as overinvestment and lower tax avoidance, which harms the interests of minority shareholders (Bradshaw et al., 2019; Cong et al., 2019). For another, because privatization gives managers of state firms some degree of autonomy, managers can use their control to expropriate shareholders' values to serve their interests. As a result, both government-controlling shareholders and minority shareholders suffer from the

self-serving behaviors of managers. Although minority shareholders might have little power to oversee the managers, the government with significant control and power is able to supervise them to mitigate agency conflicts. Therefore, manager entrenchment is less likely to be serious in Chinese state firms.

Last, the concentrated ownership in Chinese state firms creates significant agency conflicts between government (politicians) controlling shareholders and minority shareholders. As indicated by the "grabbing hand" hypothesis (Shleifer and Vishny, 1997), government shareholders expropriate resources from state firms to accomplish their social and political goals at the expense of minority shareholders. Under the unique political promotion system in China, local government officials are evaluated on both social (i.e., social stability, birth rate, and welfare) and economic (i.e., investment, economic growth, and fiscal revenue) performance. To meet these performance targets, government shareholders direct state firms to create more jobs, absorb surplus employment, and support non-profitable public projects, which deviates from profit generation and harms the interests of minority shareholders (Bai et al., 2006; Fan et al., 2007; Ma et al., 2023). As a consequence, Chinese state firms bear heavy policy burdens from labor redundancy, local economic boost and social welfare costs (Lin et al., 1998). In contrast, the "helping hand" hypothesis also suggests that these state firms receive compensation in the form of preferential loans, tax concessions and more government subsidies compared to private peers (Xue and Bai, 2008). Overall, Chinese state firms are associated with both agency costs and political costs, where political discretion outweighs managerial discretion.

2.3 Hypothesis development

To support politicians in achieving social objectives, state firms often bear a heavy employment burden. Expanding employment can be the politicians' priority in making business decisions, as the unemployment rate is a key consideration in maintaining social stability, which is a first-tier measurement used to evaluate the politicians' achievements. Failure to meet the social stability target could result in political demotions or even dismissal. In this context, state firms are reluctant to dismiss employees, even when necessary. Instead, they are directed by politicians to employ excess labor and hire politically connected managers rather than those best qualified (Boycko et al., 1996). While excess employment weakens corporate governance and harms firm productivity/performance (e.g., Zhang et al., 2013; Ma et al., 2023), it, in return, gives state firms more policy favors. Wang and Wang (2013) find

that local SOEs receive increased government subsidies and bank loans as compensation for overstaffing. Similarly, Xue and Bai (2008) find that excess employment is more significant in firms located in high-unemployment areas and that these firms receive more fiscal subsidies for their higher employment burden. As excess employment results in higher labor costs, we argue that state firms with a higher social employment burden are compensated with preferential borrowing treatment and softer budget constraints and then take excess leverage to cover the political costs and finance employment. Thus, we hypothesize that:

H_1: Unemployment pressure faced by politicians is positively associated with excess leverage in state firms.

In addition to social stability, economic growth is a key second-tier target for local politicians, which is strongly associated with their promotion probability (Yao and Zhang, 2015; Chen and Kung, 2016). On the one hand, China is a highly politically centralized country with five hierarchical levels within its political system: central-level, provincial-level, city-level, county-level and township-level. The highest decision-making body is the Central Politburo of the Communist Party of China. Within this centralized political system, the mobility of government officials is controlled by the higher level of government officials. In other words, local government officials are appointed by higher-level officials rather than elected by local constituents. Local government officials are more likely to be promoted if the local economy performs well (Li and Zhou, 2005). On the other hand, China has a decentralized economic system in which local governments have significant autonomy in allocating resources (Qian and Xu, 1993). Although the central government enacts laws and regulations, local government officials have a great deal of leeway in how the laws and policies are enforced in their region. Therefore, local politicians have both strong incentives and substantial power and autonomy to boost economic growth in their region (An et al., 2016).

Unlike many countries, China sets an economic growth target (gross domestic product growth (GDP)). In addition to the national target set by the central government, each local government also has its own regional GDP growth target. Failing to meet the target puts local officials under significant political pressure, which can harm their political careers. To meet local economic growth targets, politicians may direct local firms, state firms in particular, to sponsor more public investment projects (e.g., Jin et al., 2005). Thus, state firms are subsumed into the local government's economic agenda. To help state firms reach their investment and production targets, the government provides them with additional credits and other resources. Additionally, state firms often have the ability to borrow more from state-owned banks to finance their increased investment (Li et al., 2020). Under this distinctive political and

economic system, we argue that if the economic growth pressure is higher, politicians will intervene more to expand local investment to stimulate the economy. As compensation, state firms will receive more borrowing favors and softer budget constraints and are more likely to accumulate more debts to finance their investments, which leads to excess leverage. Therefore, we posit the following hypothesis:

H_2: Economic pressure faced by politicians is positively associated with excess leverage in state firms.

In China, state firms are owned or controlled by either local or central government (agencies). Previous studies have documented differences in their operations and performance between different types of state ownership (e.g., Firth et al., 2006; Chen et al., 2011; Lou et al., 2021). For example, state firms where the ultimate controlling shareholder is the central government or government agencies (e.g., the Ministry of Finance and the central State-owned Asset Supervision and Administration Commission) usually dominate in strategic industries and operate nationally. They are subject to strict monitoring and oversight by the state in carrying out their responsibilities. However, local state firms, where the ultimate controlling shareholder is local government or government agencies (e.g., local finance bureaus), usually operate regionally within a specific province or city and are extensively intervened by the local government for their private interests.

Compared to central politicians, local politicians face greater pressure in their political careers because higher-level officials control the mobility of local government officials. To alleviate this pressure, local politicians use local state firms as policy tools to improve local economic performance and reduce the regional unemployment rate. Consequently, local state firms tend to have excess overstaffing and investment (e.g., Yang and Zhao, 2016). In return, these firms receive favorable access to capital and accumulate excess debt to fund these political investments. However, central state firms are only controlled by central politicians to maintain economic stability and are immune to such political extractions from local politicians. Therefore, we hypothesize that:

H_3: The political motives of excess leverage are stronger in local state firms.

In the late 1970s, the Chinese government implemented market reform which decentralized the state authority. Local government officials have been empowered with enormous authority in resource allocation within their jurisdiction and are responsible for economic development (Li and Zhou, 2005). To motivate and manage these officials, the Chinese Communist Party (CCP) reformed personnel management, by which officials are evaluated based on economic and social performance, in addition to political conformity.

Officials who excel at boosting the local economy, increasing fiscal revenue allocations and achieving social stability are favored for promotion, while large layoffs and poor economic performance can signal incompetence and limit their advancement within the political system. Therefore, we expect that, during the promotion period, government officials facing significant political pressure have stronger incentives to intervene with state firms to stimulate the economy and reduce layoffs. Based on the promotion and career concerns of government officials, we hypothesize that:

H_4: The political motives of excess leverage are stronger shortly before official turnover.

3. Data and summary statistics

3.1 Data and sample selection

We perform our analysis on a sample of firms listed on the main board of Shanghai or Shenzhen Stock Exchanges over the period of 2003-2017. The primary data are obtained from the China Securities Market & Accounting Research (CSMAR) database. Our sample period starts in 2003, as it is the first year for which the detailed corporate governance information (i.e., ultimate controlling shareholder) becomes available.[4] Following prior studies, we exclude financial firms due to their unique accounting characteristics. We further require that all sample firms disclose available financial and corporate governance information for at least two years. The screening procedure yields 11,593 non-state firm-year observations and 9,265 state firm-year observations. In this study, a state firm is defined as a firm whose ultimate controlling shareholder is a local or central government (agencies), or a state firm. To obtain the municipal target unemployment rate and GDP growth as well as the actual unemployment rate and GDP growth, we also hand-collect regional information from the *Report on the Work of the Municipal Government* and *City Statistic Yearbook*. To mitigate the potential influence of outliers, all continuous variables are winsorized at the upper and lower 1% level.

3.2 Variables and summary statistics

Table 1 reports summary statistics for main variables used in our analysis. Panel A present descriptive statistics for the whole sample, and Panel B compares the characteristics of state firms and non-state firms. Our main variable of interest, *Leverage*, is the ratio of total debt to

[4] In 2002, Chinese Securities Regulatory Commission (CSRC) and the State Economic and Trade Commission jointly promulgated Corporate Governance Principles for Chinese Listed Companies. The guidance strengthened the disclosure requirement of corporate governance for the listed firms.

total assets. Panel B of Table 1 shows significant differences between state and non-state firms. On average, state firms are significantly more leveraged (52.836%) than non-state firms (42.366%), which is consistent with prior studies (Dewenter and Malatesta, 2001; Li et al., 2009).

With respect to political motives, we construct two proxies for the political pressures faced by municipal politicians. The first measure is *Unemployment Gap*, the difference between the annual unemployment rate and the target unemployment rate at the city level. The second measure is *GDP gap*, the difference between target GDP growth and annual GDP growth at the city level. The larger the value of *Unemployment Gap* and *GDP gap*, the greater the political pressure is. In Panel A, the average values for *GDP Gap* and *Unemployment Gap* are -0.045 and -0.001, respectively. This suggests that, on average, local government officials meet the political targets in terms of GDP growth and unemployment rate. To relieve these political pressures, state firms are usually directed to expand employment and investment, thus, we also examine labor size and investment expenditure at the firm level. We define labor size as the number of employees scaled by total assets (Yang and Zhao, 2016), whereas investment expenditure is measured as the net cash payment for fixed assets, intangible assets, and other long-term assets divided by total assets (Pan and Tian, 2020). The results indicate a significant difference in labor size and investment expenditure between state and non-state firms. The mean labor size (investment) is 0.097 (0.051) for state firms, while the figure is 0.090 (0.055) for non-state firms.

Based on prior leverage research (e.g., Nguyen et al., 2020), a set of firm-specific characteristics is also included for examination. Since large firms are usually perceived as less risky because of enhanced asset diversification and greater financial strength, we control for firm size, which is measured as the natural log of total assets (*Firm size*). The mean value of *Firm Size* of state firms is 22.226, while non-state firms have a significantly lower mean value of 21.712. Return on Assets (*ROA*) is the net income divided by total assets, reflecting how efficiently the firm produces profits by the given assets and their ability to repay the debt. Our analysis reveals a lower mean *ROA* for state firms (0.045) compared to non-state firms (0.052), aligning with Jiang and Zeng (2014). This may suggest the potential imposition of non-profit-maximizing objectives on state firms by the government. Cash flow is the ratio of net operating cash flow scaled by total assets (*Cash flow*). We show that the average cash flow of state firms (0.047) is significantly higher than that of non-state firms (0.039). This study further incorporates *Tangibility*, defined as the fixed assets to total assets ratio, and two additional financial indicators: sales growth and the book-to-market ratio (*BM*). *Sales growth* is calculated

as the annual change in sales revenue normalized by the prior year's sales, while *BM* is the book value of equity relative to market value of equity. *Working capital*, measured as the ratio of current assets minus current liabilities to total assets, is also examined. Compared to non-state firms, state firms' sales growth, and working capital ratio are significantly lower.

In terms of corporate governance, we capture managerial ownership and board features. Managerial ownership is measured as the total number of shares owned by directors and executives divided by the total number of shares outstanding (McConnell and Servaes, 1990; Cui and Mak, 2002). In line with previous studies (e.g., Wang and Judge, 2012), we find limited use of managerial incentives in Chinese state firms. On average, managerial ownership is 0.282% in state firms. Following existing literature, we employ four board and CEO characteristics: board independence is measured by the percentage of independent directors (*Independent directors*); board size is the natural log of the number of directors on the board (*Board size*), a dummy variable for whether the CEO also chairs the board (*Duality),* a dummy variable for whether the board has a female CEO (*Female CEO)* and the natural log of CEO age (*CEO age*). In line with Shailer and Wang (2015), we find that state firms have significantly lower prevalence of CEO duality and independent directors. On average, CEO duality occurs in only 8.8% of state firms but 29.1% of non-state firms. Around 36.0% of independent directors serve on the board in state firms, while 37.0% in non-state firms. In addition, state firms, on average, have a significantly larger board size than non-state firms, which is similar to Jiang and Zeng (2014).

<Insert Table 1 about here>

4. Empirical results

4.1 Excess leverage in state firms

To identify and measure the excess leverage in state firms, we follow Gao et al. (2013) to estimate how state firms would behave if they were non-state firms. First, we utilize the propensity score matching method to identify a matched sample of state and non-state firms using the nearest neighbor matching algorithm.[5] The matching approach mitigates the observed

[5] Although propensity score matching (PSM) estimators have been widely used in the literature (e.g., Huang and Kisgen, 2013; Focke et al., 2017; Masulis and Zhang, 2019), we acknowledge that PSM approach has some limitations. First, PSM assumes that covariates are time-invariant, whereas in the context of panel data, the covariates used for matching change over time. Second, the PSM method relies on observed covariates, while in panel data unobserved time-varying factors may influence both treatment assignment and outcomes. To address these challenges, we follow previous studies to include different sets of available variables that could potentially impact the outcome variable, as well as year and industry fixed effects in the matching process. Additionally, we conduct tests to validate the quality of matching and show that the matched state firms and non-state firms share observably similar characteristics.

large differences between state and non-state firms. Second, we apply the characteristics of each matched state firm into the leverage model estimated using only the matched non-state firm sample and obtain the predicted leverage for each state firm. The excess leverage is the difference between actual and predicted leverage, which captures the leverage wedge between state firms and otherwise similar non-state counterparts.

4.1.1 Propensity score matching

To identify a matched sample of non-state firms that show no significant differences in variables that are relevant for inclusion in the state firm group and for our outcome (i.e., leverage), we proceed in two steps. First, we run a logit model to estimate the probability that a firm becomes a state firm on a comprehensive range of variables and control for year fixed effects and industry fixed effects.[6] Table 2 presents the results from two specifications. Column (1) includes all financial and governance variables that could affect the inclusion in the state firm group, while in column (2), we exclude board governance controls. All coefficients and the pseudo-R-squared remain similar. Consistent with the univariate test, firms with a larger size, lower profitability, lower sales growth, longer history, and higher tangibility are more likely to be state firms.

<Insert Table 2 about here>

Next, we construct a matched sample of state firms and non-state firms based on the propensity scores (probability of being a state firm) estimated from the logit regression using the nearest neighbor matching approach. After the matching, we conduct diagnostic tests to check the matching balance. First, we re-estimate the logit model on the probability of being a state firm using the matched samples. In Table 2, column (2) reports the results based on the one-to-one nearest neighbor matching using all controls, while column (4) presents the results based on a one-to-one nearest neighbor without board governance controls. All of the independent variables are statistically insignificant in post-match specifications, indicating that the matched state firms and non-state firms have no distinguishable trends in these covariates. In addition, we also observe a substantial drop in pseudo R^2, from 0.245 (0.212) in the pre-match regressions to 0.004 (0.004) in the post-match specifications, indicating no systematic differences in the distribution of covariates between both groups. The p-value of χ^2 test is 0.759 (0.953) in the post-match models, which fails to reject the null hypothesis that all coefficients equal zero. Second, we estimate the difference in the mean value of the covariates

[6] All the independent variables in the logit model are one-year lagged.

between matched state firms and matched non-state firms in Table 3. We observe that almost all the mean differences are statistically insignificant, indicating that the state and non-state firms share similar characteristics after the matching. Rosenbaum and Rubin (1983) suggest that treated and untreated observations with the same (close) propensity scores should have identical distributions for all variables to avoid treatment effects bias. We then compare the state firms and non-state firms by plotting density estimates for the distribution of key variables for the whole sample in Figure 1 and for the matched sample in Figure 2. The whole sample's means mainly differ in firm size, cash flow, ROA, tangibility, and working capital. After matching, only small differences between state firms and non-state firms remain.

<Insert Table 3 about here>

<Insert Figures 1&2 about here>

Table 4 reports the results on the average treatment effect for the treated (ATT) of leverage based on two matching estimates. The first estimate is the one-to-one nearest neighbor estimator based on the propensity scores, which is our main matching approach. The second estimate is the two-to-one nearest neighbor estimator, in which two matches for each state firm are selected. In Panels A and B, matching is based on the propensity scores estimated from column (1) and column (2) in Table 2, respectively. For both matching methods, we obtain positive and significant estimates for leverage, indicating that state firms take higher leverage than their non-state counterparts. Specifically, if a firm is owned by the state, the leverage increases by 0.87 to 1.44 percentage points on average, corresponding to a 1.85% to 3.06% increase relative to the sample mean.

<Insert Table 4 about here>

4.1.2 Prediction of leverage

To obtain the expected leverage of state firms, we first estimate the following leverage model using only the matched non-state firm sample:

$$Leverage_{i,t} = \alpha + \delta X_{i,t-1} + \theta_t + \mu_i + \varepsilon_{i,t} \quad (1)$$

Where i is the firm identifier and t is the year. Vectors X consist of different core leverage determinants based on previous studies (i.e., Tangibility, Working capital, Cash flow, Firm size, ROA, BM, Sale growth, Industry leverage, Firm age, Blockshare, and Inflation). All the independent variables are lagged for one year. Model (1) is estimated by the fixed-effects estimator with bootstrapping[7]. μ is an individual-specific effect, which varies across firms, and

[7] In the prediction of model (1), statistics are obtained from 1000 bootstrap replications.

θ_t is the year fixed effect. ε denotes the error term, which varies both among firms and time periods. The bootstrapped standard errors are adjusted for potential heteroscedasticity. Table 5 reports the leverage regression results based on different matching approaches. For all matching procedures, we generally obtain similar estimates for the leverage determinants. Consistent with prior studies (e.g., Frank and Goyal, 2009; Öztekin, 2015), we find that non-state firms are less profitable, have a longer history and larger size, have lower cash flows, and tend to hold a higher degree of leverage.

<Insert Table 5 about here>

We apply each matched state firm's characteristics to regression models in Table 5 estimated using only the non-state firm sample and obtain predicted leverage for each state firm.[8] The excess leverage is calculated as the difference between a firm's actual leverage and predicted leverage ratio. This allows us to predict the leverage ratio of state firms as if the same level of leverage is needed as their non-state counterparts. Table 6 reports the estimated excess leverage of matched state firms based on different matching methods. As reported in Panel A, where all controls are employed in the matching, the excess leverage averages 10.759% and has a median value of 10.621%. When we use a two-to-one nearest matching estimator, the mean (median) value of excess leverage in state firms is 10.609% (10.870%). In Panel B, we rely on the matching without board governance variables and obtain similar results. Specifically, the mean (median) values of excess leverage are 16.677% (17.183%) and 13.382% (13.446%) for one-to-one and two-to-one nearest neighbor matching estimators. All the values are significantly different from zero at the 1% significance level. For both matching approaches, on average, matched state firms have greater excess leverage. Our results suggest that state firms would have much lower leverage, if they were the same firm but non-state, which is in line with the implicit guarantee and soft budget constraints arguments (Faccio et al., 2006; Sanchez-Ballesta and Garcia-Meca, 2011). Although the Chinese banks claim that all borrowers are treated equally if they have the same level of credibility, in fact, state firms receive more generous borrowing terms (Dong et al., 2016). These preferential treatments could reduce the perceived default risk of state firms, which in turn leads to excess leverage.

<Insert Table 6 about here>

[8] Gao et al. (2013) apply a similar approach to estimate the difference in cash holdings between private and public firms.

4.2 Reasons for excess leverage in state firms

Having established the significant differences in leverage between state firms and non-state firms, in this section, we examine the determinants of such leverage differences based on the matched state firms. Specifically, we estimate whether political pressure can explain the excess leverage in state firms using Model (2).

$$Excess\ leverage_{i,t} = \alpha + \beta\ Political\ pressure_{i,t-1} + X_{i,t-1}\delta + \theta_t + \mu_i + \varepsilon_{i,t} \quad (2)$$

The dependent variable is excess leverage.[9] Similar to Model (1), Model (2) is estimated by the fixed-effects estimator. μ is an individual-specific effect, which varies across firms, and θ_t is the year fixed effect. ε denotes the error term, which varies both among firms and periods of time. $X_{i,t-1}$ is a set of control variables (i.e., tangibility, working capital, cash flow, firm size, ROA, BM and sale growth). The key interest of coefficient β captures the impact of political pressure on excess leverage. Here, we have two sets of measures for political pressure. The first one is unemployment pressure (i.e., *Unemployment gap*, *Labour size* and *Excess labor size*), and the other is economic pressure (i.e., *GDP gap*, *investment,* and *Excess investment*). Specifically, the excess labor size (investment) is measured as the difference between a state firm's actual labor size (investment) and predicted labor size (investment), estimated in a way similar to excess leverage.[10]

4.2.1 Unemployment pressure

We start with local politicians' most critical political pressure: social stability. Specifically, we estimate whether the unemployment pressure contributes to the excess leverage of state firms. We argue that in regions with greater unemployment pressure, state firms are directed to take on more (excess) employment, and in return, they may receive favors from the government. State firms in a higher unemployment pressure region or with a larger labor force might be compensated by softer budget constraints through preferential access to finance, which could lead to excess leverage.

Columns (1) and (2) of Table 7 report our findings on the effects of unemployment pressure faced by municipal politicians on the excess leverage of state firms. In line with our hypothesis H1, we find that firms located in cities with a greater unemployment pressure faced

[9] We use excess leverage estimated based on the one-to-one nearest neighbour matching method.

[10] To obtain the excess investment (labor), we first estimate the investment (labor) model using only the non-state firm sample. We then apply state firms' characteristics into these regression models and obtain the estimated values of investment(labor) for each state firm. Excess investment (labor) is the difference between the predicted investment(labor) and actual investment (labor).

by politicians are associated with greater excess leverage, as indicated by the positive and statistically significant coefficient on *Unemployment gap*. Specifically, a one percentage point increase in the unemployment gap could increase excess leverage by 0.451 percentage points in column (2). With respect to other control variables, we find that tangibility, cash flow and firm age could decrease the excess leverage. In contrast, state firms with higher book-market value tend to have higher excess leverage.

<Insert Table 7 about here>

To explore the potential mechanism though which the regional unemployment pressure induces excess leverage, we further examine the relationship between labor size and excess leverage in state firms in Table 8. Employment positively affects leverage decisions in columns (1) and (2). Larger (excess) labor size is associated with significantly greater excess leverage in state firms. Specifically, a one percentage point increase in labor size (excess labor size) leads to a 0.312 (0.327) percentage points rise in excess leverage, respectively. This finding provides additional supportive evidence to our argument that state firms can borrow more than non-state peers to finance their (excess) employment, which leads to increased excess leverage. So far, we attribute the unemployment pressure faced by local politicians to the excess leverage in state firms. If this argument holds, we expect to see that the positive relationship between (excess) labor size and excess leverage is more pronounced in regions with worse employment conditions. We group firms into regions with high and low unemployment pressure. A city is assigned to the high (low) pressure region if the annual unemployment rate is above (below) the sample average. Interestingly, we find that *Labor size* and *Excess labor size* still carry positive and statistically significant coefficients in the high unemployment pressure subgroup in columns (3) and (5). Overall, our results suggest that unemployment pressure faced by local politicians is one political motive for excess leverage in Chinese state firms.

Some may argue that non-state firms could also bear the labor burden as state firms do. However, government officials are less likely to intervene with non-state firms in China. Government officials move to different regions regularly and have greater incentives to promote social stability prior to their promotions. Therefore, the short governing horizon within one jurisdiction provides fewer incentives for officials to contract with local non-SOEs on future benefits as compensation for the overemployment. In addition, the managers of SOEs, who are also evaluated within the government bureaucratic system, are more likely to interact or work with the prior officials in the future than those of non-state firms. Therefore, officials are incentivized to develop a long-term relationship with state firms and are more likely to accept the overemployment of state firms.

<Insert Table 8 about here>

4.2.2 Economic pressure

In this section, we estimate whether economic pressure can induce excess leverage in state firms. Under the decentralized economic system, China's local government officials have autonomy over the regional economy. They are incentivized to compete and boost the economic growth in their region, as the cadre promotion within the communist party is based on the local economic performance (An et al., 2016). To generate high growth and alleviate political pressure, the local governments usually use state firms as a policy tool to stimulate the regional economy. We posit that state firms located in the region with higher economic growth pressure are more likely to be intervened by the local government and are directed to expand their investment, which can lead to excess leverage.

In columns (3) and (4) of Table 7, we observe that economic pressure positively relates to excess leverage, indicated by the positive and statistically significant coefficient on *GDP gap*. Specifically, one percentage point increase in *GDP gap* is associated with a 0.091 (0.081) percentage point increase in excess leverage. This implies that state firms located in regions with higher local economic growth pressure are more likely to take excess leverage, which is in line with our hypothesis H2.

We further examine the relationship between investment expenditure and excess leverage in state firms to investigate the channels through which local economic pressure affects excess leverage. In columns (1) and (2) of Table 9, the coefficients on *Investment* and *Excess investment* are both positive and statistically significant at the 5% level, indicating that state firms with larger investment expenditures are more likely to take on excess leverage. Specifically, one percentage point increase in *Investment* and *Excess investment* leads to a 0.203 and 0.198 percentage points rise in excess leverage in state firms. This finding suggests that state firms are able to borrow more funds than non-state counterparts to finance additional investment projects, leading to excess leverage.

<Insert Table 9 about here>

Based on the results in Tables 7 and 9, we contend that the local economic pressure is attributable to excess leverage in state firms. As politicians face greater economic growth pressure, state firms are more likely to be subsumed into the local government's economic agenda to stimulate the economy. In return, these state firms receive better access to capital and accumulate much more debts than private peers to finance their investment and business,

leading to excess leverage. If our argument holds, we should observe a stronger positive relationship between investment expenditure and excess leverage in regions with weaker economic conditions. To further test this argument, we categorize firms into high and low GDP subgroups based on location. Specifically, a city is grouped into the high (low) GDP region if its annual GDP growth is above (below) the sample average. Consistent with our argument, the coefficient of *Investment* and *Excess investment* are positive and statistically significant in cities with low GDP growth in columns (4) and (6). Taken together, our findings suggest that economic pressure faced by the local politicians constitutes another political motive for excess leverage in Chinese state firms.

4.2.3 Heterogeneous effects by state ownership

Previous studies have documented significant differences between different types of state ownership (e.g., Firth et al., 2006; Chen et al., 2011; Lou et al., 2021). In China, state firms can be classified based on their controlling shareholder, which may be either the central or local government (or their respective agencies). Central state firms usually have nationwide operations and are subject to intensive monitoring and oversight by the state. They are also immune to political interferences from the local government. However, local state firms operate regionally within a specific province or city and are heavily influenced by local politicians in pursuit of political goals. Given these differences, we aim to investigate which type of state ownership is associated with political motives for excess leverage.

We divide the sample into two groups, central state firms and local state firms. Panel A of Table 10 presents the heterogeneous effects by state ownership type. Regarding the unemployment pressure, we observe that *Unemployment gap* carries a positive and significant coefficient in local state firms, whereas the coefficient becomes insignificant in central state firms. We also observe similar results for economic pressure. The coefficient on *GDP gap* is positive and statistically significant in local state firms but insignificant in central state firms. Our findings support our hypothesis (H3) that the political motives of excess leverage are more pronounced in local state firms, indicating that the heterogeneous state ownership can explain the politically driven behavior in state firms.

<Insert Table 10 about here>

4.2.4 Heterogeneous effects of political promotion incentives

Prior studies suggest that concerns about political promotion incentivize government officials to promote local economic performance and social stability (e.g., Li and Zhou, 2005). As officials aim to move up to higher positions within the political system, the incentives to achieve economic and social targets become particularly strong, especially during the last period of their terms or shortly prior to the promotion. In this section, we examine whether the effects of political pressures on excess leverage are conditional on the promotion incentives of local politicians.

Following Piotroski and Zhang (2014), we define promotion incentives based on the political turnover of two top positions in a city (i.e., the municipal party committee secretary and the mayor). Specifically, we create a dummy indicator that takes the value of one if it is the same year or the year before the political turnover (*Turnover_D*). We split our sample into subgroups with strong and weak promotion incentives. Panel B of Table 10 presents our results. In models (1) and (3), the unemployment and GDP gap coefficients are economically and statistically significant during or shortly before the official turnover. In models (2) and (4), the coefficients on political pressures become insignificant. Collectively, the findings support our conjecture (H_4) that the political motives of excess leverage in state firms become stronger during the promotion period of government officials, when the promotion and career concerns augment officials' incentives to intervene with local state firms to achieve better local economic and social performance.

4.2.5 Robustness checks

Our results so far suggest that excess leverage in state firms is attributable to the local political pressures. In this section, we conduct additional analysis to test the reliability of our findings, considering potential omitted variables. Specifically, local officials might consider various political and economic factors, such as inter-official competitions and local performance, in formulating economic growth and unemployment rate targets.

To address the possible endogeneity concern, we use an instrumental variable approach to re-estimate the political motives of excess leverage in state firms. In particular, we employ the mean value of GDP growth and unemployment rate targets set by other cities in the same province as instrumental variables. The economic rationale behind this is that higher (lower) GDP growth (unemployment rate) targets set by other cities indicate more intense competition in economic performance and social stability within the same province. Under the relative

performance evaluation system, this competition within the same province places greater political pressure on local (city-level) officials.

Table 11 presents the regression results of the instrumental variable analysis. We find that the coefficient on Unemployment gap and GDP gap are positive and statistically significant. This evidence is consistent with our main finding that heightened local political pressure is associated with increased excess leverage in state firms. Overall, our results are not driven by potential endogeneity.

<Insert Table 11 about here>

4.3 Remedies of excess leverage in state firms

In this section, we investigate potential remedies for excess leverage in state firms. Since 2006, Chinese authorities have implemented staggered reforms with special emphasis on the standardization of corporate governance structure. Therefore, we explore whether internal governance mechanisms are effective in reducing excess leverage in state firms. In Model (2), we replace political pressure with a set of governance variables from two aspects, namely board features (*Duality, Independent directors, Board size, CEO age, Female CEO)* and incentive mechanisms (*Managerial ownership).*

<Insert Table 12 about here>

In Table 12, we observe that managerial ownership in full sample firms is not related to excess leverage. Other board governance variables also fail to have a significant effect on excess leverage, which suggests that the board of directors is not effective in monitoring state firms.

One may argue that the effectiveness of governance mechanisms varies across different natures of state firms. For example, in state firms, where the ultimate controlling shareholder is the government or its agency, the directors/executives are normally appointed through the political process and evaluated largely on how well they achieve political objectives but less on the economic value creation (Dong et al., 2014; Cao et al., 2019). Therefore, they have weaker incentives to monitor the firm's management and results in the ineffectiveness of governance mechanisms. Different from government-controlling shareholders, SOE-controlling shareholders are more market-orientated and focus more on economic value creation. When the controlling shareholder is a marketized SOE, the directors/executives are appointed by the SOE rather than the department of CCP in the firm. SOE-controlled firms,

with less government intervention and greater autonomy, are able to appoint more qualified directors/executives to monitor and advise management.

In columns (2) and (3) of Table 11, we divide the state firms into subgroups based on two different types of state ownership (i.e., government-controlled firms and SOE-controlled firms). Our results suggest that the negative effect of managerial ownership on excess leverage exists only in SOE-controlled firms. Specifically, a one percentage point increase in managerial ownership leads to 0.543 percentage points in excess leverage. Unlike government-controlled firms, SOE-controlled firms have greater autonomy but receive less favorable monetary and non-monetary support. Thus, mangers, when their private interests are aligned with those of shareholders, have strong incentives to curb the excess leverage to reduce the overwhelming risk and seek better performance. As a result, managerial ownership works as a remedy to the excess leverage in SOE-controlled firms.

5. Conclusion

This paper extends the existing literature on state ownership by providing the first empirical evidence regarding the political motives of excess leverage in state firms. To address the issue of excess leverage, we first employ the propensity scores matching method to identify matched state and non-state firms. We then predict the leverage of state firms based on matched non-state firms and define the excess leverage as the difference between their actual values and predicted values. Our findings show that, on average, state firms exhibit greater excess leverage compared to similar non-state firms.

Our results also demonstrate that political motives contribute to the distortions in the leverage behavior of state firms. We find that heavy employment and local economic growth pressure are key factors driving excess leverage in Chinese state firms. Under increased political pressure, politicians are more likely to intervene in state firms and direct them to absorb surplus employment and spouse more public investments to maintain social stability and boost the local economy. As compensation for employment and investment expansion, they obtain favorable borrowing treatments and are able to borrow much more than non-state peers, leading to excess leverage. Further analysis suggests that the political motives of excess leverage only concentrate among local state firms due to extensive interferences by local governments, particularly during the period when local officials have stronger promotion incentives. Lastly, we find that managerial ownership, to some extent, curbs the excess leverage in state firms.

Our results suggest that local political environments influence the leverage decision of state firms. Politicians tend to allocate excess financial resources toward state firms in exchange for employment favors, especially in regions with higher political pressure. These findings demonstrate the advantages of government control and highlight the high political costs bared by state firms. Our study provides implications to policymakers on the efficiency of state capitalism and sheds light on the direction of further reform in state firms.

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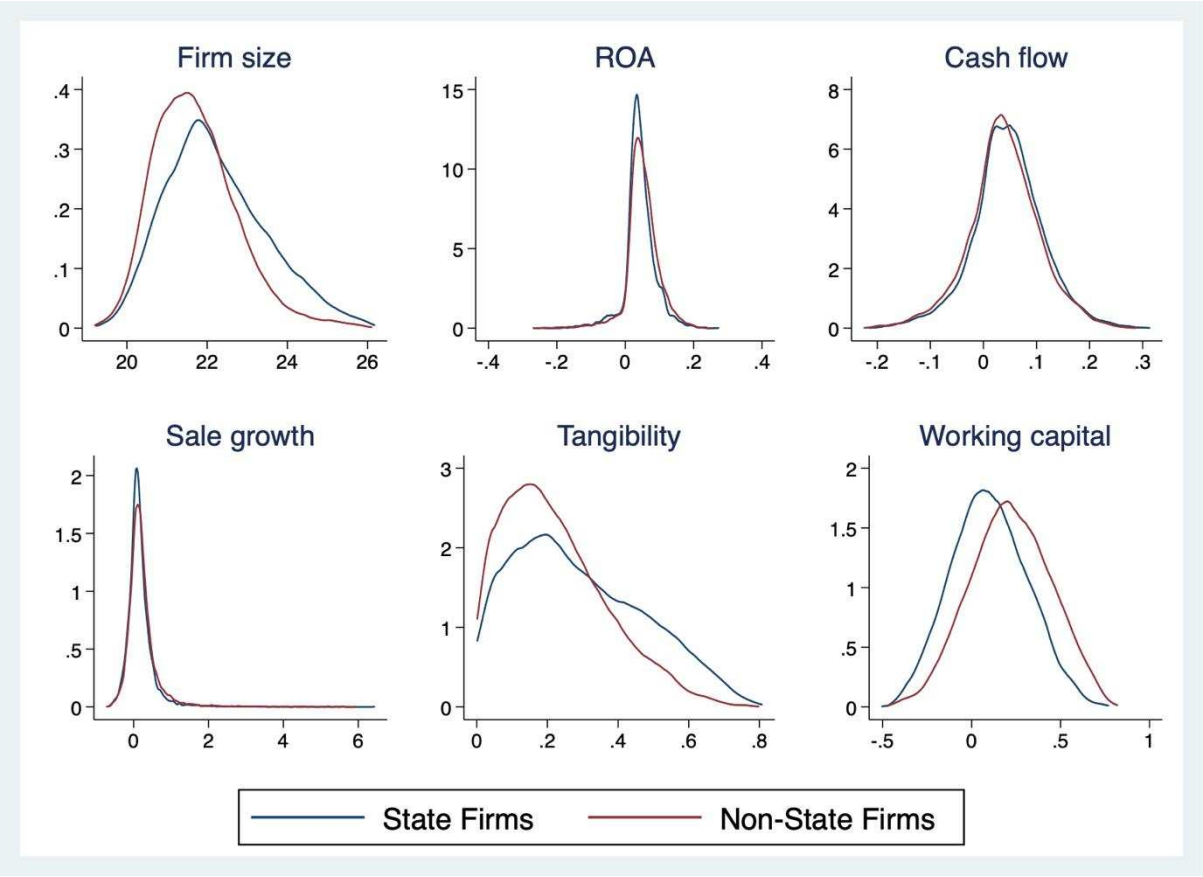
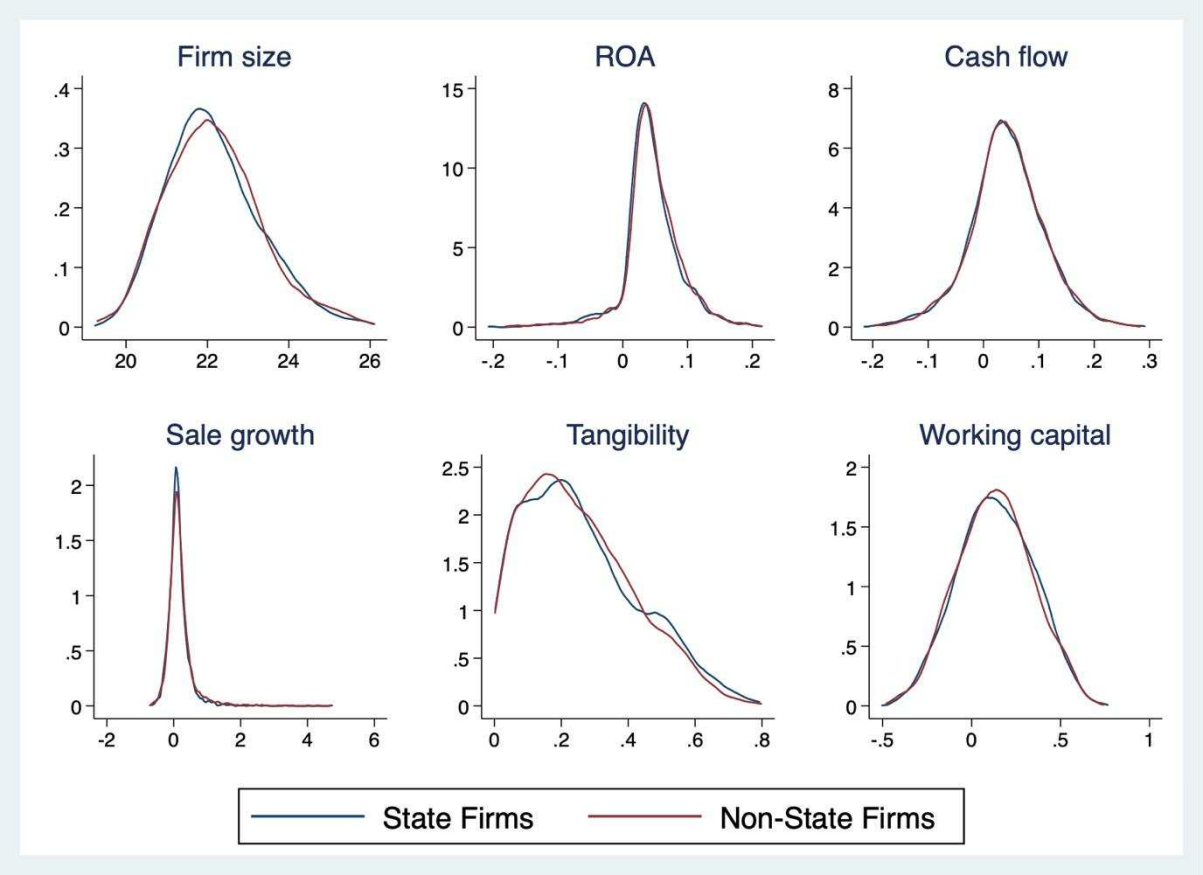
Figure 1 Distribution before matching



This figure shows the distribution of key variables in the propensity score matching analysis for state firms and non-state firms before matching.

Figure 2 Distribution after matching



This figure shows the distribution of key variables in the propensity score matching analysis for matched state firms and matched non-state firms. The matched sample is based on one-to-one nearest neighbor matching using all controls.

Table 1 Summary statistics

Panel A: Summary statistics

Variables	Mean	STD	P5	P50	P95	Obs.
Leverage (%)	47.017	19.073	15.470	47.656	77.499	20,858
Labor size	0.093	0.081	0.011	0.071	0.254	20,858
Investment	0.053	0.053	0.001	0.038	0.165	20,856
Firm size	21.941	1.171	20.303	21.793	24.173	20,858
Cash flow	0.043	0.067	-0.070	0.042	0.154	20,858
Sales growth	0.204	0.425	-0.234	0.135	0.825	20,858
ROA	0.048	0.045	-0.021	0.045	0.122	20,858
Tangibility	0.251	0.167	0.026	0.221	0.572	20,858
Working capital	0.165	0.228	-0.207	0.161	0.551	20,858
BM	0.993	0.925	0.196	0.703	2.740	19,455
Industry leverage	0.472	0.089	0.369	0.450	0.642	20,858
Blockshares (%)	38.370	15.526	15.720	36.906	65.590	20,512
Inflation	0.025	0.015	0.011	0.020	0.056	20,858
Managerial ownership (%)	8.608	16.882	0.000	0.015	50.192	20,847
Duality	0.201	0.401	0.000	0.000	1.000	20,858
Board size	2.174	0.199	1.792	2.197	2.485	20,858
Independent director	0.365	0.050	0.333	0.333	0.444	20,858
CEO age	3.868	0.139	3.638	3.871	4.078	19,820
Female CEO	0.055	0.228	0.000	0.000	1.000	19,823
GDP gap	-0.045	0.215	-0.142	-0.034	0.053	19,665
Unemployment gap	-0.001	0.027	-0.045	-0.005	0.034	17,640

Panel B: Comparisons between state firms and non-state firms

Variables	Non-state firms		State firms		Difference
	Mean	STD	Mean	STD	
Leverage (%)	42.366	18.758	52.836	17.828	-10.470***
Labor size	0.090	0.075	0.097	0.089	-0.007***
Investment	0.055	0.054	0.051	0.053	0.004***
Firm size	21.712	1.043	22.226	1.256	-0.514***
Cash flow	0.039	0.067	0.047	0.067	-0.008***
Sales growth	0.227	0.436	0.176	0.408	0.051***
ROA	0.052	0.045	0.043	0.045	0.009***
Tangibility	0.222	0.147	0.289	0.183	-0.067***
Working capital	0.218	0.226	0.099	0.213	0.119***
BM	0.772	0.710	1.274	1.077	-0.502***
Industry leverage	0.454	0.088	0.495	0.085	-0.041***
Blockshares	36.756	15.348	40.337	15.516	-3.581***
Inflation	0.024	0.014	0.026	0.016	-0.002***
Managerial ownership (%)	15.256	20.262	0.282	1.762	14.974***
Duality	0.291	0.454	0.088	0.283	0.204***
Board size	2.130	0.191	2.229	0.195	-0.099***
Independent director	0.370	0.051	0.360	0.050	0.010***
CEO age	3.859	0.151	3.880	0.121	-0.021***
Female CEO	0.067	0.251	0.039	0.194	0.028***

This table reports descriptive statistics for the variables used in our analysis. The sample is an unbalanced panel covering 2,559 firms over the period from 2003 to 2017. Panel A provides the descriptive statistics on the whole sample. Panel B compares characteristics of state firms and non-state firms.

Table 2 Probability of being a state firm

	State firm indicator			
	Using all controls		Exclude board controls	
	Pre-match	Post-match	Pre-match	Post-match
	(1)	(2)	(3)	(4)
Duality	-0.798***	0.071		
	(0.103)	(0.130)		
Board size	1.511***	0.052		
	(0.264)	(0.283)		
Independent directors	0.763	0.239		
	(0.850)	(0.964)		
Firm size	0.409***	0.026	0.486***	0.027
	(0.051)	(0.053)	(0.049)	(0.051)
Cash flow	0.144	-0.936	-4.389***	-0.490
	(0.431)	(0.940)	(0.781)	(0.891)
Sales growth	-0.194***	0.152	0.163	0.438
	(0.052)	(0.508)	(0.424)	(0.501)
ROA	-4.512***	0.077	-0.214***	-0.014
	(0.785)	(0.062)	(0.051)	(0.065)
Tangibility	1.087***	0.054	1.296***	-0.023
	(0.338)	(0.370)	(0.335)	(0.361)
Working capital	0.580**	0.224	0.588**	0.255
	(0.247)	(0.280)	(0.245)	(0.266)
Firm age	1.042***	-0.088	1.072***	-0.142*
	(0.071)	(0.078)	(0.070)	(0.076)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.245	0.004	0.212	0.004
Obs.	16,191	6,226	16,191	6,226

This table reports regression results of a logit model with *State firm* as the dependent variable. *State firm* is a dummy variable, which equals one if the firm is owned by the government. Columns (1) and (2) present pre- and post-match results, including all control variables, while columns (3) and (4) report pre- and post-match results, which only include part of the control variables. All independent variables are one-year lagged. All variables are defined in Appendix A. The robust standard errors clustered at the firm level are reported in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 3 Difference in firm characteristics based on a matched sample

Variables	Matching using all controls				Matching without board governance controls			
	Non-state firms	State firms	Difference	t-statistics	Non-state firms	State firms	Difference	t-statistics
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Duality	0.118	0.125	-0.007	0.412				
Board size	2.195	2.197	-0.002	0.657				
Independent directors	0.359	0.360	-0.001	0.616				
Firm size	21.967	21.988	-0.021	0.457	21.967	21.970	-0.003	0.905
ROA	0.047	0.046	0.001	0.585	0.046	0.046	0.001	0.500
Cash flow	0.045	0.045	-0.000	0.800	0.043	0.043	0.001	0.725
Sales growth	0.186	0.195	-0.009	0.410	0.187	0.182	0.005	0.643
Tangibility	0.259	0.261	-0.002	0.684	0.254	0.259	-0.005	0.228
Working capital	0.131	0.137	-0.006	0.253	0.134	0.134	-0.001	0.885
Firm age	2.339	2.320	0.018	0.201	2.220	2.164	0.056	0.001

This table presents the summary statistics of key variables in the propensity score analysis for state and non-state firms. Columns (1) to (4) report the statistics based on the one-to-one nearest matching using all controls. Columns (5) to (8) report the statistics based on the one-to-one nearest matching without board governance controls.

Table 4 Matching results (average treatment effects for the treated sample)

	Leverage	
	Coefficient	t-statistics
	(1)	(2)
Panel A: matching using all controls		
1:1 nearest neighbor	1.44	3.01
2:1 nearest neighbor	1.04	2.45
Panel B: matching without board governance controls		
1:1 nearest neighbor	0.87	1.88
2:1 nearest neighbor	1.06	2.53

This table shows the average treatment effects for the treated sample (ATT) of leverage. A common support is created by eliminating all treated observations with a propensity score below the smallest or above the largest propensity score for the control group. Matching is conducted with replacement. Columns (1) to (2) report the difference of ATT and t-statistics, respectively.

Table 5 Prediction regressions on leverage based on matched non-state firms

	Leverage			
	Using all controls		Exclude board controls	
	1:1 nearest neighbor	2:1 nearest neighbor	1:1 nearest neighbor	2:1 nearest neighbor
	(1)	(2)	(3)	(4)
Firm size	0.026***	0.027***	0.036***	0.029***
	(0.007)	(0.007)	(0.008)	(0.007)
Cash flow	-0.089**	-0.073**	-0.038	-0.055*
	(0.042)	(0.033)	(0.038)	(0.032)
ROA	-0.226**	-0.245***	-0.262***	-0.270***
	(0.094)	(0.068)	(0.087)	(0.069)
Sales growth	0.009	0.010**	0.010*	0.009*
	(0.006)	(0.005)	(0.006)	(0.005)
Tangibility	-0.177***	-0.128***	-0.142***	-0.171***
	(0.038)	(0.035)	(0.039)	(0.033)
Working capital	-0.334***	-0.287***	-0.271***	-0.285***
	(0.030)	(0.024)	(0.027)	(0.022)
BM	0.020***	0.022***	0.024***	0.025***
	(0.005)	(0.004)	(0.005)	(0.004)
Industry Leverage	0.112	0.106	0.015	0.096
	(0.089)	(0.081)	(0.087)	(0.078)
Blockshares	0.075**	0.068**	0.084**	0.061**
	(0.038)	(0.032)	(0.033)	(0.030)
Inflation	6.185***	5.645***	4.315***	6.150***
	(1.524)	(1.332)	(1.486)	(1.239)
Firm age	0.047***	0.040***	-0.003	0.036***
	(0.017)	(0.013)	(0.017)	(0.012)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R^2	0.278	0.245	0.246	0.256
Obs.	2,801	3,961	2,861	4,081

This table reports the bootstrap regression results of leverage prediction using only the matched non-state firms based on different matching methods. Statistics are obtained from 500 bootstrap replications. Columns (1) and (2) present results based on one-to-one and two-to-one nearest neighbor matching, including all control variables, while columns (3) and (4) report results based on one-to-one and two-to-one nearest neighbor matching, which only include part of control variables. All independent variables are lagged by one year. The constant term is included in the estimation but not reported. All variables are defined in Appendix A. The bootstrapped robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 6 Excess leverage in matched state firms

	Leverage		
	Mean	Median	Obs.
	(1)	(2)	(3)
Panel A: matching using all controls			
1:1 nearest neighbor	10.759***	10.621***	3,092
2:1 nearest neighbor	10.609***	10.870***	4,620
Panel B: matching without board governance controls			
1:1 nearest neighbor	16.677***	17.183***	3,178
2:1 nearest neighbor	13.382***	13.446***	4,700

This table presents descriptive statistics regarding matched state firms' excess leverage. Excess leverage is the difference between actual leverage and predicted leverage. Panel A reports the results based on matching using all controls. Panel B presents the results based on matching without board governance controls. Columns (1) to (3) report mean, median values, and observation numbers for matched state firms, respectively. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 7 Excess leverage and political motives

	Excess leverage			
	(1)	(2)	(3)	(4)
Unemployment gap	0.464**	0.451**		
	(0.206)	(0.206)		
GDP gap			0.091**	0.081**
			(0.042)	(0.041)
Firm size		0.010		0.010
		(0.011)		(0.011)
Cash flow		-0.099**		-0.091**
		(0.046)		(0.046)
ROA		0.129		0.130
		(0.108)		(0.102)
Sales growth		-0.009*		-0.009*
		(0.005)		(0.005)
Tangibility		-0.013		-0.011
		(0.051)		(0.050)
Working capital		-0.023		-0.014
		(0.031)		(0.030)
BM		0.033***		0.033***
		(0.009)		(0.009)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R2	0.540	0.562	0.539	0.560
Obs.	2,298	2,252	2,365	2,318

This table reports the regression results of the effects of political reasons on excess leverage in matched state firms. Unemployment gap is the difference between the annual unemployment rate and the target unemployment rate of the city. GDP gap is the difference between annual GDP growth and target GDP growth of the city. All independent variables are lagged by one year. The constant term is included into the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 8 Excess leverage and unemployment burden: Mechanisms

	Full sample	Full sample	High_UR=1	Low_UR=1	High_UR=1	Low_UR=1
	(1)	(2)	(3)	(4)	(5)	(6)
Labor size	0.312***		0.432***	0.189		
	(0.087)		(0.159)	(0.132)		
Excess labor size		0.327***			0.433***	0.219
		(0.086)			(0.156)	(0.135)
Firm size	0.016	0.012	0.028	-0.007	0.022	-0.009
	(0.011)	(0.010)	(0.022)	(0.016)	(0.021)	(0.016)
Cash flow	-0.107**	-0.109**	-0.115	-0.082	-0.118	-0.082
	(0.043)	(0.043)	(0.079)	(0.055)	(0.079)	(0.054)
ROA	0.129	0.136	0.269*	-0.060	0.278*	-0.055
	(0.098)	(0.098)	(0.159)	(0.125)	(0.160)	(0.125)
Sales growth	-0.011**	-0.010**	-0.008	-0.009	-0.006	-0.008
	(0.005)	(0.005)	(0.009)	(0.006)	(0.008)	(0.006)
Tangibility	-0.026	-0.019	0.023	-0.036	0.033	-0.034
	(0.048)	(0.047)	(0.065)	(0.078)	(0.064)	(0.077)
Working capital	-0.003	-0.004	0.041	0.047	0.042	0.045
	(0.028)	(0.028)	(0.052)	(0.038)	(0.051)	(0.038)
BM	0.034***	0.034***	0.031***	0.028**	0.032***	0.028***
	(0.008)	(0.008)	(0.011)	(0.011)	(0.011)	(0.011)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.572	0.573	0.616	0.542	0.617	0.543
Obs.	2,433	2,433	1,022	1,411	1,022	1,411

This table reports the regression results of the effects of the unemployment burden on excess leverage in state firms. Labor size is calculated as the number of employees divided by total assets. Excess labor size is the difference between actual labor size and predicted labor size. High_UR (Low_UR) equals one if the firm is located in a region where the unemployment rate is above (below) the sample median. All independent variables are lagged by one year. The constant term is included in the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 9 Excess leverage and economic burden: Mechanisms

	Full sample	Full sample	High_GDP=1	Low_GDP=1	High_GDP=1	Low_GDP =1
	(1)	(2)	(3)	(4)	(5)	(6)
Investment	0.203**		0.043	0.269**		
	(0.086)		(0.123)	(0.119)		
Excess investment		0.198**			0.028	0.291**
		(0.091)			(0.130)	(0.126)
Firm size	0.007	0.007	-0.003	0.013	-0.003	0.013
	(0.011)	(0.011)	(0.017)	(0.015)	(0.017)	(0.015)
Cash flow	-0.112**	-0.113**	-0.047	-0.097	-0.046	-0.100
	(0.044)	(0.044)	(0.060)	(0.068)	(0.060)	(0.068)
ROA	0.118	0.130	0.237*	-0.065	0.240*	-0.054
	(0.101)	(0.101)	(0.131)	(0.144)	(0.132)	(0.142)
Sales growth	-0.010*	-0.010**	-0.010	-0.007	-0.010	-0.008
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)
Tangibility	0.008	0.006	-0.065	0.055	-0.067	0.052
	(0.049)	(0.049)	(0.068)	(0.066)	(0.068)	(0.066)
Working capital	-0.007	-0.002	0.003	-0.030	0.003	-0.022
	(0.029)	(0.029)	(0.042)	(0.042)	(0.043)	(0.041)
BM	0.036***	0.035***	0.035***	0.031***	0.035***	0.031***
	(0.009)	(0.009)	(0.012)	(0.009)	(0.012)	(0.009)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.567	0.567	0.579	0.612	0.579	0.612
Obs.	2,432	2,432	1,349	1,083	1,349	1,083

This table reports the regression results of the effects of the unemployment burden on excess leverage in state firms. Investment is the ratio of capital expenditure divided by total assets. Excess investment is the difference between actual investment and predicted investment. High_GDP (Low_GDP) equals one if the firm is located in a region where the annual GDP growth is above (below) the sample median. All independent variables are lagged by one year. The constant term is included in the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table10 Heterogeneous effects

Panel A: State ownership				
	Excess leverage			
	Local_D==1	Local_D==0	Local_D==1	Local_D==0
	(1)	(2)	(3)	(4)
Unemployment gap	0.446*	0.584		
	(0.243)	(0.355)		
GDP gap			0.110**	0.030
			(0.043)	(0.063)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	0.584	0.546	0.583	0.528
R2	1,611	641	1,683	635
Panel B: Political promotion incentives				
	Excess leverage			
	Turnover_D=1	Turnover_D=0	Turnover_D=1	Turnover_D=0
	(1)	(2)	(3)	(4)
Unemployment gap	0.496**	0.577		
	(0.219)	(0.535)		
GDP gap			0.134**	0.037
			(0.056)	(0.055)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	0.547	0.665	0.541	0.670
R2	1,455	797	1,490	828

This table reports the effects of political motives on excess leverage, conditional on state ownership types and political promotion incentives. *GDP gap* is the difference between actual GDP growth and target GDP growth. *Unemployment gap* is the difference between the actual unemployment rate and the target unemployment rate of the city. *Local_D* is a dummy variable, which equals one if the firm is controlled by the local government and zero otherwise. *Turnover_D* is a dummy variable, which equals one if it is around the period of municipal party committee secretary and mayor turnover and zero otherwise. All independent variables are lagged by one year. Constant and control variables are included in the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 11 Instrumental variable approach

			Excess leverage	
	(1)	(2)	(3)	(4)
Unemployment gap		1.730**		
		(0.707)		
GDP gap				0.305**
				(0.142)
Firm size	-0.001	-0.011	-0.001	-0.012
	(0.002)	(0.009)	(0.007)	(0.009)
Cash flow	0.004	-0.064*	-0.010	-0.046
	(0.007)	(0.036)	(0.035)	(0.034)
ROA	0.006	-0.106	-0.047	-0.072
	(0.015)	(0.083)	(0.083)	(0.081)
Sales growth	0.001	0.019***	-0.005	0.024***
	(0.001)	(0.006)	(0.006)	(0.005)
Tangibility	-0.005	-0.180***	-0.006	-0.171***
	(0.006)	(0.041)	(0.034)	(0.039)
Working capital	0.001	-0.299***	-0.053**	-0.268***
	(0.004)	(0.027)	(0.023)	(0.027)
BM	0.001	0.029***	-0.004	0.031***
	(0.001)	(0.005)	(0.005)	(0.005)
Unemployment target city mean	1.613***			
	(0.215)			
GDP target city mean			-2.211***	
			(0.584)	
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Obs.	2,994	2,994	3,205	3,205
R2		0.556		0.526
Underidentification test		49.829		12.967
Weakdentification test		56.073		14.307

This table reports the regression results of the effects of political reasons on excess leverage in matched state firms using instrumental variable approach. *Unemployment gap* is the difference between the annual unemployment rate and the target unemployment rate of the city. *GDP gap* is the difference between annual GDP growth and target GDP growth of the city. *Unemployment target city mean* is the mean value of target unemployment rate for other cities within the same province. *GDP target city mean* is the mean value of target GDP growth rate for other cities within the same province. The constant term is included into the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Table 12 Excess leverage and managerial ownership

	Excess leverage		
	Full sample	Government-controlled	SOE-controlled
	(1)	(2)	(3)
Managerial ownership	-0.198	-0.076	-0.543***
	(0.141)	(0.157)	(0.173)
Duality	0.012	0.013	-0.016
	(0.011)	(0.013)	(0.018)
Board size	0.021	0.030	-0.030
	(0.035)	(0.046)	(0.057)
Independent director	0.023	-0.039	0.073
	(0.095)	(0.135)	(0.130)
CEO age	-0.061	-0.042	-0.124*
	(0.044)	(0.051)	(0.068)
Female CEO	0.012	0.028	-0.131***
	(0.023)	(0.025)	(0.028)
Firm size	0.010	0.016	0.039**
	(0.011)	(0.013)	(0.019)
Cash flow	-0.085*	-0.094*	0.007
	(0.046)	(0.053)	(0.100)
ROA	0.173*	0.278**	-0.074
	(0.102)	(0.127)	(0.173)
Sales growth	-0.011**	-0.015**	-0.019**
	(0.005)	(0.006)	(0.010)
Tangibility	0.006	0.021	0.025
	(0.049)	(0.059)	(0.100)
Working capital	-0.019	-0.017	-0.008
	(0.029)	(0.035)	(0.063)
BM	0.031***	0.040***	0.008
	(0.008)	(0.008)	(0.013)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
R2	0.567	0.588	0.586
Obs.	2,336	1,664	672

This table reports the regression results of the effects of managerial ownership on excess leverage in state firms. Column 1 reports the results based on the full sample. Column 2 reports the results based on the government-controlled firms. Column 3 reports the results based on the SOE-controlled firms. All independent variables are lagged by one year. The constant term is included in the estimation but not reported. All variables are defined in Appendix A. The robust error clustered at the firm level is shown in parentheses. *, **, *** indicate statistical significance level at 10%, 5%, and 1%, respectively.

Appendix A. Variable definitions

Leverage: Total debt scaled by total assets.

Excess leverage: The difference between a firm's actual leverage ratio and predicted leverage ratio.

GDP gap: The difference between a city's target GDP growth and annual GDP growth.

Unemployment gap: The difference between a city's annual unemployment rate and the target unemployment rate.

Labor size: Number of employees scaled by total assets.

Excess labor: The difference between a firm's actual labor size ratio and predicted labor size ratio.

Investment: Net cash payment for fixed assets, intangible assets, and other long-term assets scaled by total assets.

Excess investment: The difference between a firm's actual investment ratio and predicted investment ratio.

Firm size: Natural logarithm of total assets.

Cash flow: Net operating cash flow scaled by total assets.

Sales growth: Change in sales revenue from the previous year scaled by sales revenue in the previous year.

ROA: Net income divided by total assets.

Tangibility: Fixed assets scaled by total assets.

Working capital: Difference between current assets and current liabilities scaled by total assets

BM: Book value of equity to market value of equity.

Industry leverage: The median leverage value of the industry.

Blockshares: The percentage of shares held by controlling shareholders.

Inflation: The annual growth of the consumer price index.

Local_D: Dummy variable that equals one if the firm is controlled by local government, and zero otherwise.

Turnover_D: Dummy variable that equals to one if it's around the period of municipal party committee secretary and mayor turnover, and zero otherwise.

Managerial ownership: Total number of shares owned by directors and executives divided by the total number of shares outstanding.

Duality: Dummy variable that takes the value of 1 for CEOs who also chair the board.

Board size: Natural logarithm of the total number of directors.

Independent director: Number of independent directors scaled by the total number of directors.

CEO age: Natural logarithm of CEO's age.

Female CEO: Dummy variable that takes the value of 1 for female CEOs.