



# Ownership concentration and financial policy of China's listed firms

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## ARTICLE INFO

### JEL classification:

D22  
G32  
G34

### Keywords:

Ownership concentration  
Capital structure  
Cash reserves  
POEs  
SOEs  
China  
Management discretion

## ABSTRACT

This study examines the role of ownership concentration, measured by the top-five shareholders' equity ownership, in shaping corporate finance policies in China. Among privately-owned enterprises (POEs), ownership concentration has negative and positive effects on their debt and cash reserves, respectively, consistent with controlling shareholders' incentives to stave off business failures and ride out adverse future circumstances. These effects are more pronounced if POEs have high market-to-book, suggesting that growth opportunities heighten their controlling shareholders' desire to avoid debt and hoard cash. Although ownership concentration has similar effects on debt and cash in state-owned enterprises (SOEs), these effects in SOEs appear to reflect management discretion or conservatism. Our evidence suggests that ownership concentration is a key driver of corporate finance in an emerging market, but private and state ownership concentrations have seemingly similar but qualitatively different consequences.

## 1. Introduction

Academic research on Chinese firms' corporate finance and governance has seen steady growth in recent decades with the expansion of the country's economy and financial markets. This growing literature assesses the relevance of the forces that previous U. S. studies identified, and also explores unique aspects of China's corporate landscape—most prominently, the prevalence of SOEs. Huang and Song (2006) report that the leverage of China's listed firms is positively related to firm size and fixed assets but negatively to profitability, growth opportunities and managerial ownership. Jiang, Jiang, and Kim (2020) find that a large majority of corporate debt is short-term and SOEs' debt ratios are higher than those of POEs. Feng, Lu, and Wang (2020) show that more productive firms hold less capital and more cash in China. Kato and Long (2006) demonstrate that the CEO turnover-performance link is strong for firms with a majority shareholder but weak for those controlled by the state. Conyon and He (2011) find that executive pay is positively related to firm performance, although such pay is small in SOEs or firms with high ownership concentration. Bai and Lian (2013) provide evidence that SOEs overinvest and suffer management entrenchment. A host of studies also document that state ownership is associated with operating underperformance or low productivity compared to private ownership.<sup>1</sup> It is important to note, however,

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<sup>1</sup> See, e.g., Deng, Jiang, Li, and Liao (2020), Dong, Uchida, and Hou (2020), Fan, Huang, Oberholzer-Gee, and Zhao (2020), Guo, Han, Jahan, Jurzyk, and Ruane (2021).

<https://doi.org/10.1016/j.chieco.2023.101973>

Received 23 December 2021; Received in revised form 20 February 2023; Accepted 3 April 2023

Available online 6 April 2023

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that POEs' market-capitalization weight in China's stock market has been almost on par with SOEs in recent years (see Fig. 1), although a number of prior studies have focused exclusively on SOEs.

In this study, we investigate the impact of top shareholders' equity ownership—namely, ownership concentration—on corporate financial policy, and also delve into whether such concentration has different consequences for POEs and SOEs. The role of ownership concentration is an unexplored aspect of Chinese firms' corporate finance in previous research, although it is well documented that corporate ownership outside the U.S. is not diversified but concentrated (e.g., La Porta, Lopez-de-Silanes, & Shleifer, 1999). Indeed, we find that China's firms have high levels of ownership concentration, as the five-largest shareholders own 49.7% and 53.3% of the average POE and SOE, respectively, in our sample of listed firms for the period 2010–2019. This can imply that, unlike in the U.S., the interests of major shareholders are a key driver of corporate financial policies in China.

Specifically, we posit that POEs' debt and cash policies reflect large shareholders' incentives to stave off business failures and ride out adverse future circumstances. Accordingly, we predict that POEs with concentrated ownership use low debt but hold large cash reserves. To elaborate our reasoning, high ownership concentration raises the costs of debt (e.g., a loss from bankruptcy/liquidation) but diminishes the benefits of debt (e.g., mitigation of managerial agency problems) for top shareholders. Top shareholders' loss from credit events increases as their equity stakes increase, while their large equity stakes grant them power to counteract managerial agency problems. Also, compared to minority shareholders, top shareholders have more to lose from credit events in which they are forced to give up private benefits and sell off their stakes at steep discounts. China's undeveloped financial markets can push the costs of debt even higher, as POEs' debt financing consists mostly of short-term debt (posing high liquidity risk) due to the unavailability of long-term debt (e.g., Jiang et al., 2020). Along the same lines, the precautionary motive for holding cash (e.g., Bates, Kahle, & Stulz, 2009) can figure prominently in POEs' financial policy because of their restricted access to external finance, coupled with high economic and regulatory uncertainties. Concentrated ownership heightens this motive, as top shareholders' loss from adverse financial circumstances is commensurate with the size of their ownership stakes. Thus, the precautionary motive can prompt POEs to stock up on cash when ownership concentration is high. We further posit that, compared to minority shareholders, top shareholders have a greater incentive to preserve investment opportunities and this incentive can steer POEs' financial policy further toward lower debt and higher cash.

In contrast, the nature of ownership concentration differs substantially for SOEs. We present two relevant views and then derive predictions. In the first view ("the state capitalism view"), SOEs are mandated to serve social stability functions (e.g., Bai, Lu, & Tao, 2006), while they enjoy preferential access to debt financing. Jin, Xu, Xin, and Adhikari (2022) posit that SOEs with high state ownership (i.e., concentrated ownership) are required to serve society at large or protect people's livelihood, compared to SOEs with low state ownership (i.e., diversified ownership). Accordingly, the state capitalism suggests that SOEs with high ownership concentration pursue growth or employment targets set by the state more vigorously, compared to SOEs with low ownership concentration. This pursuit could lead to suboptimal investment—more accurately, overinvestment—which depletes cash resources, resulting in small cash balances along with large debt. Therefore, the state capitalism view predicts that ownership concentration is positively associated with debt but negatively with cash.

Meanwhile, the second view ("the management discretion view") points to the potential that the separation of management and ownership in SOEs creates management discretion problems. In this view, high state ownership in SOEs yields the absence of other major shareholders that can restrain managers' self-serving decisions. Specifically, in SOEs with high state ownership, managers are quasi-government bureaucrats (Cao, Lemmon, Pan, Qian, & Tian, 2019; Jin et al., 2022; Liu & Zhang, 2018; Xin, Bao, & Hu, 2019) and conservatism (or risk-aversion) can be built into their character and decision making so it manifests in the form of avoiding debt and hoarding cash. Meanwhile, conservatism is likely to be less pronounced in SOEs with low state ownership, as those SOEs are expected to strive to preserve and increase the value of state assets, compared with SOEs with high state ownership (e.g., Jin et al., 2022). Moreover, their managers have greater incentives to create shareholder value, as they are evaluated based more on economic performance than on political performance (e.g., Liu & Zhang, 2018). Thus, compared to their counterparts in SOEs with concentrated ownership, managers in SOEs with diversified ownership tolerate greater risk in managing financial policies, resulting in higher debt and lower cash reserves. In sum, the managerial discretion view predicts that ownership concentration is negatively associated with debt but positively with cash among SOEs.

Therefore, these two views yield contrasting predictions for SOEs. The state capitalism view (the management discretion view) predicts that high ownership concentration leads to high debt and low cash (low debt and high cash). In both views, however, investment opportunities are unlikely to factor into SOEs' debt and cash decisions because the social stability mandate and managerial conservatism are not conducive to preserving investment opportunities.

To test our predictions, we construct a sample of China's listed firms from the CSMAR database for the period 2010–2019. We measure ownership concentration by the top-five shareholders' equity ownership in each firm on the premise that their equity holdings reflect controlling shareholders' interests as well as their power. In the first part of our investigation, we analyze the effects of ownership concentration on POEs' debt and cash policies. In the second part, we extend our analysis to SOEs to explore the potential that private and state ownership concentration can have different consequences for corporate debt and cash policies.

We first conduct bivariate analysis on ownership concentration's relation with debt and cash by sorting POEs into quintiles based on ownership concentration (*OC*). We find that the total debt ratio decreases as ownership concentration increases, with the median total debt ratio decreasing from the bottom (0.201) to the top *OC* quintile (0.173). The short-term debt ratio displays a similar pattern, with its median decreasing from the bottom (0.138) to the top *OC* quintile (0.107). However, the median long-term debt ratio of our sample POEs is close to zero, suggesting that the majority of POEs do not have access to long-term debt financing. Meanwhile, the cash ratio increases with an increase of ownership concentration, with the median cash ratio increasing from the bottom (0.136) to the top *OC* quintile (0.157).

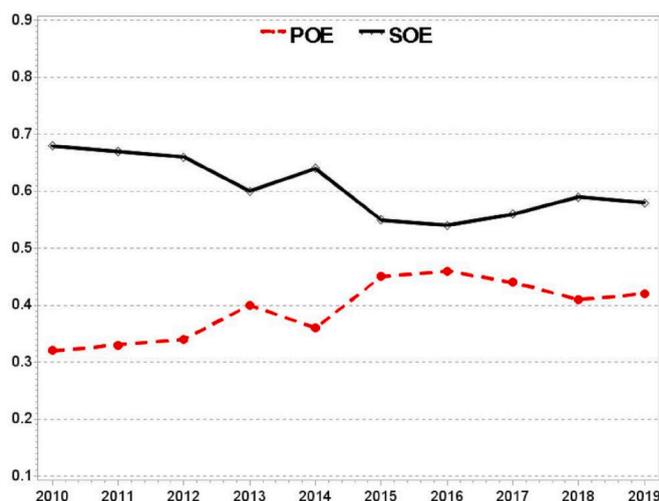


Fig. 1. The market-value weights of POEs and SOEs in China's stock markets.

The graph plots the weights of privately-owned enterprises (POEs) and state-owned enterprises (SOEs) in terms of their total market capitalizations. The sample consists of non-financial firms listed on Shanghai and Shenzhen exchanges over the period 2010–2019.

We then estimate multiple regressions of POEs' debt and cash. After controlling for a standard set of firm characteristics along with industry- and year-fixed effects, we find that ownership concentration has significant negative effects on the total debt and short-term debt ratios, while it has a significant positive effect on the cash ratio. In a series of robustness checks that address potential endogeneity problems—e.g., propensity score matching (PSM), instrument variable (IV) regressions and firm-fixed effects regressions—we find consistent support for our conclusion: POEs with high ownership concentration have lower debt but higher cash reserves than those with low ownership concentration.

Our results suggest that POEs' capital structure and cash policies are shaped by top shareholders' incentives to avoid bankruptcy/liquidation risk and scrutiny from creditors. To test whether these incentives are more pronounced if the firm has investment opportunities, we create a high market-to-book dummy (i.e., a proxy for investment opportunities) and then interact it with ownership concentration. Regression results suggest that the presence of investment opportunities reinforces both the negative and positive effects of ownership concentration on debt and cash, respectively. In addition, we address the concern that POEs with high ownership concentration may underinvest, given that such firms use debt financing sparingly and maintain large cash balances. We quantify underinvestment by taking deviations from expected investment (e.g., Biddle, Hilary, & Verdi, 2009) and find that high ownership concentration does not lead to underinvestment.

We then turn our attention to SOEs. Our regression results show that ownership concentration also has negative and positive effects on the debt and cash of SOEs, respectively, suggesting that, like POEs, SOEs with high ownership concentration also shun debt and stockpile cash. Therefore, our evidence supports the management discretion view, rather than the state capitalism view. Meanwhile unlike in POEs, the presence of investment opportunities does not strengthen SOEs' propensities to avoid debt and hoard cash at high levels of ownership concentration, consistent with the idea that self-interested SOE managers have little incentive to protect growth opportunities in setting debt and cash policies. These findings continue to hold if we use state ownership in place of top five shareholdings as a proxy for ownership concentration. We further find that, unlike in POEs, management ownership in SOEs is close to zero. Therefore, our results fall in line with the idea that high ownership concentration in SOEs is associated with greater management discretion or conservatism, yielding those firms' penchant to avoid debt and hoard cash but with little intention of safeguarding investment opportunities.

The present study adds to the growing literature on Chinese firms' corporate finance by shining the spotlight on ownership concentration. To our knowledge, this is the first study to document that ownership concentration shapes Chinese firms' capital structure and cash policies. Despite the fact that firms outside the U.S. are typically under the control of families or the state with high ownership concentration (La Porta et al., 1999), previous studies have paid little attention to the ramifications of ownership concentration for China's firms. Although Ma, Naughton, and Tian (2010) examine Chinese firms' ownership concentration, their study covers a period prior to the split-share reform in 2005 and does not consider capital structure and cash policies. Huang and Song (2006) identify a list of firm characteristics that determine Chinese firms' capital structure, but they do not consider ownership concentration.

We present novel findings concerning the consequences of private and state ownership concentration. Although concentrated ownership has ostensibly identical effects on capital structure and cash reserves for both POEs and SOEs, those effects are underpinned by fundamentally different forces. In regard to private ownership concentration, our findings point to the primacy of controlling shareholders' desire to stave off credit events and other adverse circumstances as a way to preserve investment opportunities. We speculate Feng et al. (2020) observation—that more productive firms hold more cash in China—could arise partly from a similar desire of POEs to preserve such opportunities. In contrast, with respect to state ownership concentration, our findings suggest that the management-ownership separation in SOEs creates management entrenchment (e.g., Bai & Lian, 2013; Kato & Long, 2006), a problem

that only intensifies at high levels of ownership concentration. In short, although high ownership concentration yields low debt and high cash in both POEs and SOEs, such effects reflect two disparate underlying forces: controlling shareholders' incentives to preserve investment opportunities in POEs vs. management discretion in SOEs.

This study complements prior international studies documenting that the type of ownership (i.e., private vs. state ownership) matters to corporate performance and behavior. For example, Dewenter and Malatesta (2001) find that state-owned firms are less efficiently run but use more debt than privately-owned firms. Boubakri, Cosset, and Guedhami (2005) show that private ownership concentration is positively associated with post-privatization performance and such positive association is stronger in countries with weak investor protection. Our evidence also relates to Boubakri, Cosset, and Saffar (2013) finding that corporate risk taking is negatively associated with state ownership. Our study extends this strand of research by demonstrating that ownership concentration is a key driver of corporate finance in an emerging market, but private and state ownership concentrations have qualitatively different (albeit seemingly similar) consequences.

The rest of the paper proceeds as follows. Section 2 develops our hypotheses and describes the sample and key variables, Section 3 presents empirical results, and Section 4 concludes.

## 2. Hypothesis development and sample description

### 2.1. Hypothesis development

According to the trade-off theory of capital structure, firms balance the costs and benefits of debt in their capital structure decision as a way to maximize shareholder value. While debt poses bankruptcy/liquidity risk, it can confer benefits on shareholders by mitigating the management-shareholder conflicts. For example, debt entails monitoring by creditors with its covenants and renegotiations hindering managers' self-serving decisions (e.g., Chava & Roberts, 2008; Nini, Smith, & Sufi, 2012). Debt also reduces free cash flows, thereby limiting managers' wasteful deployment of a firm's resources (Jensen, 1986).

We posit that concentrated ownership in POEs raises the costs of debt but lessens its benefits for shareholders, more specifically, large shareholders. After all, shareholders have more to lose from credit events (such as default or liquidation), the higher their equity holdings, suggesting that their incentive to avoid debt increases with the size of their ownership stakes. In cases of credit events, top shareholders face the prospect of losing private benefits and suffer from illiquid ownership stakes, unlike minority shareholders. In other words, credit events likely force top shareholders to give up private benefits and sell off their stakes at steep discounts (as large stakes are harder to sell in financial trouble). Meanwhile, top shareholders' direct oversight of management can supplant the monitoring and disciplining role of debt, as those shareholders (along with family members) frequently take on management positions and even run day-to-day operations. In other words, ownership concentration can render the benefits of debt inconsequential in capital structure decisions.

Furthermore, China's undeveloped financial markets can sharpen shareholders' incentive to keep debt at low levels. As we will show below, the majority of POEs do not have access to long-term debt financing. The unavailability of long-term debt means that debt financing in China poses exceedingly high liquidity risk and entails frequent (unwelcome) scrutiny by creditors, as firms have to renew and renegotiate debt contracts at short intervals.<sup>2</sup> It also means that POEs are unable to mix long-term and short-term debt, as a way to achieve a balance between their liquidity risk and underinvestment problems.<sup>3</sup>

In a nutshell, while ownership concentration diminishes the benefits of debt (e.g., reduction of management-shareholder conflicts), it heightens the costs of debt (e.g., a loss from credit events) for top shareholders. China's undeveloped financial markets can push the costs of debt even higher for top shareholders who have more to lose from credit events compared to minority shareholders. Furthermore, at high levels of ownership concentration, top shareholders can exert sufficient influence over the firm's financial policy to ensure that its capital structure reflects their preference for lower debt.

**Hypothesis 1.** POEs with high ownership concentration use lower debt than those with low ownership concentration.

In exploring the relation between ownership concentration and cash reserves, we posit that the precautionary motive for holding cash is a key driver of Chinese POEs' cash policy, particularly, among those with high ownership concentration. Bates et al. (2009) find that the precautionary motive is the primary determinant of U.S. firms' cash holdings. This motive could be more prominent for China's POEs in light of high levels of economic and regulatory uncertainty as is typical in an emerging country. Also, China's undeveloped financial markets can drive firms to stock up on cash for precautionary purposes. For example, on top of the absence of long-

<sup>2</sup> We acknowledge that ownership concentration can potentially lower the costs of debt and thereby result in a higher usage of debt by POEs, if such concentration attenuates the shareholder-debtholder conflict—a form of conflict that can give rise to underinvestment (Myers, 1977) and asset substitution (Jensen & Meckling, 1976). Along the same lines, banks in China may favorably take into account ownership concentration in their loan decisions, e.g., by charging lower interest rates to firms that are controlled by large shareholders. It is not clear, however, whether this effect in China is significant enough—in comparison of the aforementioned costs of debt for controlling shareholders—to create a positive relation between ownership concentration and the use of debt. This can be assessed in our empirical analysis that follows.

<sup>3</sup> While the use of short-term debt poses liquidity risk, it can lessen the underinvestment problem. Johnson (2003) documents that firms tend to increase short-term debt relative to long-term debt if they have many investment opportunities, suggesting that short-term debt can help reduce the underinvestment problem. However, we posit that in China, POEs' reliance on short-term debt is more a result of the unavailability of long-term debt financing than that of their effort to mitigate the underinvestment problem.

term debt financing stated above, POEs face limited access to equity financing due to regulatory restrictions (Jiang et al., 2020). Thus, in coping with the precarious market conditions coupled with the challenge of external financing, it is vital to maintain sufficiently large cash reserves and ride out adverse and unforeseen circumstances. Failure to withstand those circumstances leads to an abrupt, premature termination of the business, inflicting a loss of investment on controlling shareholders. In this regard, the precautionary motive for holding cash increases as ownership concentration increases, as shareholders' loss incurred by business failure is commensurate with the size of their ownership stakes.

It should be noted that weak shareholder protection or managerial agency problems could also result in high cash holdings. Dittmar, Mahrt-Smith, and Servaes (2003) find that firms in countries with weak shareholder protection hold more cash, compared to those in countries with strong shareholder protection. However, weak shareholder protection is a country-level variable influencing firms across the board, and there is little reason a priori that its influence on cash holdings is more pronounced for firms with high ownership concentration in China. Moreover, as Harford, Mansi, and Maxwell (2008) document, managerial agency problems can in fact lead to lower cash holdings as managers spend quickly on acquisitions and capital expenditures instead of hoarding cash. Also, as we posited above, ownership concentration in China's POEs can restrain managerial agency problems, as controlling shareholders monitor managers or take on management duties themselves. Therefore, in cases where POEs with high ownership concentration hold large cash balances, such balances are not likely to arise from managerial agency problems—as opposed to the precautionary motive for cash.

**Hypothesis 2.** POEs with high ownership concentration hold more cash than those with low ownership concentration.

In corporate finance research, investment opportunities are seen as a key force that shapes capital structure and cash policies. Specifically, prior studies document that investment opportunities have a negative effect on the use of debt but a positive effect on cash holdings. For example, Rajan and Zingales (1995) find that debt ratios are negatively associated with market-to-book (a proxy for investment opportunities), consistent with the idea that firms avoid debt to preserve investment opportunities. The negative effect of market-to-book on debt is also congruent with Myers' (1977) underinvestment hypothesis in which debt-laden firms pass up positive NPV projects if those projects benefit creditors but not shareholders. Opler, Pinkowitz, Stulz, and Williamson (1999) demonstrate that cash holdings are positively associated with market-to-book, suggesting that firms with investment opportunities hold large cash for fear of foregoing those opportunities. In a similar vein, Bates et al. (2009) conclusion—that the precautionary motive is a prime driver of U.S. firms' large cash holdings—can imply that investment opportunities shape cash holdings, given that much of the precautionary motive can be traced to firms' desire to defend investment opportunities.

We posit that investment opportunities induce China's POEs to use less debt and hold more cash as a way to safeguard such opportunities. In a fast-growing economy like China, investment opportunities could be highly valuable and, on the flip side, passing up such opportunities could be highly damaging to top shareholders. We further posit that this inducement is greater when ownership is concentrated than when it is diversified, given that top shareholders have more to gain or lose from preserving or foregoing those opportunities, the greater their ownership stakes in the firm. Moreover, top shareholders with significant equity stakes can influence the firms' financial policies to ensure that investment opportunities are preserved. Therefore, we hypothesize that ownership concentration intensifies the forces that yield low debt and large cash in the presence of investment opportunities.

**Hypothesis 3.** The propensities of POEs with high ownership concentration to use low debt and hold large cash are heightened if POEs have valuable growth opportunities.

Turning our attention to SOEs, we highlight two opposing forces—namely, the state's power and management's discretion/self-interest—that can drive the relationship between ownership concentration and financial policies in SOEs. These forces help us to build two views that we refer to as “the state capitalism view” and “the management discretion view,” respectively.

First, in the state capitalism view, China's SOEs are mandated to serve social stability functions (e.g., Bai et al., 2006) so maximizing shareholder value is rarely a first priority (unlike its POEs). Therefore, by construction, SOEs' debt and cash levels are suboptimal from private shareholders' perspective. Also, with the state's banking, SOEs enjoy preferential access to bank loans, which could lead to excess debt. We note, however, that not all SOEs are created equal. Jin et al. (2022) document that SOEs with high state ownership (i.e., concentrated ownership) are under greater pressure to serve social goals—such as protecting people's livelihood—more than those with low state ownership (i.e., diversified ownership). Liu and Zhang (2018) report that the top managers of the former SOEs are evaluated based more on political performance, compared to their counterparts of the latter SOEs. Along these lines, we posit that, compared to SOEs with diversified ownership, SOEs with concentrated ownership pursue growth or employment targets set by the state more vigorously. Such pursuit can lead to overinvestment—which exhausts cash resources—resulting in small cash balances along with large debt. Therefore, the state capitalism view predicts that ownership concentration is positively associated with debt but negatively with cash. This view also predicts that the presence of investment opportunities does not moderate the effects of ownership concentration on debt and cash policies because social stability goals take precedence over preservation of long-term investment opportunities.

Second, the management discretion view builds on the premise that concentrated ownership in SOEs confers greater discretion on managers, because such concentration means the absence of other major shareholders that can restrain managers' self-serving decisions. After all, controlling shareholders in SOEs are legal persons such as governments and their agencies so separation of

management and ownership is the norm in SOEs—in contrast with many POEs in which founders or their family members often run day-to-day operations. This separation in SOEs has the potential to create the same type of agency conflicts that plague many U.S. corporations—namely, management entrenchment.<sup>4</sup> Berger, Ofek, and Stulz (1997) document evidence that entrenched managers in the U.S. have discretion over financial policy and, more specifically, seek to avoid debt as a way to protect their undiversified human capital or reduce performance pressure.

We posit that management discretion in SOEs with high state ownership has two uniquely Chinese features: (i) conservatism/long-term career concerns as government bureaucrats and (ii) short-termism due to frequent management turnover. Extant studies—such as Xin et al. (2019), Jin et al. (2022) and Cao et al. (2019)—point out that SEO managers (or “cadets” in these authors’ words) are quasi-government officials, suggesting that conservatism (as well as risk aversion) is built into these managers’ character and decision making as government bureaucrats. This conservatism can manifest in the form of avoiding debt and hoarding cash. The above studies also document that non-monetary compensation—such as managerial and political promotions—constitutes the prime incentive mechanism for SOE managers.<sup>5</sup> Particularly, their long-term career concerns within government bureaucracy are a prime driver of their managerial decisions. Therefore, these quasi-government bureaucrats have an incentive to avoid debt and hoard cash to minimize the risk of outright business failure (e.g., insolvency or bankruptcy), because such failure could deal a crippling blow to their bureaucratic career by ruining their reputation.<sup>6</sup> Additionally, these managers are not in charge of the same company over the long haul, as they are frequently transferred to other SOEs of the same or higher ranks (Xin et al., 2019) and to government positions (Cao et al., 2019). This can create short-termism in which SOE managers choose debt and cash levels with little intention of safeguarding investment opportunities.

We posit, however, that conservatism (as government bureaucrats) and short-termism (due to frequent turnover) are less pronounced in SOEs with diversified ownership. According to Liu and Zhang (2018), while managers are career-track bureaucrats and compensated as such in SOEs with high state ownership, their counterparts in SOEs with low state ownership have greater incentives to create value in SOEs as they are evaluated based more on economic performance than on political performance. Jin et al. (2022) also document that SOEs with low state ownership are expected to strive to preserve and increase the value of state assets, compared with SOEs with high state ownership that are required to protect peoples’ livelihoods and serve the society at large. Therefore, we posit that managers in SOEs with diversified ownership tolerate greater risk in managing financial policies, resulting in higher debt and lower cash reserves, compared to SOEs with concentrated ownership. Therefore, this managerial discretion view predicts a positive (negative) cross-sectional relation between ownership concentration and debt (cash) among SOEs.

In summary, the above two views yield contrasting predictions on the effects of ownership concentration on SOEs’ debt and cash. On the one hand, the state capitalism view predicts that high ownership concentration leads to high debt and low cash. On the other hand, the management discretion/conservatism view predicts that such concentration results in low debt and high cash. In both views, however, the presence of investment opportunities might not factor into SOEs’ debt and cash decisions because of the priority given to social stability goals or managerial conservatism. Thus, investment opportunities may not moderate or reinforce the effects of ownership concentration on debt and cash in SOEs.

**Hypothesis 4a.** According to the state capitalism view, SOEs with high ownership concentration use higher debt and hold smaller cash, compared to those with low ownership concentration.

**Hypothesis 4b.** According to the management discretion view, SOEs with high ownership concentration use lower debt and hold larger cash, compared to those with low ownership concentration.

**Hypothesis 4c.** The presence of investment opportunities does not moderate (heighten) the propensities of SOEs with high ownership concentration to use high debt and hold small cash (low debt and hold large cash) according to the state capitalism view (the management discretion view).

## 2.2. Sample construction and key variables

Our sample consists of China’s firms that are listed on the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE). The SSE and SZSE began trading in 1990 and 1991, respectively. During the 2000s, the SZSE added two boards, one for small- and medium-sized enterprises and the other for startup firms, in 2004 and 2009, respectively. Arguably, “the split-share reform” (initiated in April 2005) has been the most sweeping reform in China’s stock market history. Prior to the reform, the majority of Chinese firms’ shares were non-tradable and held primarily by the state or legal persons. The reform converted large numbers of non-tradable shares into tradable ones. Jiang et al. (2020) report that non-tradable shares accounted for over 60% of the average firm’s shares before the reform, but this percentage dropped to below 30% by 2010.

<sup>4</sup> A paucity of compensation devices such as stock options may further aggravate management entrenchment in China’s SOEs. Kato and Long (2006) and Bai and Lian (2013) document evidence of management entrenchment in SOEs.

<sup>5</sup> Managerial promotion refers to transfers to larger SOEs of the same rank or those of a higher rank, whereas political promotion involves transfer to government positions. Previous studies show that SOE managers’ monetary compensation is much lower compared to POE managers (e.g., Xin et al., 2019).

<sup>6</sup> Meanwhile, moderately poor business performance may not necessarily reflect badly on their performance record and hurt their chances of promotion. This is mainly because SOE managers are expected to perform multi-tasks including meeting the aforementioned social stability goals, and thus their job performance is not evaluated based on accounting metrics like profitability (e.g., Jin et al., 2022; Xin et al., 2019).

To construct our dataset of China's listed firms, we use the China Stock Market Accounting and Research (CSMAR) database. The CSMAR provides a comprehensive set of firm-level characteristics—including financial statement numbers, stock prices, share ownership and corporate governance—for firms that are listed on the stock exchanges in Shanghai and Shenzhen. We begin by collecting firm-years whose records are available in the CSMAR for the period 2010–2019. We drop companies in the financial sector because of the distinctive nature of their operations and financial reporting systems. We also drop firm-years if book assets are missing or if the firm performs its IPO in that year. The filtering procedure leaves us with 17,436 firm-years (1780 unique firms) spanning the period of 2010–2019. This final dataset consists of 8806 firm-years (980 unique firms) of POEs and 8630 firm-years (964 unique firms) of SOEs.

In identifying POEs and SOEs, we follow the CSMAR's classification of listed firms. Specifically, if the database classifies a firm as an SOE (in a database item labeled "Code of Equity Nature"), then we treat the firm as an SOE but otherwise as a POE. Previous research on China's firms points out that there is no clear-cut method of defining or identifying SOEs.<sup>7</sup> Although our approach of following the CSMAR's classification could be subject to criticism, there is an indication that firms classified as SOEs in the database are controlled by government agencies. SOEs' actual controllers (in a database item labeled "Name of the Actual Controller") have names such as "State-owned Assets Supervision and Administration Commission of the State Council," "State-owned Assets Supervision and Administration Commission of Haidan District People's Government of Beijing," and so on. In addition, when we compute the percentage state ownership of firms (using a database item labeled *Nshrstt*) in our final dataset, the mean state ownership of POEs is close to zero (0.4%), whereas that of SOEs is 8.2%, suggesting that the two groups are distinct from each other in terms of the presence (or absence) of state ownership.

The key variable in our analysis is ownership concentration. We measure ownership concentration by the top-five shareholders' equity ownership in each firm.<sup>8</sup> Our premise is that the proportion of the five largest shareholders' equity holdings reflects controlling shareholders' interests as well as their power to push their incentives on the firm. In the early part of our empirical analysis, we focus on POEs in examining the effects of ownership concentration on capital structure and cash reserves. In the latter part, we extend our analysis to SOEs in exploring whether and how ownership concentration could have similar or divergent effects on the financial policy of POEs and SOEs.

The variables that we use in our analysis are presented and defined in [Appendix Table A.1](#). To mitigate the effects of extreme values, we winsorize all continuous variables at the 1st and 99th percentiles of their distribution.

### 3. Empirical results

#### 3.1. Bivariate analysis on ownership concentration's relation with debt and cash

In [Table 1](#), we report the mean and median values of ownership concentration, the debt ratios and the cash ratio for POEs. We report these values for quintile subgroups that are sorted by ownership concentration as well as for the full sample. The table shows that POEs' ownership concentration (*OC*) is spread out considerably across firms from a median of 0.298 for the bottom quintile to a median of 0.706 for the top quintile.

The table also shows that the total debt ratio is negatively associated with *OC*, as the mean (median) total debt ratio decreases from 0.212 (0.201) of the bottom quintile to 0.195 (0.173) of the top *OC* quintile. Turning to the short-term and long-term debt ratios (i.e., the two components of the total debt ratio), we find that the short-term debt ratio also has a downward-sloping relation with *OC*. Its downward-sloping relation is more clearly seen in median values, as the median short-term debt ratio decreases from the bottom (0.138) to the top *OC* quintile (0.107). Also, the mean short-term debt ratio of the top quintile (0.137) is much lower than the means of the other quintiles ranging from 0.153 to 0.159. On the other hand, the relation between *OC* and the long-term debt ratio is neither downward nor upward-sloping because the median long-term debt ratio is close to zero in all quintiles. For POEs as a whole, the median long-term debt ratio is close to only 0.005, suggesting that the majority of POEs do not have access to long-term debt financing.<sup>9</sup>

The table also shows that the cash ratio is positively associated with *OC*. The mean (median) cash ratio increases monotonically from the bottom (0.169 (0.136)) to the top quintile (0.205 (0.157)) so the gap between the mean (median) cash ratio of the bottom and top quintiles is as large as 3.6 (2.1) percentage points. In addition, the net debt ratio, defined as (total debt - cash)/assets, is negatively associated with *OC*, as the mean (median) net debt ratio decreases from 0.044 (0.059) to -0.011 (0.019) as we move from the bottom to top *OC* quintile. Because of the way net debt is constructed, this negative association reflects *OC*'s negative and positive relations with the total debt and cash ratios, respectively. It is remarkable that the gap in the mean (median) net debt ratio between the bottom and top *OC* quintiles exceeds 5 (4) percentage points. Moreover, in the top *OC* quintile, the mean (median) net debt ratio is even negative (close to zero), suggesting that POEs' cash holdings exceed or are close to the amount of their debt at the highest level of ownership concentration.

Therefore, our observations from [Table 1](#) suggest that POEs with high ownership concentration use low debt but hold large cash,

<sup>7</sup> See, e.g., [Working Paper](#).

<sup>8</sup> Similarly, [Hartzell and Starks \(2003\)](#) and [Kempf, Manconi, and Spalt \(2017\)](#) use the fraction of a firm's stock held by five largest institutional investors to quantify institutional ownership concentration in their U.S. studies.

<sup>9</sup> The long-term debt ratio displays high positive skewness with a close-to-zero median value but a much higher mean value for the full sample, suggesting that long-term debt financing is granted to only a small proportion of POEs.

**Table 1**  
Mean and median debt and cash reserves for subgroups by ownership concentration.

	Quintiles by ownership concentration (OC)					All obs.
	1 (low)	2	3	4	5 (high)	
<i>OC</i>	0.290 [0.298]	0.410 [0.407]	0.498 [0.495]	0.582 [0.579]	0.707 [0.706]	0.497 [0.496]
<i>Total debt/Assets</i>	0.212 [0.201]	0.207 [0.192]	0.201 [0.179]	0.205 [0.188]	0.195 [0.173]	0.204 [0.187]
<i>ST debt/Assets</i>	0.156 [0.138]	0.159 [0.131]	0.153 [0.126]	0.158 [0.130]	0.137 [0.107]	0.153 [0.126]
<i>LT debt/Assets</i>	0.055 [0.014]	0.048 [0.004]	0.047 [0.003]	0.047 [0.003]	0.058 [0.004]	0.051 [0.005]
<i>Cash/Assets</i>	0.169 [0.136]	0.172 [0.141]	0.185 [0.150]	0.197 [0.151]	0.205 [0.157]	0.186 [0.147]
<i>Net debt/Assets</i>	0.044 [0.059]	0.035 [0.049]	0.016 [0.037]	0.009 [0.032]	−0.011 [0.019]	0.019 [0.039]
Number of obs.	1766	1762	1759	1762	1757	8806

The table reports the mean and median (in brackets) of ownership concentration (*OC*), the total debt ratio, the long-term debt ratio the short-term debt ratio, the cash ratio and the net debt ratio for quintile subgroups that are created based on ownership concentration. The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. *OC* is top-five shareholders' ownership. To create quintile subgroups, each year we divide the sample firms into five equal-sized subgroups by *OC*. Variable definitions are provided in [Table A.1](#).

compared to those with low ownership concentration. [Table 2](#) presents a correlation matrix for ownership concentration, the debt ratios and the cash ratio along with other firm characteristics of interest. The reported correlations confirm the patterns identified in [Table 1](#). For example, the correlation between *OC* and the total debt ratio is negative and significant (−0.046), whereas the correlation between *OC* and the cash ratio is positive and significant (0.153). In [Appendix Table A.2](#), we present additional descriptive statistics for key variables for POEs (as well as SOEs) as a whole.

### 3.2. Multiple regressions of debt and cash ratios of POEs

In [Table 3](#), we estimate multiple regressions for our sample of POEs to determine whether ownership concentration has negative and positive effects on debt and cash, respectively, after controlling for a set of firm characteristics. We consider the total debt ratio, the short-term debt ratio, the cash ratio and the net debt ratio alternately as the dependent variable. We do not include the long-term debt ratio as the dependent variable because the use of long-term debt is close to nil among POEs. Because the debt and cash ratios have lower and upper limits (0 and 1, respectively), we estimate Tobit regression as in [Rajan and Zingales \(1995\)](#). We use two measures of ownership concentration, *OC* and *High OC*, as the explanatory variables of interest. As before, *OC* is a continuous variable that represents the top-five shareholders' total ownership (expressed in decimals). *High OC* is a dummy variable that indicates whether the firm's *OC* belongs to the top one-third of the sample firms in a given year. The regressions control for a standard set of firm characteristics such as the four variables commonly called the Rajan-Zingales variables ([Rajan & Zingales, 1995](#))—firm size (*Size*), profitability (*ROA*), asset tangibility (*Tangibility*) and market-to-book (*MB*)—along with *ROA* volatility (*ROAVOL*). The regressions also control for industry- and year-fixed effects.

Results in [Table 3](#) suggest that POEs have low debt ratios if their ownership concentration is high. In columns (1) and (2), where the dependent variable is the total debt ratio, both *OC* and *High OC* have significant negative effects with coefficients of −0.071 and −0.022. Similarly, in regressions of the short-term debt ratio in columns (3) and (4), the coefficients on both *OC* and *High OC* are significantly negative (−0.041 and −0.013). Therefore, regressions show that both the total debt and short-term debt ratios are negatively associated with ownership concentration—or, equivalently, those ratios are lower for firms with high ownership concentration than those with low ownership concentration. These findings are consistent with the view that POEs' controlling shareholders prefer low debt levels when their ownership stakes are high.

In columns (5) and (6), we estimate regressions of the cash ratio. Both *OC* and *High OC* have significant positive coefficients (0.095 and 0.028, respectively), suggesting that firms with high ownership concentration have large cash holdings, compared to those with low ownership concentration. In columns (7) and (8), where the dependent variable is the net debt ratio, both *OC* and *High OC* have significant negative effects with coefficients of −0.158 and −0.047, respectively. Given that net debt is defined as total debt net of cash, the negative effects in these two columns add credence to the negative and positive effects of ownership concentration on debt and cash, respectively, that are demonstrated in columns (1)–(6).<sup>10</sup>

To summarize, our regression results confirm the two relationships that are identified from bivariate analyses of [Tables 1 and 2](#), as

<sup>10</sup> It is worthy of note that the coefficient on *ROAVOL* (a proxy for cash-flow uncertainty) is not significant or even negative in regressions of cash in columns (5) and (6). This could suggest that POEs' cash balances are not shaped by the precautionary motive for hoarding cash in connection with cash-flow uncertainty. On the other hand, the coefficient on *MB* (a proxy for valuable growth opportunities) is significantly positive in both columns. This positive effect of *MB* on cash balances could be construed as an indication that POE's cash balances are shaped by the precautionary motive in connection with valuable growth opportunities.

**Table 2**  
Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) OC	1									
(2) Total debt/Assets	-0.046* (0.000)	1								
(3) ST debt/Assets	-0.056* (0.000)	0.866* (0.000)	1							
(4) Cash/Assets	0.153* (0.000)	-0.374* (0.000)	-0.315* (0.000)	1						
(5) Net debt/Assets	-0.113* (0.000)	0.864* (0.000)	0.744* (0.000)	-0.789* (0.000)	1					
(6) Size	0.074* (0.000)	0.403* (0.000)	0.230* (0.000)	-0.238* (0.000)	0.394* (0.000)	1				
(7) ROA	0.183* (0.000)	-0.214* (0.000)	-0.209* (0.000)	0.169* (0.000)	-0.236* (0.000)	0.053* (0.000)	1			
(8) Tangibility	0.020 (0.067)	0.329* (0.000)	0.271* (0.000)	-0.414* (0.000)	0.442* (0.000)	0.102* (0.000)	-0.068* (0.000)	1		
(9) MB	0.008 (0.477)	-0.331* (0.000)	-0.269* (0.000)	0.194* (0.000)	-0.322* (0.000)	-0.419* (0.000)	0.167* (0.000)	-0.188* (0.000)	1	
(10) ROAVOL	-0.073* (0.000)	-0.024* (0.030)	-0.010 (0.353)	-0.010 (0.355)	-0.008 (0.489)	-0.154* (0.000)	-0.283* (0.000)	-0.080* (0.000)	0.207* (0.000)	1

The table reports a correlation matrix for ownership concentration (OC), the total debt ratio, the short-term debt ratio, the cash ratio, and the net debt ratio along with other firm characteristics. The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. The numbers in parentheses are *p*-values. \* indicate two-tailed significance at the 5% level. Variable definitions are provided in Table A.1.

**Table 3**  
Regressions of the debt and cash ratios on ownership concentration.

	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Asset		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OC	-0.071*** [0.022]		-0.041** [0.019]		0.095*** [0.017]		-0.158*** [0.031]	
High OC		-0.022*** [0.006]		-0.013** [0.005]		0.028*** [0.005]		-0.047*** [0.008]
Size	0.065*** [0.004]	0.065*** [0.004]	0.035*** [0.003]	0.035*** [0.003]	-0.012*** [0.003]	-0.012*** [0.002]	0.074*** [0.005]	0.074*** [0.005]
ROA	-0.567*** [0.042]	-0.574*** [0.041]	-0.434*** [0.036]	-0.437*** [0.036]	0.148*** [0.031]	0.158*** [0.031]	-0.681*** [0.053]	-0.697*** [0.052]
Tangibility	0.233*** [0.021]	0.234*** [0.021]	0.191*** [0.018]	0.191*** [0.018]	-0.317*** [0.016]	-0.318*** [0.016]	0.529*** [0.028]	0.531*** [0.028]
MB	-0.007*** [0.002]	-0.007*** [0.002]	-0.007*** [0.002]	-0.007*** [0.002]	0.003* [0.002]	0.003* [0.002]	-0.007*** [0.002]	-0.007*** [0.002]
ROAVOL	-0.034 [0.070]	-0.033 [0.071]	-0.029 [0.060]	-0.029 [0.060]	-0.015 [0.057]	-0.016 [0.057]	0.016 [0.091]	0.018 [0.090]
Constant	-1.221*** [0.090]	-1.250*** [0.090]	-0.620*** [0.079]	-0.637*** [0.079]	0.610*** [0.059]	0.648*** [0.059]	-1.747*** [0.113]	-1.810*** [0.114]
N. of obs.	7942	7942	7942	7942	7942	7942	7942	7942
Year FE	Yes							
Ind. FE	Yes							
Pseudo R <sup>2</sup>	-1.123	-1.123	-0.465	-0.465	-0.326	-0.325	156.7	156.4

The table reports Tobit regressions of the debt and cash ratios on ownership concentration (OC) and the high-ownership-concentration dummy (*High OC*). The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. The dependent variables are the total debt ratio in columns (1) and (2); the short-term debt ratio in columns (3) and (4); the cash ratio in columns (5) and (6); and the net debt ratio in columns (7) and (8), respectively. *OC* is top-five shareholders' ownership in the firm. *High OC* is a dummy variable that equals one if the firm's *OC* belongs to the top-third of all sample firms in a given year and zero otherwise. All regressions control for industry and year fixed effects. The numbers in parentheses are firm-clustered standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

ownership concentration of POEs has positive and negative effects on debt and cash, respectively, even after controlling for a standard set of firm characteristics. These findings line up well with the following narrative: POEs' controlling shareholders have incentives to stave off credit events and scrutiny by creditors by lowering debt and stockpiling cash, and these incentives increase with an increase of their ownership stake in the firm.

### 3.3. Addressing endogeneity concerns

We perform a series of robustness checks to address potential endogeneity problems, as the estimated effects of ownership concentration on debt and cash in our regressions may reflect reverse-causality, simultaneity or an omitted-variable bias. Our robustness checks include propensity score matching (PSM), instrument variable (IV) regressions and firm-fixed effects regressions.

In Table 4, we implement propensity score matching by taking *High OC* as treatment. This involves matching observations on the propensities that are estimated using a list of firm characteristics: firm size (*Size*), profitability (*ROA*), asset tangibility (*Tangibility*), market-to-book (*MB*) and ROA volatility (*ROAVOL*). We impose a caliper distance of 0.03 as in Shipman, Swanquist, and Whited (2017). The reported results show that ownership concentration continues to have a negative effect on the use of debt and a positive effect on cash holdings, even after matching observations based on estimated propensities to have high ownership concentration. For example, *High OC* has a significant negative coefficient (−0.017) in regression of the total debt in column (1), although its coefficient is not significant, albeit negative, in regression of the short-term debt in column (2) (−0.010). Meanwhile, *High OC* has a significant positive coefficient (0.022) in regression of the cash ratio in column (3) but a significant negative coefficient (−0.035) in regression of the net debt ratio in column (4).

Next, we estimate instrumental variable (IV) regressions to further address endogeneity concerns. To instrument ownership concentration, we use three exogenous variables: the industry median of (intangible assets + R&D expenditures)/assets, the industry median firm size ( $\log(\text{assets})$ ) and the twice-lagged value of ownership concentration. We contend that a firm's ownership concentration—more specifically, the extent to which controlling shareholders hold large equity stakes—is related to growth potential (the first instrument), capital requirement (the second instrument) and past ownership concentration (the third instrument). Because these instruments are measured at the industry level or represent the past value of ownership concentration, they are unlikely to be endogenous with the contemporaneous value of debt and cash ratios (i.e., the dependent variables in our regressions).<sup>11</sup>

In Table 5, the IV regression results continue to suggest that ownership concentration has negative and positive effects on debt and cash, respectively. In columns (1) and (2), both  $OC_{IV}$  and  $High\ OC_{IV}$  have significant negative coefficients (−0.051 and −0.021, respectively) in regressions of the total debt ratio. Similarly, in columns (3) and (4), their coefficients continue to be significantly negative (−0.020 and −0.008, respectively) in regressions of the short-term debt ratio. In columns (5) and (6), both  $OC_{IV}$  and  $High\ OC_{IV}$  have significant positive coefficients (0.041 and 0.017, respectively) in regressions of the cash ratio. Finally, in columns (7) and (8), both measures have significant negative coefficients in regressions of the net debt ratio (−0.050 and −0.020, respectively). In short, the negative and positive effects of ownership concentration on debt and cash remain intact in our instrumental variable regression approach to addressing endogeneity concerns.

Lastly, in Table 6, we add firm-fixed effects in estimating regressions of the debt and cash ratios. By adding firm-fixed effects, we intend to control for time-invariant unobservable firm-specific factors that can create an omitted-variable bias—a potential source of endogeneity problems. Results from firm-fixed-effect regressions show that the effects of *OC* and *High OC* remain significant with the same signs as before. In regressions of the total debt and short-term debt ratios in columns (1)–(4), the coefficients on both *OC* and *High OC* are all negative and significant. Their coefficients are positive and significant in regressions of the cash ratio in columns (5)–(6), whereas they are negative and significant in regressions of the net debt ratio in columns (7)–(8). In short, ownership concentration has significantly positive and negative effects on debt and cash, respectively, even after controlling for time-invariant unobservable firm-specific factors.

Therefore, all three approaches to addressing endogeneity concerns lead to the same conclusion: POEs with high ownership concentration use low debt but keep large cash holdings, compared with those with low ownership concentration.

### 3.4. The effects of ownership concentration on the likelihood of underinvestment

The preceding results raise the concern that POEs with high ownership concentration could underinvest as a result of using debt financing sparingly and maintaining large cash balances. Next we examine whether POEs' likelihood of underinvestment varies systematically with ownership concentration. To do so, we identify underinvesting firm-years using Biddle et al. (2009) method. This involves estimating a regression of investment on sales growth (a proxy for growth opportunities) and then employing the residual as a proxy for the deviation from expected investment. Specifically, we estimate the following regression model:

$$Invest_{i,t} = \beta_0 + \beta_1 Sales\ Growth_{i,t-1} + \varepsilon_{i,t}, \quad (1)$$

where  $Invest_{i,t}$  is investment of firm  $i$  in year  $t$  scaled by book assets in year  $t-1$ , and  $Sales\ Growth_{i,t-1}$  is the growth rate of sales from year  $t-2$  to  $t-1$ . We estimate eq. (1) for each industry-year in the full sample of listed firms over the period 2010–2019. We then rank firm-years into quartiles based on their residuals. Firm-years in the bottom quartile (i.e., the most negative residuals) are classified as

<sup>11</sup> Prior studies commonly use industry-level variables as instruments in IV regressions. For example, Acharya, Davydenko, and Strebulaev (2012) use the industry median ratio of intangible assets to total assets as an instrument variable in addressing potential endogeneity in the relation between cash holdings and credit ratings. Recent studies show that intangible assets have become increasingly important in generating growth as economies shift toward serviced- and technology-based industries (e.g., Peters & Taylor, 2017). In the CSMAR database manual, Intangible assets ([A001218100]) are defined as “the net amount of intangible assets after deducting amortization and impairment and include patent, non-patent technology, trademark, copyright, land use right, etc.” In unreported results, we have performed a range of tests to ensure that our instrument ( $OC_{IV}$ ) is sufficiently exogenous but not weak.

**Table 4**  
Propensity Score Matching (PSM) regressions.

	Dependent variables =					
	Total debt/Assets		ST debt/Assets		Cash/Assets	Net debt/Assets
	(1)	(2)	(3)	(4)		
<i>High OC</i>	-0.017** [0.007]	-0.010 [0.006]	0.022*** [0.005]	-0.035*** [0.009]		
<i>Size</i>	0.063*** [0.004]	0.033*** [0.003]	-0.011*** [0.003]	0.070*** [0.005]		
<i>ROA</i>	-0.693*** [0.056]	-0.496*** [0.048]	0.143*** [0.039]	-0.808*** [0.072]		
<i>Tangibility</i>	0.234*** [0.024]	0.183*** [0.021]	-0.335*** [0.020]	0.547*** [0.034]		
<i>MB</i>	-0.006** [0.003]	-0.006*** [0.002]	0.005*** [0.002]	-0.009*** [0.003]		
<i>ROAVOL</i>	0.052 [0.086]	0.062 [0.073]	-0.050 [0.065]	0.113 [0.116]		
<i>Constant</i>	-1.195*** [0.092]	-0.589*** [0.082]	0.625*** [0.065]	-1.734*** [0.122]		
Num. of obs.	5288	5288	5288	5288		
Year FE	Yes	Yes	Yes	Yes		
Industry FE	Yes	Yes	Yes	Yes		
Pseudo R <sup>2</sup>	-1.329	-0.516	-0.377	11.695		

The table reports propensity score matching regressions of the debt and cash ratios on the high-ownership-concentration dummy (*High OC*). The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. The dependent variables are the total debt ratio in column (1), the short-term debt ratio in column (2), the cash ratio in column (3) and the net debt ratio in column (4), respectively. *High OC* is a dummy variable that equals one if the firm's *OC* belongs to the top-third of all sample firms in a given year and zero otherwise. *OC* is top-five shareholders' ownership in the firm. The PSM is performed based on *High OC* for the firm characteristics included in the regressions with caliper = 0.03. All regressions control for industry and year fixed effects. The numbers in parentheses are firm-clustered standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

**Table 5**  
Instrumental variable (IV) regressions.

	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>OC<sub>IV</sub></i>	-0.051*** [0.014]		-0.020* [0.012]		0.041*** [0.010]		-0.050*** [0.018]	
<i>High OC<sub>IV</sub></i>		-0.021*** [0.006]		-0.008* [0.005]		0.017*** [0.004]		-0.020*** [0.007]
<i>Size</i>	0.062*** [0.002]	0.063*** [0.002]	0.032*** [0.002]	0.033*** [0.002]	-0.007*** [0.001]	-0.008*** [0.001]	0.060*** [0.002]	0.060*** [0.002]
<i>ROA</i>	-0.569*** [0.026]	-0.571*** [0.026]	-0.441*** [0.023]	-0.441*** [0.023]	0.185*** [0.019]	0.186*** [0.019]	-0.686*** [0.035]	-0.688*** [0.035]
<i>Tangibility</i>	0.203*** [0.011]	0.204*** [0.011]	0.162*** [0.010]	0.162*** [0.010]	-0.247*** [0.008]	-0.248*** [0.008]	0.354*** [0.015]	0.354*** [0.015]
<i>MB</i>	-0.008*** [0.001]	-0.008*** [0.001]	-0.008*** [0.001]	-0.008*** [0.001]	0.005*** [0.001]	0.005*** [0.001]	-0.014*** [0.002]	-0.014*** [0.002]
<i>ROAVOL</i>	-0.064 [0.039]	-0.062 [0.039]	-0.061* [0.035]	-0.060* [0.035]	0.051* [0.028]	0.049* [0.028]	-0.059 [0.052]	-0.057 [0.052]
<i>Constant</i>	-1.137*** [0.044]	-1.164*** [0.044]	-0.545*** [0.039]	-0.556*** [0.039]	0.426*** [0.032]	0.448*** [0.032]	-1.267*** [0.057]	-1.293*** [0.058]
Num. of obs.	6788	6788	6788	6788	6788	6788	6788	6788
Year FE	Yes							
Industry FE	Yes							
Chi squared	4134	4134	2796	2797	2221	2222	3166	3167

The table reports the second-stage instrumental-variable regressions of the debt and cash ratios on ownership concentration (*OC*) and a high-ownership-concentration dummy (*High OC*). The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. The dependent variables are the total debt ratio in columns (1)–(2); the short-term debt ratio in columns (3)–(4); the cash ratio in columns (5)–(6); and the net debt ratio in columns (7)–(8), respectively. *OC* is top-five shareholders' ownership in the firm. *High OC* is a dummy variable that equals one if the firm's *OC* belongs to the top-third of all sample firms in a given year and zero otherwise. *OC* and *High OC* are instrumented by three exogenous variables: industry median of (intangible assets + R&D expenditures)/assets, industry median log(assets), and twice-lagged value of ownership concentration. All regressions control for industry and year fixed effects. The numbers in parentheses are standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

**Table 6**  
Firm-fixed-effect regressions.

	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>OC</i>	-0.122*** [0.013]		-0.086*** [0.012]		0.204*** [0.013]		-0.323*** [0.020]	
<i>High OC</i>		-0.005** [0.002]		-0.003** [0.002]		0.011*** [0.002]		-0.016*** [0.003]
<i>Size</i>	0.067*** [0.002]	0.065*** [0.002]	0.032*** [0.002]	0.030*** [0.002]	-0.022*** [0.002]	-0.018*** [0.002]	0.090*** [0.004]	0.082*** [0.004]
<i>ROA</i>	-0.325*** [0.018]	-0.340*** [0.018]	-0.242*** [0.016]	-0.253*** [0.016]	0.086*** [0.018]	0.111*** [0.018]	-0.419*** [0.027]	-0.458*** [0.027]
<i>Tangibility</i>	0.192*** [0.010]	0.196*** [0.010]	0.157*** [0.009]	0.159*** [0.009]	-0.363*** [0.010]	-0.369*** [0.010]	0.557*** [0.015]	0.565*** [0.016]
<i>MB</i>	-0.002** [0.001]	-0.002** [0.001]	-0.001 [0.001]	-0.001 [0.001]	0.001 [0.001]	0.002** [0.001]	-0.003** [0.001]	-0.004*** [0.001]
<i>ROAVOL</i>	-0.072** [0.031]	-0.071** [0.031]	-0.080*** [0.027]	-0.079*** [0.027]	0.086*** [0.031]	0.084*** [0.031]	-0.149*** [0.046]	-0.146*** [0.047]
<i>Constant</i>	0.020** [0.008]	0.015* [0.008]	0.011 [0.007]	0.008 [0.007]	0.060*** [0.008]	0.066*** [0.008]	-0.040*** [0.012]	-0.051*** [0.012]
Num. of obs.	7942	7942	7942	7942	7942	7942	7942	7942
Year FE	Yes							
Firm FE	Yes							
Pseudo R <sup>2</sup>	-0.137	-0.132	-0.089	-0.086	-0.193	-0.180	-0.439	-0.411

The table reports firm-fixed effect regressions of the debt and cash ratios on ownership concentration (*OC*) and the high-ownership-concentration dummy (*High OC*). The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. The dependent variables are the total debt ratio in columns (1)–(2); the short-term debt ratio in columns (3)–(4); the cash ratio in columns (5)–(6) and the net debt ratio in columns (7)–(8), respectively. *OC* is top-five shareholders' ownership in the firm. *High OC* is a dummy variable that equals one if the firm's *OC* belongs to the top-third of all sample firms in a given year and zero otherwise. All regressions control for firm-fixed effects along with year fixed effects. The numbers in parentheses are standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

underinvesting, those in the middle two quartiles as engaging in normal investment, and those in the top quartile (i.e., the most positive residuals) as overinvesting.

Table 7 reports the likelihoods—that is, relative frequencies—of underinvestment, normal investment and overinvestment—for quintile subgroups by ownership concentration. The likelihood of underinvestment of POEs does not increase with an increase of ownership concentration. On the contrary, the likelihood of underinvestment drops as we move from low to high ownership concentration, as this likelihood is high at 29.8% for the bottom *OC* quintile but decreases almost monotonically to 22.2% for the top *OC* quintile. We also note that the likelihood of underinvestment for the top *OC* quintile (22.2%) is lower than the benchmark level of 25%, suggesting that the POEs with the highest ownership concentration are less likely to underinvest than their industry peers.<sup>12</sup> In related observations, the POEs of the top *OC* quintile have a likelihood of normal investment of 52.0% (that is, slightly higher than the benchmark level of 50%) and a likelihood of overinvestment of 25.8% (that is, close to the 25% benchmark level). This means that, compared to their industry peers, the POEs with the highest ownership concentration are slightly more likely to engage in normal investment and almost equally likely to overinvest.

Therefore, our results do not suggest that high ownership concentration is associated with underinvestment. If anything, POEs with high ownership concentration underinvest less often than those with low ownership concentration.

### 3.5. The role of valuable investment opportunities

We examine whether the effects of ownership concentration on debt and cash are more pronounced if POEs have valuable investment opportunities. We employ market-to-book as a proxy for such opportunities and then create a high market-to-book dummy (*High MB*) that is equal to one if the firm's market-to-book belongs to the top-third of the sample in a given year and zero otherwise. In essence, we assume that high market-to-book indicates the presence of valuable investment opportunities. We then interact ownership concentration with *High MB* in regressions of the debt and cash ratios.

In Table 8's regressions, we continue to use *OC* and *High OC* as alternate measures of ownership concentration. The regression results provide evidence that high market-to-book elevates the extent to which POEs with high ownership concentration use low debt and hold large cash. In columns (1) and (3), where *OC* measures ownership concentration, the coefficient on the interaction *OC* × *High MB* is negative, albeit not significant, in regressions of total debt and short-term debt. In columns (2) and (4), where *High OC* measures

<sup>12</sup> In our scheme, a randomly selected firm in a given industry-year has a 25% chance of underinvestment, a 25% chance of overinvestment and a 50% chance of normal investment.

**Table 7**  
Likelihoods of under-, normal- and overinvestment of POEs.

		Quintiles by ownership concentration (OC)					All obs.
		1	2	3	4	5	
Likelihood of underinvestment	N. of obs.	417	375	324	325	310	1751
	Prob (%)	29.8	26.8	23.2	23.2	22.2	25.1
Likelihood of normal investment	N. of obs.	673	674	706	716	725	3494
	Prob (%)	48.1	48.2	50.5	51.2	52.0	50.0
Likelihood of overinvestment	N of obs.	310	349	369	357	360	1745
	Prob (%)	22.1	25.0	26.4	25.5	25.8	25.0
Num. of obs.		1400	1398	1399	1398	1395	6990

The table reports the likelihoods (i.e., relative frequency) of underinvestment, normal investment, and overinvestment for quintile subgroups that are created based on ownership concentration (OC). The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. To capture underinvestment, normal investment, and overinvestment, we classify firm-years into quartiles based on residuals from the regression model:  $Invest_{i,t} = \beta_0 + \beta_1 Sales Growth_{i,t-1} + \varepsilon_{i,t}$ . This regression is estimated for each industry-year in the full sample of listed firms consisting of both SOEs and POEs.  $Sales Growth_{i,t-1}$  is the percentage change in sales from year  $t-2$  to  $t-1$ .  $Invest_{i,t}$  is the sum of capital expenditures and R&D expenditures. Firm-years in the bottom quartile (i.e., the most negative residuals) are classified as underinvesting, those in the middle two quartiles as engaging in normal investment, and those in the top quartile (i.e., the most positive residuals) as overinvesting. To aid the reader in interpreting reported numbers, 29.8% in the row “Likelihood of underinvestment” for the first OC quintile means that 29.8% of POEs in this quintile are assigned to underinvestment based on their residuals of the above regressions.

**Table 8**  
Regressions with the interaction of ownership concentration with the high MB dummy.

	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OC	-0.056** [0.026]		-0.035 [0.023]		0.070*** [0.019]		-0.120*** [0.035]	
OC×High MB	-0.047 [0.034]		-0.017 [0.030]		0.072** [0.031]		-0.108** [0.049]	
High OC		-0.015** [0.007]		-0.011* [0.007]		0.022*** [0.005]		-0.036*** [0.010]
High OC×High MB		-0.020* [0.010]		-0.006 [0.009]		0.016* [0.009]		-0.033** [0.014]
High MB	-0.002 [0.019]	-0.019*** [0.007]	-0.017 [0.016]	-0.023*** [0.003]	-0.024 [0.016]	0.007 [0.005]	0.022 [0.026]	-0.021** [0.009]
Size	0.065*** [0.004]	0.065*** [0.004]	0.036*** [0.003]	0.036*** [0.003]	-0.013*** [0.002]	-0.012*** [0.002]	0.074*** [0.005]	0.073*** [0.005]
ROA	-0.566*** [0.041]	-0.574*** [0.041]	-0.437*** [0.035]	-0.441*** [0.035]	0.142*** [0.031]	0.154*** [0.031]	-0.668*** [0.052]	-0.687*** [0.052]
Tangibility	0.233*** [0.021]	0.233*** [0.021]	0.190*** [0.018]	0.190*** [0.018]	-0.316*** [0.016]	-0.318*** [0.016]	0.527*** [0.028]	0.529*** [0.028]
ROAVOL	-0.052 [0.071]	-0.050 [0.071]	-0.048 [0.060]	-0.047 [0.060]	-0.004 [0.058]	-0.010 [0.057]	-0.004 [0.091]	0.004 [0.091]
Constant	-1.246*** [0.088]	-1.265*** [0.087]	-0.642*** [0.078]	-0.655*** [0.077]	0.626*** [0.057]	0.647*** [0.058]	-1.764*** [0.110]	-1.803*** [0.110]
Num. of obs.	7942	7942	7942	7942	7942	7942	7942	7942
Year FE	Yes							
Industry FE	Yes							
Pseudo R <sup>2</sup>	-1.126	-1.127	-0.466	-0.466	-0.329	-0.326	157.7	157.4

The table reports Tobit regressions of the debt and cash ratios on ownership concentration and its interaction with the high market-to-book dummy. The sample consists of privately-owned enterprises (POEs) over the period 2010–2019. OC is the sum of the percentage ownership of the top-five shareholders. OC is top-five shareholders’ ownership in the firm. High OC is a dummy variable that equals one if the firm’s OC belongs to the top-third of all sample firms in a given year and zero otherwise. High MB is a dummy variable that equals one if a firm’s market-to-book equity ratio belongs to the top one-third of the sample in a given year and zero otherwise. OC × High MB and High OC × High MB are interactions. The dependent variables are the total debt ratio in columns (1)–(2); the short-term debt ratio in columns (3)–(4); the cash ratio in columns (5)–(6); and the net debt ratio in columns (7)–(8), respectively. All regressions control for industry and year fixed effects. The numbers in parentheses are firm-clustered standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

ownership concentration, the interaction High OC × High MB has a significant negative effect on total debt in column (2), although its effect loses significance on short-term debt in column (4). Therefore, there is evidence that high market-to-book strengthens the propensity of firms with high ownership concentration to use less total debt.

In columns (5) and (6), both interactions OC × High MB and High OC × High MB have significant positive coefficients in regressions

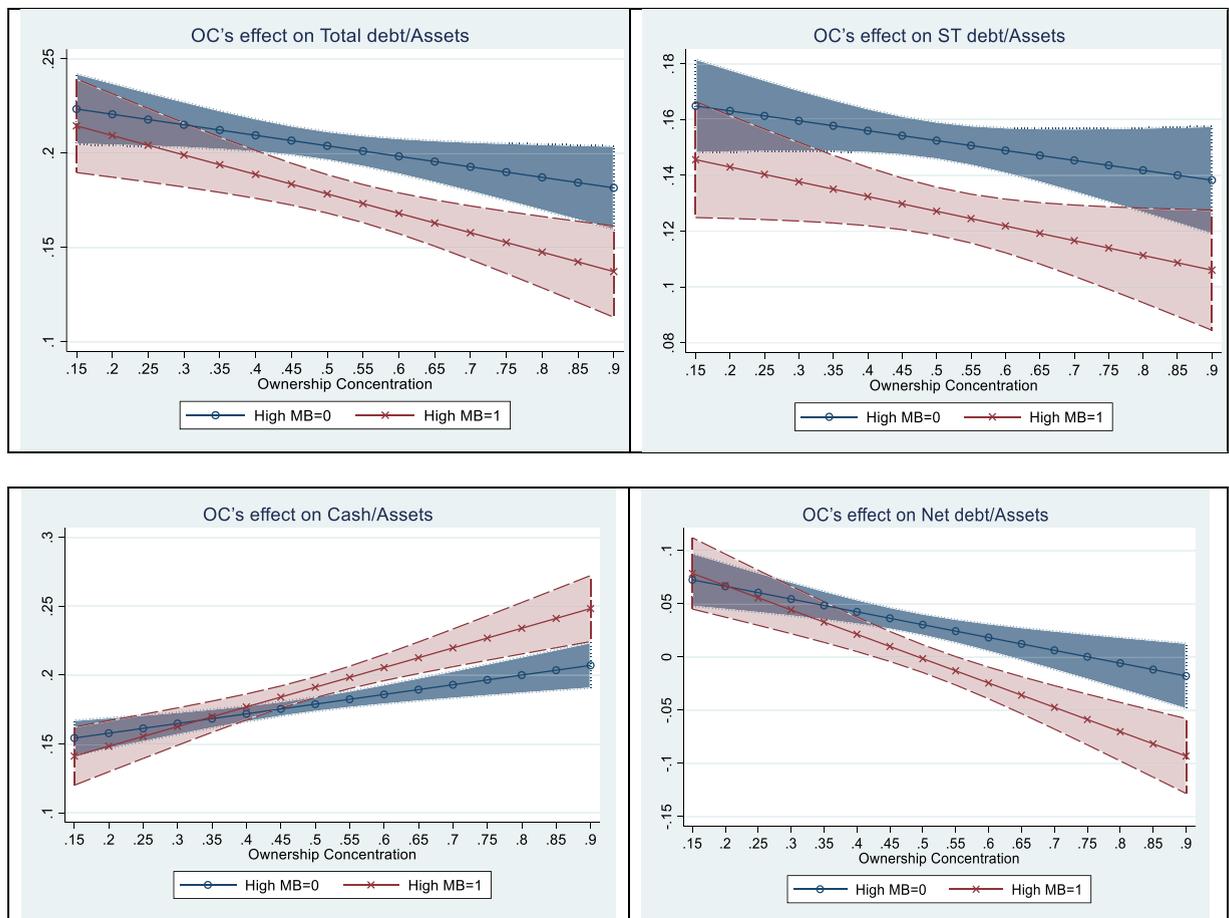
of the cash ratio, suggesting that the positive effect of ownership concentration on cash is more prominent for high market-to-book firms. In columns (7) and (8), both interactions have significant negative coefficients in regressions of the net debt ratio, consistently with the idea that high market-to-book escalates the propensity of firms with high ownership concentration to use low debt and hold large cash.

Overall, investment opportunities reinforce the negative and positive effects of ownership concentration on debt and cash, respectively, among POEs, suggesting that POEs' inclinations to shun debt and hoard cash at high levels of ownership concentration are strengthened if those firms possess valuable investment opportunities. Fig. 2 illustrates this point graphically, as it shows that the two confidence intervals for the estimated coefficients on OC for high-MB POEs and low-MB POEs do not overlap at high levels of ownership concentration as much as they do at low levels of ownership concentration. Therefore, the graphs confirm that the effects of ownership concentration on debt and cash are considerably stronger for high-MB POEs than for low-MB POEs at high levels of ownership concentration (vs. low levels of ownership concentration). Our conclusions make intuitive sense, given that controlling shareholders' preference for low debt and high cash is rooted in their desire to foster and preserve valuable investment opportunities.

### 3.6. The effects of ownership concentration among state-owned enterprises (SOEs)

We now turn our attention to state-owned enterprises (SOEs) and assess whether ownership concentration has similar effects on SOEs' debt and cash policies. Our aim is to gain further insights into the role of ownership concentration in shaping capital structure and cash holdings in China. Our investigation centers on the question of whether high ownership concentration has qualitatively different consequences for financial policies, depending on whether such concentration is marked by state or private ownership.

In Table 9, we estimate regressions of the debt and cash ratios for our sample of SOEs over the period 2010–2019. We use two measures of ownership variables for SOEs: OC and state ownership (*State\_own*). As before, OC is the ownership of the top-five shareholders. *State\_own* is the ownership of governmental agencies and institutions.



**Fig. 2.** The marginal effects of ownership concentration (OC) for low-MB and high-MB POEs. Each graph shows the 95% confidence intervals for the coefficient on ownership concentration (OC) at different levels of OC for privately owned enterprises (POEs) with *High MB* = 0 and those with *High MB* = 1. The confidence intervals are generated based on the estimated regression models that are reported in Table 8's columns (1), (3), (5) and (7), respectively, where OC enters as a continuous variable.

**Table 9**  
Regressions for state-owned enterprises (SOEs).

Panel A: Regressions of debt and cash ratios								
	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>OC</i>	-0.187*** [0.030]		-0.132*** [0.023]		0.074*** [0.018]		-0.218*** [0.036]	
<i>State_own</i>		-0.061*** [0.020]		-0.041*** [0.016]		0.047*** [0.013]		-0.087*** [0.025]
<i>Size</i>	0.049*** [0.004]	0.041*** [0.004]	0.018*** [0.003]	0.012*** [0.003]	-0.010*** [0.003]	-0.007*** [0.002]	0.053*** [0.005]	0.044*** [0.005]
<i>ROA</i>	-0.824*** [0.062]	-0.851*** [0.061]	-0.586*** [0.054]	-0.606*** [0.053]	0.238*** [0.038]	0.244*** [0.038]	-1.060*** [0.077]	-1.088*** [0.077]
<i>Tangibility</i>	0.154*** [0.025]	0.161*** [0.025]	0.084*** [0.019]	0.088*** [0.019]	-0.239*** [0.017]	-0.242*** [0.017]	0.298*** [0.031]	0.308*** [0.031]
<i>MB</i>	-0.021*** [0.004]	-0.024*** [0.004]	-0.017*** [0.003]	-0.019*** [0.003]	0.006*** [0.002]	0.007*** [0.002]	-0.030*** [0.006]	-0.034*** [0.006]
<i>ROAVOL</i>	0.153 [0.096]	0.176* [0.095]	0.114 [0.075]	0.129* [0.076]	-0.072 [0.049]	-0.094* [0.050]	0.229** [0.115]	0.263** [0.115]
<i>Constant</i>	-0.750*** [0.097]	-0.666*** [0.098]	-0.144* [0.075]	-0.083 [0.074]	0.449*** [0.055]	0.421*** [0.054]	-1.032*** [0.121]	-0.935*** [0.121]
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623
Year FE	Yes							
Industry FE	Yes							
Pseudo R <sup>2</sup>	-1.482	-1.414	-0.420	-0.399	-0.267	-0.263	1.016	0.981

Panel B: Regressions with interactions of ownership variables with high MB dummy								
	Dependent variable =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>High OC</i>	-0.071*** [0.010]		-0.053*** [0.008]		0.015** [0.006]		-0.084*** [0.013]	
<i>High OC</i> <i>× High MB</i>	0.038*** [0.014]		0.035*** [0.011]		0.015 [0.010]		0.023 [0.019]	
<i>High State</i>		-0.010 [0.007]		-0.006 [0.006]		0.008* [0.004]		-0.017** [0.009]
<i>High State</i> <i>× High MB</i>		0.004 [0.012]		0.002 [0.010]		0.006 [0.008]		-0.005 [0.015]
<i>High MB</i>	-0.068*** [0.009]	-0.065*** [0.009]	-0.056*** [0.008]	-0.051*** [0.008]	0.015*** [0.006]	0.019*** [0.006]	-0.080*** [0.011]	-0.080*** [0.012]
<i>Size</i>	0.048*** [0.004]	0.040*** [0.004]	0.017*** [0.003]	0.012*** [0.003]	-0.009*** [0.002]	-0.007*** [0.002]	0.054*** [0.005]	0.045*** [0.005]
<i>ROA</i>	-0.819*** [0.058]	-0.844*** [0.059]	-0.583*** [0.051]	-0.600*** [0.052]	0.234*** [0.037]	0.246*** [0.038]	-1.021*** [0.073]	-1.057*** [0.074]
<i>Tangibility</i>	0.155*** [0.025]	0.162*** [0.025]	0.084*** [0.019]	0.090*** [0.019]	-0.241*** [0.017]	-0.242*** [0.017]	0.384*** [0.032]	0.392*** [0.032]
<i>ROAVOL</i>	0.116 [0.095]	0.091 [0.097]	0.082 [0.074]	0.063 [0.076]	-0.058 [0.047]	-0.058 [0.048]	0.204* [0.107]	0.181* [0.108]
<i>Constant</i>	-0.799*** [0.096]	-0.658*** [0.097]	-0.186** [0.074]	-0.082 [0.073]	0.453*** [0.055]	0.416*** [0.053]	-1.194*** [0.119]	-1.020*** [0.118]
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623
Year FE	Yes							
Industry FE	Yes							
Pseudo R <sup>2</sup>	-1.496	-1.412	-0.427	-0.399	-0.266	-0.262	7.604	7.265

The table reports Tobit regressions of the debt and cash ratios on ownership concentration (*OC*) and state ownership (*State*). The sample consists of state-owned enterprises (SOEs) over the period 2010–2019. In both Panels A and B, the dependent variables are the total debt ratio in columns (1)–(2); the short-term debt ratio in columns (3)–(4); the cash ratio in columns (5)–(6); and the net debt ratio in columns (7)–(8), respectively. *OC* is top-five shareholders' ownership in the firm. *State\_own* is governments' ownership in the firm. In Panel B, *High OC* (*High State*) is a dummy variable that equals one if the firm's *OC* (*State\_own*) belongs to the top-third of all sample firms in a given year and zero otherwise. *High MB* is a dummy variable that equals one if a firm's market-to-book equity ratio belongs to the top one-third of the sample in a given year and zero otherwise. *High OC × High MB* and *High State × High MB* are interactions. All regressions control for industry and year fixed effects. The numbers in parentheses are firm-clustered standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

In Panel A, regression results show that both *OC* and *State\_own* have negative and positive effects on debt and cash, respectively, for SOEs. In columns (1)–(4), *OC* and *State\_own* have significant negative coefficients consistently in regressions of the total debt ratio and the short-term debt ratio. Meanwhile, in columns (5)–(6), both variables have significant positive coefficients in regressions of the cash ratio. Furthermore, in columns (7)–(8), both variables have significant negative coefficients in regressions of the net debt ratio, an observation that is consistent with their positive and negative effects on debt and cash in the preceding columns. Taken together, SOEs with high ownership concentration avoid debt and hoard cash, compared with SOEs with low ownership concentration.<sup>13</sup>

In Panel B, we examine whether investment opportunities strengthen SOEs' propensity to use low debt and hold large cash when ownership concentration is high. Regressions include the high market-to-book dummy (*High MB*) and its interaction with the ownership variables (*High OC* × *High MB* and *High State* × *High MB*) as explanatory variables. We remind the reader that, in similar regression specifications for POEs (in Table 8), the interactions, *OC* × *High MB* and *High OC* × *High MB*, have negative and positive effects on debt and cash, respectively, suggesting that POEs controlled by large shareholders avoid debt and hoard cash to a greater extent if they have valuable investment opportunities. In contrast, Panel B's regressions for SOEs show that the interactions, *High OC* × *High MB* and *High State* × *High MB*, have either significantly positive or insignificant effects on the total and short-term debt ratios (columns (1)–(4)) and have insignificant effects on the cash ratio and the net debt ratio (columns (5)–(8)). Therefore, in contrast to POEs, SOEs' preference for low debt and large cash at high levels of ownership concentration is not reinforced by valuable investment opportunities.

In summary, as in POEs, ownership concentration has negative and positive effects on the debt and cash of SOEs, respectively, suggesting that SOEs with high ownership concentration also shun debt and stockpile cash. These results support the predictions from the management discretion view, rather than those from the state capitalism view. Also, the presence of investment opportunities fails to bolster SOEs' propensities to avoid debt and hoard cash at high levels of ownership concentration, suggesting that those propensities do not reflect an incentive to preserve investment opportunities. Therefore, our results fall in line with the idea that high ownership concentration in SOEs is associated with management entrenchment or conservatism, yielding those firms' penchant to avoid debt and hoard cash but with little intention of safeguarding investment opportunities. This in turn indicates that although ownership concentration has seemingly similar effects for POEs and SOEs, the drivers of such effects are fundamentally different for the two groups of firms.

### 3.7. Further robustness checks and related issues

#### 3.7.1. Effects of the top 1 shareholder's ownership on debt and cash policies

In the next analysis, we consider the top 1 shareholder's (i.e., the single largest shareholder) ownership stake as a proxy for ownership concentration. To account for the fact that the top 1 shareholder's ownership stake is rather small and thus unable to represent a controlling stake in many firms, we construct and use a dummy variable (denoted by *OC1<sub>50p</sub>*) that equals 1 if the top 1 shareholder's ownership exceeds 50% and 0 otherwise. In estimating regressions, we also include an additional ownership concentration dummy variable (denoted by *OC5<sub>50p</sub>*) to account for firms in which the top 1 shareholder's ownership does not exceed 50% but the top 5 shareholders' ownership does. While both dummy variables capture the extent of ownership concentration, *OC1<sub>50p</sub>* reflects a greater level of concentration than *OC5<sub>50p</sub>*.

In Panel A of Table 10, regressions are estimated for POEs. Both ownership concentration measures are negatively associated with total debt (column (1)) and positively with cash (column (3)), reinforcing the evidence that controlling shareholders prefer low debt but high cash balances. At the bottom of the panel, the Wald test results suggest that the explanatory power of the two ownership concentration measures is not significantly different. In the next four columns (5)–(8), we interact the two ownership concentration measures with the high market-to-book indicator. In columns (5) and (7), *OC1<sub>50p</sub>* × *High MB* has significant negative and positive effects on debt and cash, respectively, suggesting that firms controlled by a single dominant shareholder tend to have low debt but high cash balances as a way to preserve growth opportunities. Meanwhile, in the same columns, *OC5<sub>50p</sub>* × *High MB* has positive and negative coefficients, respectively, but those coefficients are not statistically significant. Therefore, according to our results, the incentive to preserve investment opportunities through financial policies seems to be greater when there is a single dominant shareholder than when controlling ownership is dispersed across top shareholders.

In Panel B, we repeat regressions for SOEs after constructing the same ownership concentration variables (i.e., *OC1<sub>50p</sub>* and *OC5<sub>50p</sub>*) for SOEs. In columns (1) and (3), both *OC1<sub>50p</sub>* and *OC5<sub>50p</sub>* have significant positive and negative effects on debt and cash, respectively. Therefore, like POEs, SOEs with concentrated ownership tend to have low debt and high cash balances, regardless of whether we identify ownership concentration with the top 1 or 5 shareholdings. It is worth noting that *OC1<sub>50p</sub>* has a significantly greater effect on debt, if not on cash, than *OC5<sub>50p</sub>* in the Wald test results at the bottom. In the next four columns, we add interaction terms to regressions. In column (5), both *OC1<sub>50p</sub>* × *High MB* and *OC5<sub>50p</sub>* × *High MB* have significant positive effects on debt. This confirms our earlier observation from Table 9's regression results for SOEs. In sum, unlike POEs, SOEs with dominant shareholders, whether they are identified using the top 1 or top 5 shareholders, do not avoid but embrace high debt when they have high market-to-book. On the other hand, in column (7), *OC1<sub>50p</sub>* × *High MB* has a significant positive effect, although the effect of *OC5<sub>50p</sub>* × *High MB* is insignificant. Therefore, there is evidence that SOEs controlled by a single dominant state shareholder has high cash balances when they have high market-to-book.

<sup>13</sup> In Appendix Table A.4, we have addressed the endogeneity concerns regarding our regressions for SOEs. Our conclusion for SOEs remains unchanged in all three approaches that include the propensity score matching regressions, the IV regressions and firm-fixed effect regressions.

**Table 10**  
The effects of Top 1 shareholdings in POEs and SOEs.

Panel A: Regressions for POEs								
	Dependent variables =							
	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>OC1<sub>50p</sub></i>	-0.022** [0.011]	-0.014 [0.009]	0.030*** [0.009]	-0.051*** [0.015]	-0.007 [0.013]	-0.007 [0.011]	0.017* [0.010]	-0.024 [0.018]
<i>OC5<sub>50p</sub></i>	-0.017*** [0.006]	-0.008 [0.006]	0.024*** [0.005]	-0.038*** [0.008]	-0.014* [0.007]	-0.007 [0.007]	0.022*** [0.005]	-0.034*** [0.009]
<i>OC1<sub>50p</sub> × High MB</i>					-0.042*** [0.016]	-0.019 [0.014]	0.035** [0.015]	-0.072*** [0.024]
<i>OC5<sub>50p</sub> × High MB</i>					-0.009 [0.011]	-0.001 [0.010]	0.007 [0.009]	-0.011 [0.015]
<i>High MB</i>					-0.018** [0.008]	-0.023*** [0.007]	0.006 [0.006]	-0.020* [0.010]
<i>MB</i>	-0.007*** [0.002]	-0.008*** [0.002]	0.003* [0.002]	-0.007*** [0.003]				
<i>Size</i>	0.065*** [0.004]	0.035*** [0.003]	-0.012*** [0.003]	0.074*** [0.005]	0.065*** [0.004]	0.036*** [0.003]	-0.012*** [0.002]	0.073*** [0.005]
<i>ROA</i>	-0.574*** [0.042]	-0.438*** [0.036]	0.157*** [0.031]	-0.696*** [0.053]	-0.572*** [0.041]	-0.441*** [0.035]	0.152*** [0.031]	-0.684*** [0.052]
<i>Tangibility</i>	0.235*** [0.021]	0.192*** [0.018]	-0.318*** [0.016]	0.531*** [0.028]	0.234*** [0.021]	0.191*** [0.018]	-0.317*** [0.016]	0.529*** [0.028]
<i>ROAVOL</i>	-0.038 [0.070]	-0.031 [0.060]	-0.010 [0.057]	0.007 [0.090]	-0.059 [0.071]	-0.051 [0.059]	0.001 [0.058]	-0.014 [0.091]
<i>Intercept</i>	-1.243*** [0.090]	-0.633*** [0.079]	0.639*** [0.059]	-1.796*** [0.113]	-1.261*** [0.087]	-0.652*** [0.077]	0.642*** [0.057]	-1.794*** [0.110]
Num. of obs.	7942	7942	7942	7942	7942	7942	7942	7942
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.120	-0.464	-0.324	155.8	-1.126	-0.465	-0.326	157.1
The Wald test of H <sub>0</sub> : The coefficients of <i>OC1<sub>50p</sub></i> and <i>OC5<sub>50p</sub></i> are equal in (1)–(4) and those of the two interactions are equal in (5)–(8).								
<i>F</i> statistic	0.30	0.50	0.55	0.79	4.37**	1.58	3.10*	6.37
<i>p</i> -value	0.584	0.480	0.460	0.375	0.037	0.210	0.078	0.012

Panel B: Regressions for SOEs								
	Dependent variables =							
	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>OC1<sub>50p</sub></i>	-0.069*** [0.011]	-0.047*** [0.008]	0.023*** [0.007]	-0.090*** [0.014]	-0.084*** [0.012]	-0.060*** [0.010]	0.014** [0.007]	-0.096*** [0.015]
<i>OC5<sub>50p</sub></i>	-0.027*** [0.009]	-0.021*** [0.007]	0.018*** [0.005]	-0.045*** [0.011]	-0.042*** [0.010]	-0.033*** [0.009]	0.017*** [0.006]	-0.059*** [0.013]
<i>OC1<sub>50p</sub> × High MB</i>					0.044*** [0.017]	0.038*** [0.014]	0.035*** [0.013]	0.014 [0.023]
<i>OC5<sub>50p</sub> × High MB</i>					0.044*** [0.015]	0.033*** [0.012]	0.002 [0.009]	0.041** [0.018]
<i>High MB</i>					-0.084*** [0.011]	-0.067*** [0.009]	0.012* [0.007]	-0.093*** [0.014]
<i>MB</i>	-0.023*** [0.004]	-0.018*** [0.003]	0.007*** [0.002]	-0.025*** [0.005]				
<i>Size</i>	0.046*** [0.004]	0.016*** [0.003]	-0.009*** [0.002]	0.054*** [0.005]	0.046*** [0.004]	0.016*** [0.003]	-0.009*** [0.002]	0.052*** [0.005]
<i>ROA</i>	-0.823*** [0.061]	-0.586*** [0.053]	0.238*** [0.038]	-1.038*** [0.076]	-0.819*** [0.059]	-0.585*** [0.052]	0.226*** [0.037]	-1.015*** [0.074]
<i>Tangibility</i>	0.157*** [0.025]	0.086*** [0.019]	-0.241*** [0.017]	0.387*** [0.032]	0.157*** [0.025]	0.086*** [0.019]	-0.241*** [0.017]	0.387*** [0.032]
<i>ROAVOL</i>	0.158* [0.094]	0.118 [0.074]	-0.075 [0.049]	0.248** [0.108]	0.104 [0.095]	0.074 [0.075]	-0.053 [0.046]	0.187* [0.106]
<i>Intercept</i>	-0.756*** [0.097]	-0.148** [0.075]	0.453*** [0.055]	-1.184*** [0.119]	-0.752*** [0.097]	-0.149** [0.074]	0.449*** [0.054]	-1.142*** [0.118]
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(continued on next page)

Table 10 (continued)

	Panel B: Regressions for SOEs							
	Dependent variables =							
	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets	Total debt/ Assets	ST debt/Assets	Cash/ Assets	Net debt/ Assets
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.484	-0.419	-0.266	7.528	-1.504	-0.426	-0.270	7.630
The Wald test of H <sub>0</sub> : The coefficients of <i>OC1</i> <sub>50p</sub> and <i>OC5</i> <sub>50p</sub> are equal in (1)–(4) and those of the two interactions are equal in (5)–(8).								
F statistic	17.04***	11.34***	0.67	11.43***	0.00	0.14	6.15**	1.30
p-value	0.000	0.001	0.413	0.001	0.969	0.708	0.013	0.254

We repeat the regressions in previous tables by considering the top 1 shareholder's controlling ownership stake as a proxy for ownership concentration. In both Panels, *OC1*<sub>50</sub> is a dummy variable that equals 1 if the top 1 shareholder's ownership exceeds 50% and 0 otherwise. *OC5*<sub>50p</sub> is an additional dummy variable that accounts for firms in which the top 1 shareholder's ownership does not exceed 50% but the top 5 shareholders' ownership does. Thus, *OC5*<sub>50p</sub> is equal to 1 if the top 1 shareholder's ownership does not exceed 50% but the top 5 shareholders' ownership does and 0 otherwise. *High MB* is a dummy variable that equals one if a firm's market-to-book equity ratio belongs to the top one-third of the sample in a given year and zero otherwise. All regressions control for industry and year fixed effects. The numbers in parentheses are firm-clustered standard errors. \*, \*\*, and \*\*\* indicate two-tailed significance at the 10%, 5%, and 1% level, respectively. Variable definitions are provided in Table A.1.

### 3.7.2. Management ownership of POEs and SOEs

In Table 11, we delve further into why ownership concentration can have qualitatively different consequences for POEs and SOEs by considering management ownership (*MO*). Management ownership is defined as the proportion of shares held by directors, supervisors and senior management. The table reports the mean and median of management ownership (*MO*) for POEs and SOEs. For POEs as a whole, the mean management ownership is 10.9%. There is a tendency for the mean management ownership to increase from the low to high *OC* levels, albeit not monotonically. This tendency is not surprising, considering that when controlling shareholders have large equity stakes in POEs, those shareholders or their family members often take on management positions. This in turn implies that the interests of management and controlling shareholders are closely aligned at high levels of ownership concentration in POEs. As a consequence, POEs are more likely to be run to benefit controlling shareholders—e.g., by preserving investment opportunities with low debt and high cash holdings.

In stark contrast, for SOEs as a whole, management ownership is close to zero in both mean and median (0.3% and 0.0%, respectively), and their management ownership does not increase with ownership concentration. The virtually zero managerial shareholding in SOEs reinforces our impression that there is a clear separation of ownership and management in SOEs, which can bring forth management entrenchment in those firms. As we stated above, high state ownership concentration can help solidify management entrenchment because it effectively pushes out other major blockholders that can monitor and discipline management. Therefore, the negative and positive effects of ownership concentration on debt and cash in SOEs (as reported in Table 9) may well reflect the conservative financial policies by self-interested management who seek to shield themselves from the risk of financially adverse events.

### 3.7.3. Relevance of financial constraints to our conclusion

Although undeveloped financial markets in China can raise the cost of external finance higher across the board, some firms may face greater financial constraints than others, particularly, among POEs that do not enjoy the state's backing. We note, however, that the effects of financial constraints on the debt and cash ratios could be ambiguous or quite complicated. On the one hand, it is plausible that financial constrained firms have low debt and cash balance, because they are unable to borrow money or raise external finance. On the other hand, financial constraints could reflect poor/negative profitability in which case such constraints could be accompanied by high debt ratios (arising from cumulative losses) and depleted cash balances. Further, it is also plausible that firms facing financial constraints deliberately maintain low debt ratio but large cash balance as a precaution.

In unreported results, as a way to ensure that our conclusion is robust to controlling for firms' (in)ability to get external finance, we repeat estimation of Table 3's regressions by using the KZ index (a common measure of financial constraint in corporate finance literature, e.g., Kaplan and Zingales (1997)) as an additional control. We find that *OC* continue to have negative and positive effects on debt and cash, respectively, for POEs. We also find (untabulated) that high *OC* firms (e.g., the top *OC* quintile) among POEs have the lowest KZ index scores in both mean and median.<sup>14</sup> On the surface, this could mean that firms controlled by large private shareholders do not generally face financial constraints. We caution the reader against this interpretation, because financial constraints are a relative concept. Thus, although some firms could appear to be less financial constrained in terms of low KZ scores, they still confront undeveloped financial markets in the form of difficulty of raising long-term debt and issuing equity (as described in the hypothesis section). Moreover, we also point out that high *OC* firms' low KZ numbers are probably not so much an indication of financial constraints as reflection of their conservative financial policies, specifically, their low-debt and high-cash policies, given that the debt and

<sup>14</sup> In unreported results, we have also considered the Whited and Wu (WW) index (Whited & Wu, 2006) as an alternate measure of financial constraint. We also find (untabulated) that high *OC* firms have the lowest WW scores in mean and median. In both KZ and WW indexes, higher (lower) scores indicate greater (lower) levels of financial constraint.

**Table 11**  
Management ownership of POEs vs. SOEs.

		All obs.	Quintiles by ownership concentration (OC)				
			1 (low)	2	3	4	5 (high)
POEs' MO	Mean	0.109	0.056	0.099	0.129	0.142	0.119
	Median	[0.009]	[0.001]	[0.015]	[0.040]	[0.019]	[0.003]
	N	8796	1763	1758	1761	1758	1756
SOEs' MO	Mean	0.003	0.004	0.003	0.002	0.002	0.002
	Median	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
	N	8630	1730	1725	1729	1725	1721

The table reports the mean and median of management ownership (MO), defined as the proportion of shares held by directors, supervisors and senior management. The sample consists of privately-owned enterprises (POEs) and state-owned enterprises (SOEs) over the period 2010–2019. The mean and median values are reported for all observations of each group as well as for their quintile subgroups by ownership concentration (OC), where OC is top-five shareholders' ownership in the firm.

cash ratios are key elements of the KZ index.

#### 3.7.4. Further robustness checks

Our primary measure of ownership concentration (OC) is the sum of the top-five shareholders' equity ownership. In the regressions in [Appendix Table A.3](#), we consider two alternative measures of ownership concentration by taking the sum of the top-three or top-ten shareholders' equity ownership. We find that using these alternative ownership concentration measures does not affect our conclusions. In an additional robustness check, we address [Jiang et al. \(2020\)](#) observation that corporate debt levels in China vary across providences by repeating regressions after adding province fixed effects; however, the estimated results (untabulated) continue to support our conclusions.

## 4. Conclusion

This study documents that ownership concentration shapes the capital structure and cash policies of China's firms. Although corporate ownership is highly concentrated outside the U.S. ([La Porta et al., 1999](#)), previous studies have not explored the consequences of ownership concentration for corporate finance in China. To our knowledge, this is the first study to document that ownership concentration plays a significant role in Chinese firms' corporate finance policies.

Our results suggest that high ownership concentration leads to lower debt and higher cash holdings in both POEs and SOEs, but these ostensibly similar effects of ownership concentration reflect disparate underlying forces. For POEs, our results are consistent with the idea that China's underdeveloped financial markets, coupled with high economic and regulatory uncertainties, heighten the cost of debt (e.g., bankruptcy/liquidation) and the precautionary motive for holding cash for their controlling shareholders. For SOEs, our results are consistent with the notion that state ownership concentration gives rise to management entrenchment (e.g., [Boubakri et al., 2013](#); [Conyon & He, 2011](#); [Kato & Long, 2006](#)), which can yield low debt and high cash holdings. This study contributes to the literature by demonstrating that both ownership concentration and the type of ownership (i.e., private or state ownership) have significant impacts on financial policies in an emerging country.

Finally, this study suggests possible directions for future research. While we provide new evidence concerning the roles of ownership concentration and type in shaping corporate financial policies, there are several related questions that we have not explored. For example, future research can investigate the effects of ownership concentration and type on the value of cash (e.g., [Dittmar & Mahrt-Smith, 2007](#)) as well as the stock and operating performance from corporate investment (e.g., [Carlson, Fisher, & Giammarino, 2006](#)) to further enrich our understanding of these forces in China and other emerging markets.

#### Data availability

The authors do not have permission to share data.

#### Acknowledgements

We thank Belton Fleisher (the Editor) and acknowledge helpful comments from two anonymous reviewers. This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2022S1A5A2A03051816).

## Appendix A. Appendix

Appendix Table A.1

Definitions of variables.

Variable	Definition
Ownership concentration (OC)	The proportion of equity shares held by top-five shareholders ([ <i>ShrCR3</i> ])
Total Debt ( <i>Total debt</i> )	The sum of short-term debt ( <i>ST debt</i> ) and long-term debt ( <i>LT debt</i> )
Short-term Debt ( <i>ST debt</i> )	Short-term loans ([ <i>A002101000</i> ]) + notes payable ([ <i>A002108000</i> ]) + non-current liabilities due within one year ([ <i>A002125000</i> ])
Long-term Debt ( <i>LT debt</i> )	Long-term loans ([ <i>A002201000</i> ]) + bonds payable ([ <i>A002203000</i> ])
Cash reserves ( <i>Cash</i> )	Cash and cash equivalents ([ <i>A001101000</i> ])
Net Debt ( <i>Net debt</i> )	Total debt ( <i>Debt</i> ) – cash and cash equivalents ( <i>Cash</i> )
Firm size ( <i>Size</i> )	The natural logarithm of total assets ([ <i>A001000000</i> ])
Profitability (ROA)	EBIT / total assets ( <i>A001000000</i> ), where EBIT is the sum of net profit ([ <i>B002000000</i> ]), income tax expenses ([ <i>B002100000</i> ]), and financial expenses ([ <i>B001211000</i> ])
Tangibility ( <i>Tangibility</i> )	Net fixed assets ([ <i>A001212000</i> ]) + net inventories ([ <i>A001123000</i> ]) scaled by total assets
Market to Book Ratio ( <i>MB</i> )	Market value of assets / total book assets ([ <i>A001000000</i> ]), where market value of assets = (total shares – B shares) × closing price of A share + B shares × closing price of B shares + total liabilities ([ <i>A002000000</i> ])
ROA volatility (ROAVOL)	The standard deviation of ROA over the most recent five years including the current year
State ownership ( <i>State_own</i> )	The number of state-owned shares ([ <i>Nshrstt</i> ]) / total number of shares ([ <i>Nshrttl</i> ]), where state-owned shares refer to the shares held by governmental agencies or institutions, which are authorized to invest on behalf of the state, including state shares and state-owned legal person shares.
High OC	A dummy variable if a firm's OC belongs to the top-third of the sample firms in a given year
High MB	A dummy variable if a firm's MB belongs to the top-third of the sample firms in a given year
High State	A dummy variable if a firm's State belongs to the top-third of the sample firms in a given year
Management ownership ( <i>MO</i> )	The number of shares held by directors, supervisors and senior management ([ <i>Nshrsmst</i> ]) / total number of shares ([ <i>Nshrttl</i> ])

The table provides definitions of the variables used in this study. Field names in brackets in the column labeled “Definition” are from the China Stock Market Accounting and Research (CSMAR).

Appendix Table A.2

Descriptive statistics for POEs and SOEs.

Panel A: POEs						
	N	Mean	Median	Std. Dev	Min	Max
OC	8806	0.497	0.496	0.151	0.175	0.885
State_own	8806	0.004	0.000	0.026	0.000	0.648
Total debt/Assets	8806	0.204	0.187	0.161	0.000	0.722
ST debt/Assets	8806	0.153	0.126	0.132	0.000	0.621
Cash/Assets	8806	0.186	0.147	0.134	0.010	0.765
Net debt/Assets	8806	0.019	0.039	0.245	–0.755	0.671
Size	8806	21.979	21.874	1.154	18.679	26.553
ROA	8806	0.055	0.052	0.071	–0.420	0.318
Tangibility	8806	0.357	0.344	0.176	0.014	0.852
MB	8502	2.644	2.064	1.884	0.791	17.884
ROAVOL	8187	0.038	0.022	0.048	0.000	0.350
Panel B: SOEs						
	N	Mean	Median	Std. Dev	Min	Max
OC	8630	0.533	0.528	0.156	0.175	0.885
State_own	8630	0.082	0.000	0.161	0.000	0.710
Total debt/Assets	8630	0.264	0.253	0.184	0.000	0.722
ST debt/Assets	8630	0.171	0.142	0.141	0.000	0.621
Cash/Assets	8630	0.162	0.132	0.115	0.010	0.765
Net debt/Assets	8630	0.102	0.117	0.253	–0.755	0.671
Size	8630	22.743	22.620	1.385	18.679	26.553
ROA	8630	0.050	0.045	0.056	–0.420	0.318
Tangibility	8630	0.427	0.418	0.187	0.014	0.852
MB	8457	1.956	1.513	1.385	0.791	17.884
ROAVOL	7778	0.030	0.018	0.040	0.000	0.350

The table reports descriptive statistics for the variables used in this study for POEs (in Panel A) and SOEs (in Panel B). The sample consists of listed firms in China over the period 2010–2019. OC is top-five shareholders' ownership. Variable definitions are provided in Table A.1.

**Appendix Table A.3**

Using Top 3 and Top 10 shareholdings as proxies for ownership concentration.

Panel A1: Using Top 3 shareholdings for POEs								
Dependent variables =								
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net Debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$OC_3$	-0.056**		-0.029		0.093***		-0.140***	
	[0.023]		[0.020]		[0.018]		[0.032]	
High $OC_3$		-0.018***		-0.011*		0.029***		-0.044***
		[0.007]		[0.006]		[0.005]		[0.009]
Control var.	Included	Included	Included	Included	Included	Included	Included	Included
Constant	Included	Included	Included	Included	Included	Included	Included	Included
Num. of obs.	7934	7934	7934	7934	7934	7934	7934	7934
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.119	-1.120	-0.464	-0.464	-0.325	-0.325	266.4	266.7
Panel A2: Using top 10 shareholdings for POEs								
Dependent variables =								
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net Debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$OC_{10}$	-0.087***		-0.054***		0.099***		-0.179***	
	[0.022]		[0.019]		[0.017]		[0.030]	
High $OC_{10}$		-0.025***		-0.015***		0.024***		-0.048***
		[0.006]		[0.005]		[0.005]		[0.008]
Control var.	Included	Included	Included	Included	Included	Included	Included	Included
Constant	Included	Included	Included	Included	Included	Included	Included	Included
Num. of obs.	7934	7934	7934	7934	7934	7934	7934	7934
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.130	-1.128	-0.468	-0.467	-0.327	-0.321	269.9	267.5
Panel B1: Using Top 3 shareholdings for SOEs								
Dependent variables =								
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net Debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$OC_3$	-0.186***		-0.130***		0.070***		-0.251***	
	[0.030]		[0.023]		[0.019]		[0.039]	
High $OC_3$		-0.057***		-0.041***		0.019***		-0.075***
		[0.009]		[0.007]		[0.005]		[0.011]
Control var.	Included	Included	Included	Included	Included	Included	Included	Included
Constant	Included	Included	Included	Included	Included	Included	Included	Included
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.482	-1.476	-0.420	-0.420	-0.266	-0.264	7.547	7.499
Panel B2: Using top 10 shareholdings for SOEs								
Dependent variables =								
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net Debt/Assets	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$OC_{10}$	-0.192***		-0.137***		0.079***		-0.269***	
	[0.029]		[0.022]		[0.018]		[0.037]	
High $OC_{10}$		-0.064***		-0.045***		0.020***		-0.084***
		[0.008]		[0.006]		[0.005]		[0.011]
Control var.	Included	Included	Included	Included	Included	Included	Included	Included
Constant	Included	Included	Included	Included	Included	Included	Included	Included
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.487	-1.496	-0.422	-0.425	-0.268	-0.265	7.601	7.590

We repeat the regressions in Table 3 using Top 3 shareholdings (denoted by  $OC_3$ ) and Top 10 shareholdings (denoted by  $OC_{10}$ ) as a proxy for ownership concentration. In Panels A1 and A2, regressions are estimated for POEs; in Panels B1 and B2, they are estimated for SOEs.

Appendix Table A.4

Addressing endogeneity concerns for our regressions for SOEs.

Panel A: Propensity Score Matching (PSM) regressions for SOEs				
	Dependent variables =			
	Total debt/Assets	ST debt/Assets	Cash/Assets	Net debt/Assets
	(1)	(2)	(3)	(4)
High OC	-0.056*** [0.010]	-0.036*** [0.007]	0.020*** [0.007]	-0.075*** [0.013]
Size	0.033*** [0.005]	0.008** [0.003]	-0.004 [0.003]	0.036*** [0.007]
ROA	-0.874*** [0.088]	-0.534*** [0.077]	0.344*** [0.066]	-1.194*** [0.118]
Tangibility	0.153*** [0.030]	0.081*** [0.020]	-0.226*** [0.023]	0.369*** [0.040]
MB	-0.025*** [0.006]	-0.019*** [0.004]	0.009** [0.004]	-0.029*** [0.007]
ROAVOL	0.150 [0.121]	0.118 [0.094]	-0.014 [0.073]	0.172 [0.161]
Constant	-0.444*** [0.123]	0.044 [0.083]	0.315*** [0.073]	-0.749*** [0.153]
Num. of obs.	5076	5076	5076	5076
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R <sup>2</sup>	-1.542	-0.442	-0.344	4.947

Panel B: Instrumental variable (IV) regressions for SOEs

Panel B: Instrumental variable (IV) regressions for SOEs								
	Dependent variables =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(2)	(2)	(3)	(3)	(4)	(4)
OC <sub>IV</sub>	-0.193*** [0.016]		-0.138*** [0.013]		0.073*** [0.010]		-0.229*** [0.020]	
High OC <sub>IV</sub>		-0.083*** [0.007]		-0.059*** [0.006]		0.031*** [0.004]		-0.098*** [0.009]
Size	0.049*** [0.002]	0.051*** [0.002]	0.019*** [0.002]	0.020*** [0.002]	-0.011*** [0.001]	-0.011*** [0.001]	0.054*** [0.002]	0.056*** [0.002]
ROA	-0.802*** [0.037]	-0.798*** [0.037]	-0.583*** [0.031]	-0.580*** [0.031]	0.233*** [0.022]	0.231*** [0.022]	-1.043*** [0.047]	-1.041*** [0.047]
Tangibility	0.151*** [0.012]	0.148*** [0.012]	0.075*** [0.010]	0.073*** [0.010]	-0.222*** [0.007]	-0.221*** [0.007]	0.292*** [0.015]	0.289*** [0.015]
MB	-0.021*** [0.002]	-0.020*** [0.002]	-0.017*** [0.002]	-0.016*** [0.002]	0.006*** [0.001]	0.006*** [0.001]	-0.029*** [0.003]	-0.028*** [0.003]
ROAVOL	0.124** [0.050]	0.151*** [0.050]	0.078* [0.042]	0.097** [0.042]	-0.054* [0.030]	-0.064** [0.030]	0.200*** [0.064]	0.231*** [0.065]
Constant	-0.751*** [0.044]	-0.862*** [0.047]	-0.156*** [0.037]	-0.234*** [0.039]	0.438*** [0.027]	0.480*** [0.028]	-1.040*** [0.056]	-1.168*** [0.060]
Num. of obs.	6709	6709	6709	6709	6709	6709	6709	6709
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chi squared	4180	4159	2632	2625	3127	3107	3929	3917

Panel C: Firm-fixed-effect regressions for SOEs

Panel C: Firm-fixed-effect regressions for SOEs								
	Dependent variables =							
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets	
	(1)	(2)	(2)	(2)	(3)	(3)	(4)	(4)
OC	-0.198*** [0.017]		-0.142*** [0.015]		0.093*** [0.012]		-0.292*** [0.022]	
High OC		-0.007*** [0.002]		-0.005** [0.002]		0.004*** [0.002]		-0.010*** [0.003]
Size	0.063*** [0.003]	0.053*** [0.003]	0.022*** [0.003]	0.015*** [0.003]	-0.014*** [0.002]	-0.009*** [0.002]	0.076*** [0.004]	0.061*** [0.004]
ROA	-0.483*** [0.023]	-0.500*** [0.023]	-0.305*** [0.020]	-0.317*** [0.021]	0.159*** [0.017]	0.166*** [0.017]	-0.645*** [0.030]	-0.669*** [0.030]
Tangibility	0.104*** [0.011]	0.108*** [0.011]	0.073*** [0.010]	0.076*** [0.010]	-0.275*** [0.008]	-0.277*** [0.008]	0.375*** [0.014]	0.382*** [0.014]
MB	-0.003** [0.001]	-0.004*** [0.001]	-0.002* [0.001]	-0.003** [0.001]	0.002* [0.001]	0.002** [0.001]	-0.005*** [0.002]	-0.006*** [0.002]

(continued on next page)

Appendix Table A.4 (continued)

Panel C: Firm-fixed-effect regressions for SOEs									
Dependent variables =									
	Total debt/Assets		ST debt/Assets		Cash/Assets		Net debt/Assets		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ROAVOL	-0.076**	-0.104***	-0.064*	-0.084**	0.043	0.056**	-0.125**	-0.165***	
	[0.037]	[0.038]	[0.034]	[0.034]	[0.027]	[0.027]	[0.049]	[0.049]	
Constant	0.027***	0.025***	0.010	0.009	0.006	0.006	0.021**	0.019*	
	[0.008]	[0.008]	[0.007]	[0.007]	[0.006]	[0.006]	[0.011]	[0.011]	
Num. of obs.	7623	7623	7623	7623	7623	7623	7623	7623	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Pseudo R <sup>2</sup>	-0.100	-0.092	-0.060	-0.055	-0.072	-0.070	-0.178	-0.163	

In this table, we perform three tests to address endogeneity concerns for SOEs. Panels A, B and C are analogues of Tables 4, 5 and 6, respectively, where we estimated the same regression models for POEs.

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