Toward a theory of internal governance structure of China’s large SOEs

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\textbf{A B S T R A C T}

This research constructs a simple model to reveal the trade-off between decentralized and centralized governance structures of large state-owned enterprises (SOEs) in China. Our model shows that delegating the decision-making authority to large SOE managers enhances their initiative in terms of local investment while also perhaps leading to the ex-post moral hazard problem. The managerial entrenchment effect causes a misalignment between large SOE managers’ personal interests and organizational interests. We construct a model by introducing a mechanism called the constrained-delegation governance structure approach to illustrate the issues, such that by eliminating some of large SOE managers’ managerial entrenchment investment choice through partially delegating SASAC (State-owned Assets Supervision and Administration Commission of the State Council) officials’ decision-making authority to the party committee within large SOEs, the trade-off between centralization and decentralization with respect to loss of control versus the local initiative can be resolved. We also show and discuss how the efficiency of the constrained delegation governance structure within Chinese large SOEs delivered through party committee control is mitigated with the presence of collusion between the party committee secretary and large SOE managers. By eliminating the self-selection endogeneity issues, some further empirical evidence including the robustness check shows that (1) the existence of a party committee could reduce the overinvestment problem of listed large SOEs, and that (2) the monitoring effect of the party committee is more pronounced when the CEO herself is a party member.

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1. Introduction

Raising urgent issues regarding the on-going reforms of large state-owned enterprises (SOEs) in China,\textsuperscript{2} Naughton (2017) argued that there exists a so-called “impossibility trinity” dilemma that large SOEs encounter there. Three core goals, all

\textsuperscript{1} These authors contributed equally to this study and share first authorship.

\textsuperscript{2} This paper defines large SOEs as those whose operating income is above 500 million RMB. This definition is consistent with the standard criteria set by the Chinese National Statistical Industrial Enterprises Yearbook.

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inherently inconsistent, have been pushed by the state to reform large SOEs under the supervision from both central- and local-level governments: increase firm autonomy; improve oversight from the state; and assign new development missions to state firms.\(^3\) In some studies of the literature, the last two goals have been persistently labelled as factors that are ascribed to the low operational efficiency of large Chinese SOEs (Shen, Fang, & Deng, 2017; Xu, Zhu, & Lin, 2005; Lin, Cai, & Li, 1996; Lin, Cai, & Li, 2003).\(^4\)

The above cohorts of scholars have noted that it is impossible to increase managerial autonomy for large SOE managers, on the one hand, and loosen political control over firms on the other. We summarize three main reasons with respect to why political control over firms reduces the efficiency of large SOEs. (1) The incentives for managers to improve the productivity of state-owned enterprises (SOEs) are inevitably undermined due to a lack of initiatives. (2) State control over firms can induce non-productive rent-seeking activities to crowd out productive profit-maximization activities. (3) The allocation of formal authority to government officials over large SOEs makes them unable to adapt to the local demands of the product market for which a certain amount of local information is required. As Sachs and Lipton (1990) mentioned:

The bureaucracy provides an extraordinarily important practical argument for radical free market policies, even in circumstances where “market failures” exist and pure theory might suggest more nuanced policies. It is naive to think of the existing bureaucracy as equipped, professionally and temperamentally, to implement sophisticated policies based on Western-style theories of the “second best”. The bureaucracy cannot be relied for efficiency in regulating monopoly prices, promoting infant industries or implementing industrial policy.

Another stream of the literature holds contrasting views regarding the role of state control over large SOEs. These studies advocate that necessities exist for the central state to guide policies over the operations of large SOEs especially during periods of economic transition (Broedsgaard, 2012; Koppell, 2007; Nolan & Wang, 1999; Nolan & Yeung, 2001). Among this literature, Peter Nolan particularly demonstrated that state intervention into large SOEs is endogenously derived from the external forces of globalization. On the one hand, there is an increasing number of foreign multinational firms with much more advanced technology entering the Chinese market, which in the long term might crowd out the less competitive domestic firms already in the market. On the other hand, the party-state could directly assign large SOE bureaucrats with the tasks of forming the joint-ventures with these foreign multinationals to facilitate capability and technology transfers. As a result, Chinese bureaucrats have indeed played an active role in the institutional reconstruction and technological upgrading of large SOEs since the country’s opening-up policies.\(^5\) Using the case study of two giant SOEs, Shougang (steel) and Sanjiu (pharmaceutical), Nolan and Yeung (2001) further pinpointed that the underlying factors driving the technological advancement of large SOEs are ascribed to the legacy of motivational and organizational skills possessed by the Chinese Communist Party that is in the direct control of large SOEs.

Broedsgaard (2012) even presented the idea that political personnel control from the state over large SOEs in China has played an essential role in mobilizing the resources required for these firms’ rapid growth. Through state officials’ particular recruitment system stemming from the Soviet Union’s so-called nomenklatura, China is able to manage potential insider control by SOE managers by rotating and transferring their positions to other bureaucratic positions, yet conversely such a system allows SOE managers to easily gain access to the required resource inputs from the state such as bank loan, subsidies, and so on to ensure the rapid expansion and high efficiency of these large SOEs.\(^6\) Similar views are held by Lo (1999) in which he came up with the point that some long-term oriented institutions of Chinese SOEs such as the state’s mandatory responsibility of fulfilling the policy commitments imposed by itself could be conducive to productive efficiency, although not necessarily good for the improvement of allocative efficiency. The message of this argument is clear: the state as a bulwark for large SOEs could advance their level of productivities in a very efficient way despite the fact such state guidance might result in the monopolistic status of large SOEs, which cause welfare losses (allocative efficiency). It could be argued that the dichotomy in the literature regarding whether or not the state should play an active role in guiding the daily operations of large SOEs in China essentially reflects upon the fact that the effect of the power division structure between the Leninist party state and the SOEs’ managers on the performance of large Chinese SOEs could be very mixed and debatable.

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3 The assignment of state missions to state firms is compatible with the terminology pointed out by Lin, Cai, and Li, (1998), policy burdens, which we classify into two categories: social policy burdens and strategic policy burdens. The former refers to the compulsory employment of excessive numbers of unskilled workers as well as their corresponding welfare entitlements such as social pensions. Strategic policy burdens refer to the state’s promotion in terms of forcing SOEs to invest within excessively capital-intensive industries, which are inconsistent with the comparative advantage of the labor-intensive factor endowment structure of China. These strategic policy burdens are imposed by the state to accumulate the necessary capital for rapid industrialization and catching-up policies under national industrial development. For detailed discussions of these two types of policy burdens, please consult Shen and Deng (2016).

4 Several empirical and case study findings in the management literature have also corroborated these views (Tan, 2007; Connor, Deng, & Luo, 2006).

5 Several empirical studies in the past several decades have verified the view concerning the continuous technological improvement of large SOEs (Jefferson, Rawski, & Zhang, 2008; Zhou, Zhang, Gu, & Wang, 2007).

6 Koppell (2007) discussed the possibilities of China’s reforms to liberate the large SOEs from bureaucratic state control while maintaining some political guidance from state authority. He came up with the point that it is not the key issue of whether or not the state should eliminate its control over large SOEs, it is instead quite important to investigate the certain way in which political guidance over SOEs and economic independence of SOEs could be compatible with each other. Drawing upon American experiences with state-led hybrid organizations, he argued that there are 3 essential conditions that have to be satisfied to ensure such compatibilities: (1) Welfare functions of large SOEs must be replaced by policy objectives that reconcile with commercial purposes. (2) Reducing the financial dependence on SOEs will remove barriers to ration control. (3) A robust and concrete regulatory framework should be developed to substitute for the administrative linkages between SOEs and the state such that the direct control of the latter over the former is weakened.
The purpose of this study is twofold. First, it illustrates the trade-off between loss of control and local initiative undertaking under different governance schemes of large SOEs in China. We argue that the decentralized governance structure of large SOEs in which SOE managers are granted certain managerial autonomy could encourage them to be more adaptive to local market demand. However, the downside of such decentralized governance structure is that it could lead to ex-post moral hazard managerial behaviors including managerial entrenchment activities. Through such activities, large SOE managers undertake some unprofitable investment projects that come at the expenses of the large SOE’s interests as a whole, but are in aligned with the personal interests of said managers. When a large SOE manager’s decision-making authority is centralized to state officials, then there will be mitigation of ex-post high agency costs caused by the moral hazard problem due to the state’s monitoring effort. Nevertheless, the centralized governance structure of large SOEs led by the state officials also undermines local SOE managers’ initiative to invest.

Second, we propose a governance mechanism, the so-called constrained delegation organizational structure, to resolve the trade-off arising from the centralized versus decentralized style to governance. Under constrained delegation, some unprofitable investment projects might maximize SOE managers’ personal private control of benefits, but incur a cost on the whole organizational interests. In other words, the constrained delegation governance structure approach could play an important role in hindering the empire-building tendency of SOEs’ managers while avoiding any negative aspects like a lack of initiatives by managers caused by the excessive level of direct supervision and control by state officials from the State-owned Assets Supervision and Administration Commission of the State Council (SASAC). In reality, the delegation of certain decision-making authorities from the state to the party-committee within large SOEs is the rational embodiment of such a constrained delegation governance mechanism. We also demonstrate that the constrained delegation is preferable over either a centralized or decentralized governance mechanism when SASAC officials are neither optimistic nor pessimistic about local product market demand.

Shen et al. (2017) constructed a sequential game model showing that an economy dominated by large SOEs with rent seeking purposes by the state such as in China is not necessarily worse-off than a monopolistic free market economy in terms of welfare level. From the organizational structure viewpoint, it is indeed a very important policy implication issue of respective merits and drawbacks of decentralized and centralized tactics of organizing productions. In other words, when large SOEs' decision makings are heavily under state control, a centralized structure of the organization emerges. The same happens for a decentralized structure if large SOE managers are given a certain level of autonomy in terms of decision making and authority over allocating resources or investment plans. Our study is most closely linked with a recent paper by Huang, Li, Ma, and Xu (2017) in which they revealed the trade-off between centralized and decentralized governance structures in terms of explaining the heterogeneity of SOE firm-level performance in China. However, our paper differs in two aspects. (1) This paper focuses on the centralization versus decentralization trade-off within the internal environment of SOEs, whereas their paper treats the distance to central government as the key to illustrating such centralization versus decentralization trade-off. (2) Their paper does not acknowledge the role of a centralized organizational structure of large Chinese SOEs in overcoming the ex-post high agency costs caused by the empire-building inclination of mega-SOE managers, whereas this paper does so instead.

It has been widely discussed in the modern organizational economics literature that a distinct internal organizational structure greatly impacts the performance differentials across firms (Gibbons, 2010). Three lines of research have been developed to detect the channels through which organizational structure might affect firms’ performances: (1) The delegation of contracts, which replicates efficient centralized contracting (the revelation principles) (Baron & Besanko, 1992; Melumad, Mookherjee, & Reichelstein, 1995). (2) The information processing and communication costs approach (Bolton & Dewatripont, 1994; Garcano, 2000; Radner, 1993; Sah & Stiglitz, 1986). (3) The trade-off between information and loss of control (Aghion & Tirole, 1997; Alonso, Dessein, & Matouschek, 2008; Dessein, 2002; Hart & Moore, 2005; Rajan & Zingales, 2001).

The trade-off between decentralization and centralization has been persistently one of the most hotly debated topics in the organizational economics literature. The drawbacks of decentralization, in which the agents may be biased towards their investment decisions that are inconsistent with the interests of the organization as a whole, might lead to a conflict between the principal and the agents. Nevertheless, there also exists an advantage in terms of delegating authority to the agents as they have better access to local information of the product market.

There are two approaches that organizations could adopt to resolve the negative aspects of decentralization. (1) They can centralize decisions when the bias of the agent severely hurts the performance of the organization. (2) They could limit the discretion of the agent by eliminating “conflicting choices”. In this paper we argue that the party committee secretary who is the self-extended agent of SASAC officials plays a crucial role in eliminating the biased interests of Chinese large SOE managers, such as managerial entrenchment behaviors including excessive network expansion, perk consumption, empire-

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1. In this paper, SASAC is an equivalent concept to the government or state that exerts supervisory right over the large SOEs in China. In the rest of this paper, when we mention the government or state, it automatically implies bureaucratic sectors of the State Asset Committee. The full name for this bureaucratic body is called “State-owned Assets Supervision and Administration Commission of the State Council (SASAC)”. In Chinese, it is “国务院国有资产监督管理委员会”.

2. The weakness of this approach is that it only works under a complete contract environment (Mookherjee, 2006). This is obviously inconsistent with the principals (party-state) agent (SOE managers) framework when analyzing the nature of the organizational structure of large SOEs in China.
building investment, and so on, which lead to a misalignment between overall organizational interests and large SOE managers’ personal benefits. As a result, the role of party-committee control over a large Chinese SOE might essentially resolve such negative aspects, mainly including the ex-post high agency cost and the moral hazard problem arising from the decentralized governance structure of large SOEs.

We still would like to present the point that a firm with a centralized organizational structure has certain drawbacks. In reality, SASAC officials are not strongly suited to adapt nor to even fully understand the local information of product demand. If they are not greatly informed and impose fully bureaucratic control over large SOEs to the extent that well-informed SOE managers are unable to make investment decisions on their own, then the large SOEs will incur large losses. Hence, by revealing the trade-off between the centralized and decentralized organizational structures of large SOEs, our paper is a first attempt to unify the two-sided argument on whether the role of the party committee within Chinese large SOEs could be beneficial or detrimental on the efficiency improvements of these firms.

It should be noted that the decision-making authority of SOEs had been fully centralized to the state Ministry of Finance until 2008. There are substantial series of reform packages that have been issued to address the inefficiencies arising from state officials’ excessive level of supervision over large SOEs. These reforms, mainly including the transfer of rights and profit retention, contractual responsibility system, commercialization, and joint-ownership restructuring of SOEs, all aimed to reverse the poor business performances of firms. Nevertheless, their performances did not improve as expected prior to the massive wave of privatization of small-medium SOEs in the late 1990s. However, the power relational structure of the governance system of large SOEs in China has undergone a fundamental change since 2008 when the state council of China enacted a detailed policy package with respect to the newly established state bureau. The newly established SASAC has been used by the state to function as the representative of the party state that manages the human resources, management, marketing, and finance of large SOEs for the sake of improving these firms’ profitability. The following diagram (Fig. 1) shows the three-tier structure for the supervision and administration of state-owned assets from 2008.

From the empirical data, we more interestingly can also see after the privatization campaign of small-medium SOEs in the late 1990s (the so-called ‘grasp the large, let go of the small’) that the return on assets (ROA) of the remaining non-privatized large SOEs still exhibited very good performance especially after 2008. This is illustrated by Fig. 2. Fig. 2 presents the soaring trend of SOEs’ ROA since 1999. This is a puzzle, because the remaining SOEs since the late-1990s are those that have been under the direct control of the central government or SASAC. In other words, at least from the empirical data, state bureaucratic control has not played a dampening role in lowering the profitability of large SOEs. The puzzle seems to be more evident if one compares the profit margins between private firms and SOEs since 1999. The following Fig. 3 illustrates this point.

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9 The reason why we use the terminology managerial entrenchment instead of empire building is because the opportunistic behavior of large Chinese SOEs’ managers is different from or at least not the same as that of executives of big corporations in the West. Despite the conventional use of the empire-building effect in the corporate finance literature (Jensen, 1986; Jensen & Murphy, 1990; Kanniainen, 2000), this effect only specifically refers to the situation under which when there is the separation of control and ownership in the giant firms, then executives of these big corporations without a legal residual claim to the firms operating income are only interested in expanding the sizes of the firms without taking care of the firms’ shareholder values. This is apparently not fully true for Chinese large SOEs, mainly because one cannot equalize shareholder value as the only interest of SOEs especially when it is applied to the Chinese context. In China, as argued by Lin and Tan (1999) and Shen et al. (2017), large SOEs also carry political and national industrial development tasks, including social stability and investment in strategic sectors. Bearing these in mind, we rather use the terminology managerial entrenchment to avoid any confusion caused by mis-use of the terms.
10 The official document number of this policy package is 2008(11).
11 According to latest SASAC statistics, there are 97 central SOEs in China (2020.03.01).
Fig. 3 shows that the profit margins of SOEs since 2000 have been higher than those of private firms. This implies that large SOEs in China are not performing as worse as expected, which is an empirical puzzle we shall address in this paper: Why are the remaining large SOEs in China still competitive even though they are still endowed with a strong mix of bureaucratic control and partial marketization? We show that it is not always welfare-losing to centralize the decision making authority of investment plans for large SOEs to the central state. A centralized structure could help large SOEs overcome the negative aspects arising from the principal-agent problem such as the moral hazard of managers. In other words, in contrast to most prevailing literature in the 1990s that regard such poor performance as being caused by an excessive level of bureaucratic control over large SOEs, we argue that some efficiency implications exist over a centralized governance structure of large Chinese SOEs.

The rest of the article runs as follows. Following this introduction, Section 2 shows the model. Section 3 presents our suggestive empirical evidence. Section 4 offers policy implications. Section 5 renders conclusions.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>SASAC’s payoff as a function of the decision and the realization of demand for the product.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Low (L)</td>
</tr>
<tr>
<td>Invest</td>
<td>a</td>
</tr>
<tr>
<td>Not Invest</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes: a<b<c and a<−2, −1≤b<0, and c>0.
2. A simple model

The following model illustrates the basic trade-off between a decentralized and centralized power division structure of large Chinese SOEs. Assume the principal (SASAC official)'s payoff function for different investment projects with different levels of demand is distributed as follows.

Suppose a large SOE is about to invest in the development of a new product. The return of such development depends on local demand for the product. Large SOE managers, acting as agents through their daily interaction with market operations, are more knowledgeable of future product demand. For SASAC officials, they only know that product demand could have 3 possible values: High (H), Medium (M), and Low (L).

From Table 1 we see that SASAC officials who care about the overall profits of this investment project will only decide to invest if product demand is high. Nevertheless, mega-SOE managers know the actual demand for the product. It is assumed that SOE managers' payoff function is given by \((\lambda, \Pi + h\text{Invest})\), where \(h\) is the "bias" of these managers and is obtained only if SASAC officials prefer to invest. Moreover, \(d\) captures the managerial entrenchment effect of large SOEs.\(^{12}\) According to some scholars, large SOE managers in China without legal claims to the residual rights of their firms tend to expand the size of their firms with the objective of sales maximization instead of profit maximization (Bai, Lu, & Tao, 2006; Shen et al., 2017; Zhang & Ma, 1999). In other words, on the one hand, they must target the overall profits of their firms, while on the other hand, they have a natural self-interest for managerial entrenchment in order to maximize their private benefits of firm control. If \(h > 0\), then a manager undertakes the managerial entrenchment investment and vice versa for \(h < 0\). If \(h = 0\), then a manager is neutral on the investment plan.

Parameter \(\lambda\) denotes how much weight the large SOE manager places on the firm's overall profits. It is obvious to see that \(\lambda\) is not necessarily equal to 1, because as mentioned previously, large SOE managers in China are not always geared toward profit-maximizing; they might instead maximize sales or total amount of labor employed, for which both of these two are direct measures of firm size. Thus, \(\lambda\) measures the degree of alignment between a firm's overall interest and the self-interests of individual SOE managers. If \(\lambda > 1\) or \(\lambda < 1\), then the misalignment problem occurs.

Suppose \(\lambda = 0.5\). We then normalize the amount of investment to be 1. Thus, we can present the table of the payoff function for large SOE managers as follows.

From Table 2, since \(a < -2\), \(-1 < b < 0\), it can be derived that \((0.5a + h) < 0\), \((0.5b + h) > 0\), and \((0.5c + h) > 0\). This leads to the situation whereby large SOE managers will invest if demand is medium and/or high, which is in contrast to the case in which the SASAC official prefers to invest in the project only if demand is high. It could be seen that the biasedness of decision making in this case is reflected by the fact that large SOE managers are misaligned if local demand is medium and are aligned if local demand is both high and low. In order to resolve such a misalignment caused by the superior knowledge that managers have on local product information, there are two possible solutions to be adopted as follows.

Delegated the investment decision to the large SOE managers.\(^{13}\)

Centralize the investment to the SASAC officials (bias = 0).\(^{14}\)

One thing to bear in mind is that one benefit for assigning authority to the SASAC officials (that is, centralizing the decision making process) is that they will make decisions that prevent the state assets from depreciation - in other words, profit maximization. The downside, nevertheless, is that SASAC officials lack local information and thus are uncertain about local market demand.

Assume that a SASAC official assigns probability \(p_L\) to a low demand situation, \(p_M\) to medium demand, and \(p_H\) to high demand. Here, \(p_L + p_M + p_H = 1\). For simplicity, suppose that \(p_L = p_M = p\) and that \(p_H = 1 - 2p\).\(^{15}\) Note that the highest profit that this large SOE could make (which occurs when the decision is made by a decision maker who only cares about profits and perfectly observes product demand) is to invest if and only if demand is \(H\), in which profits are:

\[
\pi_{\text{max}} = 0p_L + 0p_M + cp_H = c - 2pc. \tag{1}
\]

\(^{12}\) The terminology of the empire-building effect was first coined by Baumol (1959).

\(^{13}\) The delegation approach in terms of decentralizing the decision making within the internal organization is tantamount to giving more autonomy to the decision making process of large SOEs' managers. This approach was first brought forth by Chinese Marxist Economist Ye Fang Sun (1956).

\(^{14}\) The recent tendency for a power division structure is more consistent with the centralization of the decision making process in which the China government persistently emphasizes the importance of more intense party guidance and monitoring over large SOEs throughout the country.

\(^{15}\) If \(p < \frac{1}{2}\), then all demand realizations seem equally likely. If \(p = 0\), then SASAC officials know for sure demand is \(H\). If \(p > \frac{1}{2}\), then SASAC officials know for sure demand could not be \(H\).
Whether or not the decision making process must be centralized or delegated depends upon a comparison of the expected profits of the firm under each possible organizational structure.

2.1. Centralization

This is the case where all decisions regarding an investment are made by SASAC officials. They make decisions without the knowledge of demand, but seek to maximize profits for the sake of appreciation of state assets. The expected profit if SASAC officials decide to invest is:

\[ \pi_I = ap_L + bp_M + cp_H = ap + bp + c(1 - 2p) = (a + b - 2c)p + c. \]  

The expected profit for them not to invest is 0. Thus, SASAC officials decide to invest if and only if:

\[ (a + b - 2c)p + c > 0 \]  

Given that \( a < b < c \) and \(-2 < b < 0\), and \( c > 0\), this implies that:

\[ p < \frac{c}{2c - a - b}. \]  

The loss from centralization lies in the fact that the SASAC officials always make the same decision regardless of the actual product demand due to a lack of local knowledge of the demand. If \( p < \frac{c}{2c - a - b} \), then SASAC officials always decide to invest. The loss is the reduction in profits from Eq. (1) due to their lack of local knowledge of the actual demand. A loss comes from when demand is \( L \) or \( M \), as SASAC officials should not invest. Hence, the losses from overinvestment are computed as follows:

\[ \text{Loss}_1 = \pi_{\text{max}} - \pi_I = c - 2pc - ((a + b - 2c)p + c) = (-a - b)p > 0. \]  

If \( p > \frac{c}{2c - a - b} \), then SASAC officials decide not to invest. The loss is the reduction in profits due to their lack of local knowledge of the product demand. A loss comes when demand is \( L \) or \( M \), and so the losses are computed as:

\[ \text{Loss}_2 = \pi_{\text{max}} - 0 = c - 2pc = c(1 - 2p). \]  

We can calibrate Eqs. (5) and (6) by setting \( a = -3 \), and \( b = -\frac{1}{2} \), and varying the values of \( c \). Through the calibration, we show how the losses vary with uncertainty in product demand. When \( a = -3 \), and \( b = -\frac{1}{2} \), Eq. (6) is rewritten as:

\[ \text{Loss}_1 = 3.5p \]  

From Table 3, we now compute the following graph to illustrate how the losses vary with the realization of local product demand with different values of \( c \) when SASAC officials decide not to invest (payoff of high local demand).

Fig. 4 illustrates when the decision making process is centralized to SASAC officials that the first thing needing to be mentioned is that there is zero loss when they face no uncertainty about the ‘right decision’. In other words, if \( p = \frac{1}{2} \), then demand is either \( L \) or \( M \), and so SASAC officials should not invest. If \( p = 0 \), then demand is \( H \), and SASAC officials should invest.

Second, the losses are at the maximum when there is greater uncertainty about what to do (roughly when each demand situation is equally likely), and these losses increase with respect to the SASAC officials’ payoffs (their own benefits) from high local product demand. This is because once their payoffs from high local product demand rises, \( p \) approaches closer to \( \frac{1}{2} \), implying that true demand realization is more likely to be \( L \) or \( M \). Thus, a trade-off emerges that can be summarized in the following proposition.

**Proposition 1.** Once SASAC officials’ potential payoffs from high demand rise, the occurrence of \( L \) or \( M \) demand realization is more likely, implying higher risks will arise due to their lack of knowledge of local demand, thus leading to an increase in maximum losses. If SASAC officials still choose to invest under the case of \( M \) or \( L \) demand realization, then it is for certain that maximum losses will increase.

<table>
<thead>
<tr>
<th>Values of c</th>
<th>Loss2</th>
</tr>
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<tbody>
<tr>
<td>c=1</td>
<td>1-2p</td>
</tr>
<tr>
<td>c=2</td>
<td>2-4p</td>
</tr>
<tr>
<td>c=3</td>
<td>3-6p</td>
</tr>
<tr>
<td>c=4</td>
<td>4-8p</td>
</tr>
<tr>
<td>c=5</td>
<td>5-10p</td>
</tr>
<tr>
<td>c=6</td>
<td>6-12p</td>
</tr>
<tr>
<td>c=7</td>
<td>7-14p</td>
</tr>
</tbody>
</table>
Table 4
Large SOE managers’ payoff as a function of decision and demand realization.

<table>
<thead>
<tr>
<th></th>
<th>Low (L)</th>
<th>Medium (M)</th>
<th>High (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest</td>
<td>(a\lambda + h)</td>
<td>(b\lambda + h)</td>
<td>(c\lambda + h)</td>
</tr>
<tr>
<td>Not Invest</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The macro-level policy implication from the loss of centralization is that once SASAC officials expect the local economy to show bullish performance (the potential payoff from high demand for party officials is greater), it is actually more likely in reality that the true state of the local economy is not as good as their forecast. Hence, if these over-optimistic SASAC officials with their absence of obtaining true information of the local product market demand still choose to invest when the local economy is instead undergoing a downturn, then large SOEs take on losses.

2.2. Decentralization

Large SOE managers who know local product demand better have the decision-making authority under decentralization. Nevertheless, their self-interests, such as managerial entrenchment for gaining more private control of benefits, might lead to decisions that are biased. We suppose a large SOE manager is pro-investment due to the managerial-entrenchment effect \((h>0)\) and list the preferences of this large SOE manager in Table 4.

The decisions made by large SOE managers depend on the ‘true’ bias \(\lambda\), which is the ratio of the parameter \(h\) measuring the managerial-entrenchment effect to the degree of alignment between the interests of large SOE managers and those of SASAC officials. The true bias turns higher via two channels: 1) The higher the managerial-entrenchment effect is, the higher will be the true bias. 2) The lower the degree of alignment is, the higher will be the true bias. Suppose \(h>0\), which indicates there is a managerial-entrenchment effect for large SOEs. There are 3 cases to be considered hereafter.

**Case I:** \(a\lambda + h > 0\) (in other words, \(h> -a\lambda\), given that \(a<-2\)).
For case I, the large SOE manager always invests regardless of demand.

**Case II:** \(b\lambda + h > 0\) and \(a\lambda + h < 0\) (in other words, \(-b\lambda < h < -a\lambda\), given that \(-1 < b < 0, a<-2\)).
For case II, the large SOE manager only invests if demand is high or medium.

**Case III:** \(b\lambda + h < 0\) (in other words, \(h<-b\lambda\)).
For case III, the large SOE manager only invests if demand is high.

From these 3 cases, one could argue that once the true bias becomes small enough, the large SOE manager is now aligned with the interests of SASAC officials who care more about the overall interest of that SOE.

We now compute the optimal profits under decentralization for each case above in two stages as a function of \(p\). We need to analyze which decision the large SOE manager would choose (Invest or not Invest) as a function of demand. In this research we simplify the situation under which the large SOE manager knows the demand, and so he will choose to invest...
whenever the payoff of investing is bigger than 0. Based on this, we are able to compute the profit function based on each possible value of demand.

**Case I:** $a\lambda + h > 0$ (in other words, $h > -a\lambda$).

Decision: Large SOE manager always invests.

\[
\text{Loss}_{\text{case 1}} = cp_H - (ap_l + bp_m + cp_H) = c(1 - 2p) - ap + bp + c(1 - 2p) = (a - b)p = -(a + b)p.
\]

**Case II:** $b\lambda + h > 0$ and $a\lambda + h < 0$ (in other words, $-b\lambda < h < -a\lambda$).

Decision: Large SOE manager invests only if demand is $H$ or $M$.

\[
\text{Loss}_{\text{case 2}} = cp_H - (bp_m + cp_H) = c(1 - 2p) - bp + c(1 - 2p) = -bp
\]

**Case III:** $b\lambda + h < 0$ (in other words, $h < -b\lambda$).

Decision: Large SOE manager invests only if demand is $H$.

\[
\text{Loss}_{\text{case 3}} = cp_H - cp_H = 0.
\]

2.3. *Comparison: centralization vs. decentralization*

In order to illustrate the losses from decentralization, we calibrate the values for $a$ and $b$. We set $a = -5$ and $b = -1$. Hence, \( \text{Loss}_{\text{case 1}} = 6p \) and \( \text{Loss}_{\text{case 2}} = p \). Fig. 5 represents the loss under decentralization as a function of $p$, for each possible value of the ‘effective’ bias \( \frac{h}{p} \) (red solid is case I, blue solid is case II, and green solid is case III).

From Fig. 5, we see that the losses from decentralization increase with respect to the uncertainty. Realizing this, we can incorporate the losses under centralization and decentralization into the same diagram, which allows us to see under what condition that decentralization outperforms centralization or vice versa.

In order to compare the losses much more easily, we set $a = -5$, $b = -1$, and $c = 5$. Based on Fig. 6, we now analyze the organizational choices between decentralization and centralization among 3 cases as follows.

2.3.1. *Case I (High misalignment)*

Large SOE managers are knowledgeable of local demand. However, they are very biased such that they have a strong commitment to managerial entrenchment and maximization of private controls of benefits such as reputation improvement, social network expansion, and so on. As a result, large SOE managers’ information is not used, and decentralization is unable to outperform centralization.

This has far-reaching implications on the debate over whether to remove bureaucratic control over large SOEs in China, which would necessarily improve their efficiency, especially the monopolistic ones. Our analysis indicates that once SOE managers have inconsistent interests with the SASAC officials who care most about the profit maximization of large SOEs, in order to prevent biased decisions made by SOE managers, there is a rationale for a certain level of centralized control from the state to not transfer too much autonomy to these large SOE managers. Given the fact that the problems of insider control and principal–agent conflict are very severe during the process of China’s large SOE reforms, the centralization of decisions to SASAC officials might prevent loss of control and high agency costs at these SOEs from happening.

![Fig. 5. SASAC’s losses from decentralization with different investment decisions.](image)

**Note:** The 3 different lines stand for losses under decentralization with different possible values of effective bias.
2.3.2. Case II (Medium misalignment)

If bias is medium \((-b\lambda < h < -a\lambda\), then SASAC officials sometimes choose to centralize or choose to decentralize later on, depending upon the local uncertainty of product demand. One thing to bear in mind is that the conflict between SASAC officials and large SOE managers will emerge if and only if the local demand is medium rather than high or low. This is because such SASAC officials will choose the same decision that an informed large SOE manager would choose when demand is low or high. An important observation for case II is that the benefit of decentralization is highest when the uncertainty faced by SOE managers when they made the right decisions is higher.

2.3.3. Case III (Complete alignment)

This is the case under which the bias of interest between large SOE managers and SASAC officials is so small \((h < -b\lambda\) that large SOE managers would make the same investment decisions as the SASAC officials would make. As a result, there is no loss from decentralization, because the loss of control is zero. From the above 3 cases, we derive the following proposition.

**Proposition 2.** The losses arising from decentralization of the decision-making authority implemented by SASAC officials rise as the managerial entrenchment behaviors of large SOE managers intensify - namely, \(0 < -bp < - (a + b)p\).

From Proposition 2, case 3 (complete alignment) will emerge if and only if the managerial entrenchment orientation of large SOE managers is sufficiently small. This is very unlikely under the current context of the reforms in large SOEs in China. First, according to Shen, Li, Zhang, and Jefferson (2018), Zhang, Zhang, and Liu (2017), and Shen et al. (2017), ownership reforms of large SOEs in China have already become trapped into what it is called a partial reform equilibrium or sub-game perfect Nash equilibrium. The central theme of these three studies is that the managerial entrenchment effect of large SOEs cannot be eliminated, because the current state-owned ownership structure of large SOEs can deliver a win-win game for large SOE managers and SASAC officials. Thus, both sides have no unilateral incentives to deviate from such an equilibrium. Second, as Jefferson (2016) argued, even though the ownership structure of large SOEs becomes more dispersed (ascribing to the weakness of an external regulatory mechanism that could allow shareholders with minority shares to act as independent directors), the managerial entrenchment effect that stems from the insider control of large Chinese SOEs cannot be resolved unless a complete MBO (manager buyout) type of privatization is implemented.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>SASAC’s profits table under constrained delegation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low (L)</td>
</tr>
<tr>
<td>Invest 2 Million</td>
<td>a</td>
</tr>
<tr>
<td>Invest Y Million</td>
<td>d</td>
</tr>
<tr>
<td>Invest X Million</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes: \(a < d < b < 0\), \(e > 0\) and \(d + e = 0\), and \(a + c < 0\).
Given the stagnation of ownership reforms of large SOEs in China, the prevailing managerial entrenchment effect of large SOE managers inevitably leads to huge losses from delegating the decision making authority to SOEs. Thus, it may become rationale for the state to recenter the decision making authority to SASAC officials.

2.4. Investment decision under constrained delegation

The previous section evaluates the performance of a centralized versus decentralized governance structure as an all-or-nothing choice: either the large SOE manager chooses whether to invest, or the SASAC officials chooses whether to invest. With only two choices (invest or not invest), there is not much more that a firm can do if investment decisions are decentralized. When there are more possible choices, then the SASAC officials may impose some constraints on the available choices. For example, large SOE managers in China can make their own decisions in terms of investment, but they are unable to appoint other members from the managerial boards from the personnel management perspective of large SOEs. Moreover, the authority of large SOEs’ selection mechanism for managers is constrained by the party committee within firms that is under the direct control of SASAC. In addition, SOE’s party committee secretary might also impose quantity constraints upon the amount of investment that SOE managers can make. Alternatively, party committee secretaries might also impose a credit borrowing threshold above which large SOE managers cannot borrow from banks. In all these examples the party committee secretaries as the representative of SASAC allow a lower level of decision authority for large SOE managers to decide, but impose limits by ruling out some choices.

We are now going to study the following question: If the SASAC officials decentralizes the decision-making authority, then when is it best to rule out certain decisions and limit the discretion of a large SOE manager? We consider the same set-up as before, with uninformed officials from SASAC and a large SOE manager who knows the product demand. The SASAC officials can invest either X, Y, or Z Million, where 0 < X < Y < Z. Table 5 lists the payoffs of SASAC officials as a function of demand.

Assume that SASAC officials assign probability \( p_L \) to L, \( p_M \) to M, and \( p_H \) to H. For simplicity, we suppose that \( p_L = p_M = p \) and \( p_H = 1 - 2p \). Due to the existence of the managerial entrenchment effect, the large SOE manager is pro-investment and gets the private payoff as shown in Table 6.

One can see that if large SOE managers are able to decide on the amount invested, then they will always invest Z million. Note that delegation of authority without restrictions cannot outperform centralization, as the large SOE manager always makes the same investment decision due to the managerial entrenchment effect, irrespective of different states of market demand. What if the party committee secretary imposes limits on the discretion of large SOE managers’ available investment decisions? This is the case of “constrained delegation”, and so they can decide how much to invest, but are not allowed to choose to invest in the Z-million project. In this case, under constrained delegation the large SOE managers will invest in Y million as long as demand is Medium or High and will not invest if demand is Low. We therefore compare the scenarios of constrained delegation with the case of centralization in which the decision making authority is fully wielded by the SASAC officials from the top, and we derive under which condition constrained delegation is preferable to centralization for SASAC officials or vice versa.

2.5. Centralized to SASAC officials

When the investment decisions are centralized to SASAC officials from the top, these SASAC officials have no knowledge of local demand for the product, but seek to maximize overall profits of the firms for the sake of asset appreciation. Again, we compute optimal profits in two stages. The first stage is to analyze which decision the SASAC officials will choose (Invest or Not Invest) as a function of the uncertainty they face over the local demand of the product (as a function of \( p \)). The second stage is to compute expected profits given that SASAC officials will choose an optimal decision.

The expected payoffs under each investment option for the SASAC officials are first:

\[
\begin{align*}
\pi(\text{Z million}) &= ap + bp + c(1-2p) = (a+b-2c)p + c \\
\pi(\text{Y million}) &= dp + e(1-2p) = (d-2e)p + e \\
\pi(\text{X million}) &= 0
\end{align*}
\]

Eq. (8) demonstrates that investing Z million is better than investing Y million if and only if \((a+b-2c)p + c > (d-2e)p + e\), which gives us \(p < \frac{d-e}{a+b-2c-d+2e}\). Given that \(d + e = 0\) and \(a + c = 0\), this means \(p < \frac{f-c}{b+3(e-c)}\).

<table>
<thead>
<tr>
<th></th>
<th>Low (L)</th>
<th>Medium (M)</th>
<th>High (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest Z Million</td>
<td>f</td>
<td>g</td>
<td>j</td>
</tr>
<tr>
<td>Invest Y Million</td>
<td>k</td>
<td>f</td>
<td>n</td>
</tr>
<tr>
<td>Invest X Million</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: \(k<0<f<c<n<g<j\).
Investing Z million is better than not investing if and only if \((a + b - 2c)p + c > 0\), which gives us \(p < \frac{c - b}{a - b}\). Investing Y million is better than not investing if and only if \((d - 2e)p + e > 0\), which gives \(p < \frac{c - b}{d - e}\). In other words, \(p < \frac{1}{2}\).

Take everything into account, we know that investing Z million is best if and only if \(p \leq \frac{1}{3}\). Investing Y million is best if \(p \geq \frac{1}{3}\), and not investing is the best choice for SASAC if and only if \(p \geq \frac{2}{3}\).

One may argue that SASAC officials would only prefer to invest in a big project (Z million, etc) if and only if they are uncertain about having low and medium local demand \((p < \frac{1}{2})\). If SASAC officials become more certain about having low and medium local demand, then they will choose to invest in a smaller project or even not invest if they are very certain that local demand will be low or medium.

The payoffs that the SASAC officials will obtain if they indeed know the local demand for the product can be computed as follows:

\[
\pi_{\text{know}} = (1 - 2p)c = c - 2cp
\]  

Thus, the payoff losses from the adoption of the centralized governance structure under each investment decision can be characterized as:

\[
\pi_{\text{npz}} = p(-a - b) \text{ if invest in Z million}
\]

\[
\pi_{\text{npx}} = (3e - 2c)p + c - e \text{ if invest in X million}
\]

\[
\pi_{\text{ny}} = c - 2cp \text{ if invest in Y million}
\]

We calibrate the parameters a, b, c, and e using Table 7. Based on the table, we plot the following Fig. 7 to illustrate how the losses from centralization with different possible values of parameters vary with the uncertainty of medium and low levels of local demand.

### 2.6. Constrained delegation

Under a constrained delegation, the investment decision of the Z-million project is ruled out by the officials from SASAC through appointing party committee secretaries to monitor the managers of large SOEs.\(^\text{16}\) In this case, the large SOE manager chooses to invest in the Y-million project as long as local demand is medium or high. Therefore, the profits obtained by firms can be computed as follows when the manager invests in the Y-million project:

\[
\pi_{\text{constrained}}(p) = e(1 - 2p).
\]

We further derive the payoff for a large SOE manager when she/he invests in the Y-million project under the constrained-delegation organization structure:

\[
\pi_{\text{constrained}}(p) = fp + (1 - 2p)n
\]

However, when the SASAC officials impose a constrained-delegation organization structure through party-committee control, the party committee secretary might herself have personal incentives to collude with large SOE managers to maximize her personal gains. Given this situation, we consider two cases here. Case 1 occurs when the party committee secretary does not collude with large SOE managers, and in this case the party committee is just a self-extension of the SASAC officials. Case 2 is the one when the party committee secretary decides to collude with large SOE managers, and the former will get the joint benefits with managers. In other words, the party committee secretary can derive the benefits from large SOE managers’ investment in the Y-million project under the constrained-delegation organization structure. In addition, when the collusion emerges, the party committee secretary can also extract certain proportions of the benefits of the whole large SOE when the Y-million investment project is chosen by the managers.

---

\(^{16}\) One thing to note is that it could be also possible that large SOE managers themselves at the same time have the role of party committee secretaries. This is the second monitoring way that SASAC officials impose in order to undertake the constrained delegation within large SOEs. From our viewpoint, the second monitoring way is not any different from party committees’ establishment within large SOEs in terms of the efficiency of implementing the constrained delegation as long as some of the investment decisions could be ruled out. In the later empirical part of the paper, we conduct a robustness check to verify the case whether the SOE CEO herself as a communist party member might influence the firm’s overinvestment problems. We find that such an over-investment mitigation effect is stronger when the SOE CEO herself is the party member.
2.6.1. Case 1. (No Collusion)

Case 1 refers to the situation under which there is no collusion between large SOE managers and the party committee secretary. With the absence of collusion, the payoff losses for the SASAC officials arising from their adoption of the constrained delegation organizational structure are derived as follows:

$$\pi_{\text{no collusion}} = c(1 - 2p) - e(1 - 2p) = (c - e)(1 - 2p)$$ (13)

From Eq. (13), we compare the performance of centralization and constrained delegation by looking at the payoff losses under these two different organizational structures. Such comparisons are illustrated in the 3 graphs of Fig. 8.

According to the above 3 graphs, we see that there must exist two intersection points that correspond to the situation under which the adoption of a constrained delegation governance structure is indifferent from the adoption of a centralized governance structure. We can do some simple algebra to obtain the x coordinates of these two indifferent points, which are $p_1 = \frac{c - e}{c - e} + 2$ and $p_2 = \frac{1}{2}$. In a nutshell, we have the following proposition regarding the constrained delegation.

**Proposition 3.** The organizational structure of a constrained delegation is preferable to that of centralization if and only if the SASAC officials are neither optimistic nor pessimistic about local product demand. Numerically, this is when $\frac{c - e}{c - e} + 2 \leq p \leq \frac{1}{2}$.

Proposition 3 implies that as long as the SASAC officials expect the local market demand to be more likely in the state of medium, there always exist incentives for SASAC officials to impose the constrained delegation organizational structure upon large SOEs in China. Our theoretical predictions are consistent with what has been observed in reality. There is currently a strong tendency for the establishment of party committees within large SOEs. This is the typically embodied case of constrained delegation. The positive effect of such a constrained delegation is twofold. First, it can prevent the emergence of the managerial entrenched effect of large SOE managers by ruling out some possible unprofitable choices. As a result, the economy is not over-heating. Second, SASAC officials will not impose a full degree of bureaucratic control over large SOEs as this would undermine the initiative of large SOE managers, thus leading to a decline in economic growth. The consequence is that China’s economy enters into the so-called ‘new normal’ era, as local economic growth would fluctuate less and exhibit a more stable pattern.

2.6.2. Case 2. (Collusion)

For the second case, if the party committee secretary colludes with the large SOE managers, then she or he obtains a certain proportion of the benefits derived by large SOE managers when the latter choose to invest in the Y-million project under the constrained-delegation organization structure. Moreover, with the presence of collusion, the party committee secretary will also extract parts of the benefits obtained by the large SOE when the Y-million project is chosen.

We denote $\theta$ as the proportion of the benefits that the party committee secretary could obtain when she colludes with the large SOE managers. It is assumed that $0 < \theta < 1$. In addition, when the party committee secretary decides to collude, she will also deviate from SASAC officials’ interests, which will result into the situation under which parts of SOEs’ profits will be transferred to the party committee secretary’s personal pockets. Suppose that the proportion of the benefits that the party committee secretary could extract from the SOEs’ profits $t$ is $z$ where $0 < z < 1$. When both $z$ and $\theta$ approach to 1, the degree to which the party committee secretary adopts the collusive behavior within large SOE becomes greater. This implies there could be more benefits obtained by the party committee side, and vice versa if $\theta$ and $z$ approach to 0. Under the case of

![Fig. 7. Losses under centralization (relative to first-best profits) as a function of probability p.](image)
Fig. 8. Performance comparison between centralization and constrained delegation.
collusion, the payoff function for the party committee secretary with the adoption of a constrained-delegation organization structure is written as:

$$\pi_{\text{constrained}}^{\text{c}}(p) = \theta(f p + (1 - 2p)n) + z(dp + e(1 - 2p))$$  \hspace{1cm} (14)

When the party committee secretary and a large SOE manager collude, the explicit functional form of the large SOE’s payoff that is mostly cared about by the SASAC officials with the presence of collusion is re-written as:

$$\pi_{\text{constrained}}^{\text{c}}(p) = (1 - z)dp + e(1 - 2p)$$  \hspace{1cm} (15)

Given Eqs. (14) and (15), we know that with the presence of collusion, the payoff losses from adopting the constrained delegation governance structure in Chinese large SOEs can be computed as:

$$\pi_{\text{collusion}} = c(1 - 2p) - (1 - z)dp + e(1 - 2p)$$  \hspace{1cm} (16)

From Eq. (16), one of the conditions for the SASAC officials to adopt the constrained-delegation governance approach with the presence of collusion is to ensure the following condition:

$$\pi_{\text{collusion}} = c(1 - 2p) - (1 - z)dp + e(1 - 2p) < \pi_{\text{apy}} = c - 2p$$  \hspace{1cm} (17)

On the other hand, unlike the case of centralized governance structure, if the SASAC officials adopt the constrained delegation organizational structure, then the overall payoff derived by party committee secretary must be strictly positive:

$$\theta(f p + (1 - 2p)n) + z(dp + e(1 - 2p)) > 0$$  \hspace{1cm} (18)

Combining the two conditions indicated by Eqs. (17) and (18), it can be demonstrated that with the presence of mutual collusion, the constrained delegation will fully dominate that of the centralized governance structure if and only if the following two conditions hold:

$$\begin{cases} dp + e(1 - 2p)] > 0 \text{ (SASAC official’s viability condition)} \\
[fp + (1 - 2p)n] > 0 \text{ (Manager’s viability condition)} \\
\theta(fp + (1 - 2p)n) + z(dp + e(1 - 2p)] > 0 \text{ (collusion effect)}\end{cases}$$  \hspace{1cm} (19)

From (19), the following proposition now can be derived.

**Proposition 4.** With the presence of mutual collusion between the party committee secretary and large SOE managers, the constrained delegation organization structure dominates that of the centralized organizational structure if and only if three conditions hold: (1) Large SOEs must be viable and not suffer losses such that the SASAC officials can ensure that these SOEs do not encounter the problems of asset depreciation. (2) Large SOE managers cannot derive a negative payoff under the collusion. (3) The proportion of the benefits that the party committee secretary can derive from the large SOE managers’ personal payoff as well as SASAC officials’ payoff must be positive, mathematically speaking:

$$\begin{cases} dp + e(1 - 2p)] > 0 \text{ (SASAC official’s viability condition)} \\
[fp + (1 - 2p)n] > 0 \text{ (Manager’s viability condition)} \\
\theta(fp + (1 - 2p)n) + z(dp + e(1 - 2p)] > 0 \text{ (Party Committee’s Collusion effect)}\end{cases}$$

From Proposition 4, it can be argued that the dominance of the constrained delegation organization structure over the centralized governance structure is subject to 3 incentive compatibility conditions. First, the SASAC officials must ensure that the large SOE does not suffer from profit losses under the constrained delegation governance structure with the presence of collusion. This makes sense, because the collusion between the party committee secretary and large SOE managers is feasible only if it does not erode the payoffs by SASAC officials who take the most care of large SOEs’ profitability or asset appreciation; otherwise, the SASAC officials will not be tolerant of partially delegating the certain decision-making autonomy to the party committee with large SOEs. Second, once the mutual collusion happens within the constrained delegation structure of large SOEs, the managers cannot derive a negative payoff, because if she/he suffers losses, then large SOE managers will have no incentives to collude with the party committee secretary in addition to having no interest in following the partial decision making authority wielded by the party committee secretary, thus leading to infeasibility of implementation of the constrained-delegation governance structure within large SOEs. Third, the proportion of the benefits that the party committee secretary can derive from large SOE managers and SASAC must be strictly positive. The rationale behind this is that if the party committee secretary is not able to earn a positive payoff from the collusion under the constrained delegation governance structure, then there are no incentives for her/she to collude in the first place.

It is worth noting that one might extend this organizational economics modelling framework into a dynamic version type. In other words, it could be helpful in the future for researchers to introduce the dynamic perspective of the model with a main reference to the consideration of a repeated game between large SOE managers and the SASAC officials who are the representatives of the government. Although a detailed derivation of the dynamic version of this model is beyond the scope of this paper, some fundamental insights could be captured if the dynamic version of the model is used. For the case without the collusion of the party committee and the large SOE managers, it can be expected that if large SOE managers repeatedly
interact with the SASAC officials, then the governance structure of a constrained delegation within large SOEs becomes harder to dominate that of the centralized governance structure. This is because there are two possible channels through which large SOE managers might prevent the party committee’s use of its formal decision-making authority to rule out the managerial entrenchment investment projects that are being personally preferred by themselves. The first channel is that once large SOE managers have more repeated interactions with SASAC, the SASAC officials might be more patient in the sense that they will become more tolerant of large SOE managers’ managerial entrenchment behaviors. As a result, the effectiveness of the party committee who is the extended representative of the SASAC officials to monitor the ex-post moral hazard behaviors of large SOE managers will be undermined.

The second channel is that the increasing level of repeated interaction between large SOE managers and SASAC officials increases the possibility of potential collusion between large SOE managers and the party committee secretary. Due to the possible presence of collusion, once the party committee secretary derives a certain proportion of benefits from the managerial entrenchment investment projects undertaken by large SOE managers, she/he will have lower incentives to rule out these non-profit-maximizing projects. As a consequence, it is less likely for the party committee secretary to impose the full implementation of a constrained delegation governance structure within large SOEs. For the case under which there already is the existence of collusion between large SOE managers and the party committee secretary, the occurrence of repeated interaction between managers and the SASAC officials might also generate two possible channel through which the dominance of the constrained delegation governance structure within large SOEs might become weaker. First, the repeated interaction between large SOE managers and the party committee secretary might result in the situation under which the latter becomes more tolerant of managerial entrenchment behaviors. This will result in the fact that the party committee secretary has no or lower incentives to impose the constrained delegation organization structure within large SOEs by ruling out those managerial entrenchment investment projects as she/he might also jointly benefit from them. Second, when the mutual collusion occurs, the constrained delegation might not fully dominate that of the centralized structure with the presence of repeated interaction between managers and SASAC officials, because the degree of mutual collusion under the repeated game will be further reinforced, leading to the fact that it even becomes more impossible for the party committee secretary to fully implement the constrained delegation governance structure.

3. Suggestive empirical evidence

In order to validate the argument proposed by this paper, we can test how a certain degree of bureaucratic control over large SOEs in China might mitigate the ex-post moral hazard problem such as managerial entrenchment activities undertaken by SOE managers. To achieve this aim, we use the party committee control over large SOEs in China as the proxy for the constrained delegation governance approach to manage the firms. At the same time, we estimate the over-investment level of large SOEs to reflect upon the managerial entrenchment activities undertaken by these large Chinese SOEs’ managers.

3.1. Measurement of variables

3.1.1. Measurement of party committee control within large SOEs

It is not a legal must for listed firms to disclose their party organization information, and so we cannot judge the existence of any party organization only from corporate announcements. As it is hard to acquire all party member information in a Top Management Team (TMT), if there is only one or two ordinary party members in TMT, then this does not necessarily imply this large SOE has a party committee. This is because according to chapter 5 of the Constitutions of the Chinese Communist Party, the criteria for an organization to establish its party committee is to ensure there are more than 3 party members in this organization, including the firm, non-government organization, school, and so on.17 Hence, for those large SOEs with only one or two party members in the TMT, the party committee is unlikely to exert any certain influence on the firms’ investment pattern. Nonetheless, the listed firms do disclose the resumes of top managers, and these resumes indicate whether a manager is a secretary or deputy secretary in the party committee and the other sub-branch of the party committee organization, the so-called discipline inspection committee. If a firm has a secretary or deputy secretary, then this firm must have the party organization. Thus, we employ the ratio of managers representing communist party members to the total number of executives on TMT as a proxy for party organization (variable, Party1). We also set a dummy variable according to whether there is at least one communist party deputy secretary on TMT (variable, Party 2).18

17 For the details of chapter 5 of the Constitutions of the Communist Party of China, please refer to the following link: http://www.tj2371.cn/special/zggdzc/zggdzcqw/
18 It should be noted that in China, the party committee deputy secretary is the person who oversees a whole party committee (Chan, 2004). However, being a normal party member within large SOEs does not imply that she/he is one of the members on the party committee within the large SOEs.
Table 8
Variable definitions.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overinvestment1</td>
<td>Overinvestment is estimated by the investment efficiency model of Richardson (2006), and we replace a negative value with 0.</td>
</tr>
<tr>
<td>Overinvestment2</td>
<td>Overinvestment is estimated by the investment efficiency model of Biddle et al. (2009), and we replace a negative value with 0.</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on assets, which is the ratio of operating income to total assets.</td>
</tr>
<tr>
<td>Party1</td>
<td>Ratio of executives in the top management team (TMT) who hold a post in the communist party.</td>
</tr>
<tr>
<td>Party2</td>
<td>Dummy variable, equal to one when there is at least one top executive who holds a post in the communist party.</td>
</tr>
<tr>
<td>Investment</td>
<td>Natural logarithm of firms’ investment. More specifically, investment includes the cash flow to purchase fixed assets, intangible assets, and other long-term assets; cash flow to acquire subsidiaries and other operating units; cash flow to pay for investment; net cash flow to sell fixed assets, intangible assets, and other long-term investment; net cash flow of selling subsidiaries and other operating units; cash flow of recycling investment.</td>
</tr>
<tr>
<td>Tobin Q</td>
<td>Ratio of the sum of market capitalization and total debt.</td>
</tr>
<tr>
<td>Return</td>
<td>Annual stock return, which is adjusted by controlling the effect from cash-distributives and re-investment.</td>
</tr>
<tr>
<td>Size</td>
<td>Natural logarithm of total assets.</td>
</tr>
<tr>
<td>Lev</td>
<td>Ratio of total liabilities to total assets.</td>
</tr>
<tr>
<td>Growth</td>
<td>Growth speed of operating sales.</td>
</tr>
<tr>
<td>Cash</td>
<td>Ratio of cash and cash equivalents to total assets.</td>
</tr>
<tr>
<td>Firm Age</td>
<td>The period that a firm has been listed.</td>
</tr>
<tr>
<td>Industry</td>
<td>Measurement for the industry fixed effects. We employ the 2012 industry classification issued by China Securities and Regulation Commission.</td>
</tr>
<tr>
<td>Year</td>
<td>Measurement for year fixed effects.</td>
</tr>
</tbody>
</table>

Table 9
Descriptive statistics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Sd</th>
<th>Min</th>
<th>p25</th>
<th>p50</th>
<th>p75</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overinvestment1</td>
<td>7,768</td>
<td>0.000</td>
<td>0.202</td>
<td>−1.313</td>
<td>−0.074</td>
<td>−0.030</td>
<td>0.026</td>
<td>1.740</td>
</tr>
<tr>
<td>Overinvestment2</td>
<td>7,768</td>
<td>0.060</td>
<td>0.236</td>
<td>−0.247</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.707</td>
</tr>
<tr>
<td>Party1</td>
<td>7,768</td>
<td>0.015</td>
<td>0.052</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Party2</td>
<td>7,768</td>
<td>0.092</td>
<td>0.289</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Lev</td>
<td>7,768</td>
<td>0.517</td>
<td>0.192</td>
<td>0.089</td>
<td>0.375</td>
<td>0.531</td>
<td>0.667</td>
<td>0.888</td>
</tr>
<tr>
<td>Growth</td>
<td>7,768</td>
<td>0.140</td>
<td>0.366</td>
<td>−0.496</td>
<td>−0.037</td>
<td>0.087</td>
<td>0.234</td>
<td>2.482</td>
</tr>
<tr>
<td>Cash</td>
<td>7,768</td>
<td>0.145</td>
<td>0.106</td>
<td>0.010</td>
<td>0.069</td>
<td>0.117</td>
<td>0.189</td>
<td>0.525</td>
</tr>
<tr>
<td>Firm Age</td>
<td>7,768</td>
<td>13.283</td>
<td>5.140</td>
<td>3.000</td>
<td>9.500</td>
<td>14.000</td>
<td>17.000</td>
<td>24.000</td>
</tr>
</tbody>
</table>

3.1.2. Measurement of managerial entrenchment

We follow Hope and Thomas (2008) to employ the variable Overinvestment proposed by Richardson (2006) as the proxy for managerial entrenchment, including empire-building investment. Eq. (20) estimates overinvestment.

\[
\text{Investment}_{i,t} = \alpha + \beta_1 \text{Investment}_{i,t-1} + \beta_2 \text{TobinQ}_{i,t-1} + \beta_3 \text{Lev}_{i,t-1} + \beta_4 \text{Cash}_{i,t-1} + \beta_5 \text{Firm Age}_{i,t-1} + \beta_6 \text{Size}_{i,t-1} + \beta_7 \text{Return}_{i,t-1} + \sum \text{Industry} + \sum \text{Year} + \epsilon_{i,t} \tag{20}
\]

In Eq. (20), all the independent variables are lagged for one year. Table 8 defines all the variables in Eq. (20), where \(\epsilon_{i,t}\) at the end of the equation represents that an investment cannot be explained and denotes the measurement for investment efficiency. Positive residuals denote over-investment by firms and negative residuals represent underinvestment. We replace the negative residuals with zero so as to measure overinvestment (variable: Overinvestment1).

We still follow Biddle, Hilary, and Verdi (2009) to estimate the over-investment by utilizing Eq. (21). Similar to the previous measure, we take the positive part of the residuals and replace the negative part with zero.

\[
\text{Investment}_{i,t} = \alpha + \beta_1 \text{Growth}_{i,t-1} + \sum \text{Industry} + \sum \text{Year} + \epsilon_{i,t} \tag{21}
\]

3.1.3. Measurement of other control variables

We control for firm characteristics, including firm size (Size), financial leverage (Lev), sales growth (Growth), cash holding (Cash), and firm age (Age), in the final regression analysis of overinvestment (Lee, Wang, Chiu, & Tien, 2018). Table 8 lists
Table 10
Impact of party committee on overinvestment.

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Overinvestment1</th>
<th>(2) Overinvestment1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Party1</td>
<td>-0.082***</td>
<td>-0.080**</td>
</tr>
<tr>
<td></td>
<td>(-2.586)</td>
<td>(-2.419)</td>
</tr>
<tr>
<td>Size</td>
<td>0.004*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.682)</td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>-0.090***</td>
<td>-5.497***</td>
</tr>
<tr>
<td></td>
<td>(5.705)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.064***</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.018</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>(0.610)</td>
<td>(-0.177)</td>
</tr>
<tr>
<td>Firm Age</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.038)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.054***</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>(20.128)</td>
<td>(-0.177)</td>
</tr>
<tr>
<td>Observations</td>
<td>7,768</td>
<td>7,768</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.008</td>
<td>0.037</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>6.690</td>
<td>11.54</td>
</tr>
</tbody>
</table>

Notes: (1) Heteroskedasticity-robust t-statistics are shown in parentheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1.

these variables’ definitions. The final model to estimate is to look at the impact of the operations of large SOEs’ party committee on the firms’ over-investment level, which is shown as the following Eq. (22).

Overinvestment\(_{it}\) = \(\alpha + \beta_{\text{Party}} + \gamma\text{Control}_{it} + \sum \text{Industry} + \sum \text{Year} + \epsilon_{it}\) \hspace{2cm} (22)

3.2. Data and sample selection

We collect the financial information from the Chinese Stock Market and Accounting Research database and manually collect managers’ resumes from annual financial reports. We choose the sample period from 2007 to 2017.19 In the sample selection, we exclude B-share SOEs and firms in the financial industry as well as the estate industry.20 Next, we eliminate stocks with special treatment, including ST, *ST, and PT, and delete firm-year observations for firms that have a leverage greater than 1. Lastly, we drop any observations with missing variables.

After doing those procedures, we utilize this sample data to conduct the Richardson investment efficiency model, because investment efficiency is evaluated from the full sample rather than the SOE sample. Finally, after dropping non-SOEs, we acquire a sample of 1098 A-share listed SOEs ranging from 2008 to 2017.21 To alleviate the impacts of extreme values, all variables are winsorized at the 1% level.

3.3. Summary of statistics

Table 9 shows the summary of statistics for the main variables. The mean of variable Party is 0.015, showing that SOE firms on average have 1.5% of their executive team members who are party committee secretaries or deputy secretaries. Firms with communist party member directors make up about 9.2% of all SOEs. In addition, we see that the sample firms have about 51.7% financial leverage, 14.0% sales growth, and 14.5% cash assets. Finally, the average age of sample firms is about 13.283 listed years.22

---

19 We estimate the Richardson model by lagging one year so that the final sample period is from 2008 to 2017.
20 The reason why we exclude B-share SOEs is because these firms in China’s stock market are those whose investors and main shareholders are non-mainland residents. Hence, it is rational for us to drop these B-share SOEs in our sample, because of the foreign ownership penetration of these firms, which might have a different corporate governance structure compared with A-share SOEs.
21 Through a detailed examination of the public financial statements of these listed A-share SOEs, it could be ensured that their operating income is all above 20 million RMB, which is the threshold for them to be officially statistically defined as large SOEs in China. In addition, from the aspect of official criteria and regulation of allowing the SOEs to be listed in the stock market in China, it is not feasible for those SOEs with operating income less than 20 million RMB to undergo an initial public offering (IPO). Moreover, after the massive privatization of small-medium SOEs in the late 1990s in China, there are rarely any state firms with operating income below the threshold of 20 million RMB.
22 Firm age in this paper is defined as the number of years that a firm has been listed in the stock market, because there is no detailed firm-level financial statement and board of directors data available for these firms before they underwent their IPO.
3.4. Baseline results

Table 10 presents the regression result concerning the impact of the party committee on overinvestment. Party has negative and significant coefficients in both model 1 and model 2, implying that the existence of a party committee within large SOEs reduces firms’ overinvestment problem. In other words, the monitoring mechanism through party committee control within large SOEs decreases managers’ managerial entrenchment behaviors.

Table 11
Robust check: alternative measure for managerial entrenchment (Overinvestment2).

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Model 1 Overinvestment2</th>
<th>(2) Model 2 Overinvestment2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party1</td>
<td>−0.154*** (−3.250)</td>
<td>−0.124*** (−2.627)</td>
</tr>
<tr>
<td>Size</td>
<td>0.003 (0.914)</td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>−0.215*** (−7.431)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.070*** (5.830)</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.052 (1.012)</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>0.001 (0.566)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.063*** (12.518)</td>
<td>0.070 (0.835)</td>
</tr>
</tbody>
</table>

Observations | 7,768 | 7,768 |
R-squared     | 0.015 | 0.054 |
Year FE       | Yes   | Yes   |
Industry FE   | Yes   | Yes   |
F             | 10.56 | 14.36 |

Notes: (1) Heteroskedasticity-robust t-statistics are shown in parentheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 12
Robust check: alternative measure for party committee (Party2).

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Model 1 Overinvestment1</th>
<th>(2) Model 2 Overinvestment1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party2</td>
<td>−0.013** (−2.157)</td>
<td>−0.013** (−2.079)</td>
</tr>
<tr>
<td>Size</td>
<td>0.004* (1.647)</td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>−0.090*** (−3.497)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.064*** (5.708)</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.018 (0.601)</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>0.001 (1.028)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.054*** (19.926)</td>
<td>−0.007 (−0.138)</td>
</tr>
</tbody>
</table>

Observations | 7,768 | 7,768 |
R-squared     | 0.008 | 0.037 |
Year FE       | Yes   | Yes   |
Industry FE   | Yes   | Yes   |
F             | 4.654 | 11.40 |

Notes: (1) Heteroskedasticity-robust t-statistics are shown in parentheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1.
3.5. Robustness check

3.5.1. Alternative measure for dependent variable

To verify the robustness of our empirical results, we employ an alternative dependent variable and independent variable as the robustness check. We take the positive residuals (variable: Overinvestment2) estimated by Eq. (20) as the alternative measure for overinvestment and present the results in Table 11. The coefficients of Party are negative and significant at the 1% level, which is consistent with prior results and demonstrates the robustness of our results.

Table 13
Sub-sample analysis: impact of CEO identity.

<table>
<thead>
<tr>
<th>Variable</th>
<th>CEO Not Party</th>
<th></th>
<th>CEO Party</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Overinvestment</td>
<td>Model 2</td>
<td>Overinvestment</td>
</tr>
<tr>
<td>Party1</td>
<td>−0.071</td>
<td>(−0.823)</td>
<td>−0.148**</td>
<td>(−2.204)</td>
</tr>
<tr>
<td>Size</td>
<td>0.005*</td>
<td>(1.788)</td>
<td>−0.046</td>
<td>(−1.101)</td>
</tr>
<tr>
<td>Lev</td>
<td>−0.093***</td>
<td>(−5.386)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.066***</td>
<td>(5.397)</td>
<td>0.049**</td>
<td>(2.029)</td>
</tr>
<tr>
<td>Cash</td>
<td>0.018</td>
<td>(0.571)</td>
<td>0.051</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>0.001</td>
<td>(1.005)</td>
<td>0.002</td>
<td>(1.329)</td>
</tr>
<tr>
<td>Constant</td>
<td>−0.022</td>
<td>(−0.383)</td>
<td>0.091</td>
<td>(0.591)</td>
</tr>
<tr>
<td>Observations</td>
<td>7,140</td>
<td></td>
<td>628</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.037</td>
<td></td>
<td>0.055</td>
<td></td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Industry FE</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>10.28</td>
<td></td>
<td>2.024</td>
<td></td>
</tr>
</tbody>
</table>

Notes: (1) Heteroskedasticity-robust t-statistics are shown in parentheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 14
Results of the Heckman two-step model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>First Stage</th>
<th></th>
<th>Second Stage</th>
<th></th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Party</td>
<td>Model 2</td>
<td>Overinvestment</td>
<td>Model 3</td>
</tr>
<tr>
<td>Size</td>
<td>0.458***</td>
<td>(11.814)</td>
<td>0.006</td>
<td>(1.084)</td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>1.378***</td>
<td>(5.296)</td>
<td>−0.088***</td>
<td>(−4.462)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.116</td>
<td>(1.070)</td>
<td>0.066***</td>
<td>(5.748)</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>−0.168</td>
<td>(−0.376)</td>
<td>0.014</td>
<td>(0.450)</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>−0.008</td>
<td>(−0.854)</td>
<td>0.001</td>
<td>(0.935)</td>
<td></td>
</tr>
<tr>
<td>Party</td>
<td>−0.079**</td>
<td>(−2.367)</td>
<td>−0.078**</td>
<td>(−2.288)</td>
<td></td>
</tr>
<tr>
<td>Inverse Mill</td>
<td>−0.015</td>
<td>(−0.339)</td>
<td>−0.039</td>
<td>(−0.387)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>−13.551***</td>
<td>(−14.447)</td>
<td>0.056***</td>
<td>(10.463)</td>
<td>(−0.412)</td>
</tr>
<tr>
<td>Observations</td>
<td>7,647</td>
<td></td>
<td>7,647</td>
<td></td>
<td>7,647</td>
</tr>
<tr>
<td>Pseudo/Adjusted R-squared</td>
<td>0.0675</td>
<td></td>
<td>0.007</td>
<td></td>
<td>0.038</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Industry FE</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>LR chi2/F</td>
<td>320.18</td>
<td></td>
<td>3.474</td>
<td></td>
<td>10.04</td>
</tr>
</tbody>
</table>

Notes: (1) Heteroskedasticity-robust Z/T statistics are shown in parentheses. (2) *** p < 0.01, ** p < 0.05, * p < 0.1.
3.5.2. Alternative measure for party committee
We employ dummy variable Party2 to measure the party committee and present the results in Table 12. The dummy variable Party2 refers to the situation under which there is at least one director on TMT who is a party member. In Table 12, variable Party2’s coefficient is negative and significant in both model 1 and model 2. This result aligns with previous findings, supporting the robustness of the argument. Combining the results together, we conclude that the introduction of a party committee within large SOEs reduces managers’ managerial entrenchment behaviors and exerts an effective monitoring mechanism through which large SOE managers’ ex-post moral hazard behaviors could be mitigated.

3.5.3. Impact of SOE CEO identity
In this section we look to explore the impact of large SOE CEO identity on the monitoring role of the party committee. We separate the sample into two parts according to whether the large SOE CEO herself is a party member and then conduct sub-sample analysis for a further robustness check. Party is negative and significant in firms where the SOE CEO herself is a party member. The result of Table 13 shows that the party monitoring effect is more substantial if the SOE CEO herself is indeed a communist party member, because this SOE CEO not only undergoes monitoring from the party committee, but she herself also needs to adhere to party regulations, increasing the influence of the party monitoring effect. Thus, the monitoring effect of the party committee is more pronounced when the SOE CEO herself is a party member.

Both baseline regression results and robustness analysis motivate the corporate governance story regarding why there might exist the mitigation effect brought about by party committee control on ex-post managerial entrenchment behavior, such as empire-building over-investment by large SOE managers in China.

3.5.4. Addressing the endogenous concern
Previous results demonstrate that the party committee secretary prohibit managers’ opportunistic behaviors, but the endogenous concern still exists. In China, the party committee governance in a firm is not random. In terms of the personnel management system of Chinese large SOEs, the party state might prioritize the development of certain giant state firms with crucially strategic roles in promoting the growth of the national economy. In this case, the central government might prefer to choose the party member director to manage the SOEs.

To alleviate this concern, we follow Chatterjee and Hambrick (2007) to utilize the Heckman two-step methodology. To be more specific, we estimate the probability of a firm with the existence of a party committee. We utilize logit regression to regress on predictors, including firm size, leverage, sales growth, cash holding, firm age, industry, and year fixed effects. Next, we include the predicted Inverse Mill ratio in the second stage and present the results in Table 14. Party presents significantly negative coefficients in the second stage, indicating that whether or not the party committee exists within large SOEs has a causal impact on managers’ opportunistic behaviors. The Inverse Mill ratio is not significant, implying that endogeneity is not serious in our model.

We still employ the propensity score matching to alleviate the endogenous concern. We utilize the propensity score, which is the probability of a firm having a party member, and then conduct the one-to-one matching with replacement. In Table 15, the coefficients of Party are still negative and significant, further verifying the robustness of our results.

### Table 15
Propensity score matching.

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Model 1 Overinvestment</th>
<th>(2) Model 2 Overinvestment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Party</td>
<td>-0.077*</td>
<td>-0.078**</td>
</tr>
<tr>
<td></td>
<td>(-1.952)</td>
<td>(-2.013)</td>
</tr>
<tr>
<td>Size</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.651)</td>
<td></td>
</tr>
<tr>
<td>Lev</td>
<td>-0.072**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.365)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.057***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.211)</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.355)</td>
<td></td>
</tr>
<tr>
<td>Firm Age</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.702)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.052***</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(9.278)</td>
<td>(0.209)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,341</td>
<td>1,341</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.016</td>
<td>0.047</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>3.810</td>
<td>4.206</td>
</tr>
</tbody>
</table>

Notes: (1) Heteroskedasticity-robust Z/T statistics are shown in parentheses. (2) *** p<0.01, ** p < 0.05, * p < 0.1.
4. Policy implication

The internal power structure of China’s large SOEs among different parties is a reflection of different types of allocation of formal authority within these SOEs (Zhang & Wang, 2004). The party committee’s control over large SOEs is a way in which the state can allocate formal authority.

According to Yang and Zhou (1998), three potential problems may emerge under the traditional corporate governance structure of large SOEs. (1) Due to the absence of real owners, SOE managers are only interested in maximizing their own benefits. This interest misalignment between SOE managers and shareholders arising from the decentralized governance structure of large SOEs could lead to the situation in which SOE managers easily infringe on the rights of shareholders. (2) Although in theory it suggests that SOE CEOs or managers as the agents should manage the state assets on behalf of shareholders, if the formal authority is decentralized to SOE managers, then there might be an absence of collective decision making that is often required for overcoming the free-riding problem of SOE managers. (3) If the internal governance structure is centralized to government officials from SASAC, then the relevant problem will be the ignorance of other stakeholders involved in the daily operations of large SOEs, including the incentives of SOE managers or even workers. Hence, it is reasonable to come up with the points that the constrained delegation of the party committee’s formal authority within large SOEs could largely mitigate the ex-post high agency cost caused by the decentralized governance structure of large SOEs.

One should also be aware that it is not always efficient to impose full party-committee control over large SOEs, as this inevitably will undermine the incentives that drive large SOE managers to work hard. Nonetheless, if large SOE managers are given full autonomy, then ex-post agency inefficiencies will arise, such as managerial entrenchment activities and perk consumption, which then conflict with the overall interests of the firm. In advanced economies, firm shareholders normally monitor managers of large firms through independent boards of directors consisting of representatives of employees, shareholders, and other levels of managers. This is apparently politically infeasible in China, as China’s large SOEs are under direct party control. Therefore, the role of party committees or middle-layer state-owned investment companies might to some degree substitute for the role of an independent board of directors, which could sufficiently monitor large SOE acting as agents (CEOs and managers) of the firms. The downside to SASAC officials for indefinitely imposing a certain level of party committee control over large SOEs is that such a fully centralized governance structure in large SOEs could undermine the incentives driving large-SOE managers to exert full effort.

5. Conclusion

The purpose of this paper is to propose a unified framework that integrates the two-sided argument on the role of bureaucratic control with reference to party-state guidance over large SOEs in China. We make a case that the internal governance system reform of large SOEs in China - mainly the delegation of more autonomy to large SOE managers initiated since the beginning of the 2000s - is not omnipotent with respect to welfare enhancing or efficiency improvement of large SOEs. We thus state that although the decentralized structure of large SOEs could facilitate their incentives to take more initiative in terms of investment, the downside of this is that large SOE managers may undertake managerial entrenchment activities such as the making of empire-building decisions to adopt some investment projects that do not have huge local demand or higher return, but rather could deliver personal benefits of control to themselves. The persistent tendency of Chinese large SOEs’ diversification and expansion into different types of industries is one of the most illustrative examples of the managerial entrenchment effect of these firms.

It is true that privatization of the MBO (manager buyout) type could largely remove the incentives for large SOE managers to undertake managerial entrenchment investment projects, because they would become more profit-driven rather than total revenue-driven. However, given political constraints as well as the partial reform equilibrium puzzle faced by large SOEs in China, privatization of the MBO type is not feasible in practice. Given this situation, the adoption of a more centralized organizational structure of large SOEs might be a second-best choice to make. Nevertheless, as argued previously, the shortcomings of centralization are also apparent if SASAC officials are less knowledgeable of local product demand or if they impose bureaucratic control over large SOEs to the degree to which managers have no initiatives in terms of making the investment even though the local economy is not in an upward trend. Thus, the centralized structure of large SOEs could turn into a failure.

Realizing such an organizational structure trade-off, the method the China government uses is to first establish a party committee within large SOEs to create SOE party secretaries (GuiQi DangWei Shuju) as the representatives for SASAC officials. Likewise, the introduction of middle-layer entities (the so-called state-owned capital investing companies) into the governance hierarchy of large SOEs in China could also play an equivalent role as that of the party committee in terms of constraining the managerial entrenchment tendency of SOEs’ managers while avoiding negative aspects such as a lack of initiatives for managers caused by an excessive level of direct supervision and monitoring by SASAC officials. In organizational economics, these are the advantages stemming from the institutional arrangement of constrained delegation as illustrated in the previous numerical section.

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23 Such views can also be found in some studies in the literature such as Ma, Wang, and Shen (2012).
From both the theoretical and empirical parts that are presented in the previous section of the paper, setting up party committees within the large SOEs is one way to decrease the value of $\lambda$, which is the degree of misalignment of interest between SOE managers and SASAC. This could demonstrate that imposing a certain but not full degree of political control over large SOEs is one channel for resolving the trade-off between the centralized and decentralized power division structures of Chinese large SOEs.

Data availability statement

Data available from the authors upon request.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Declaration of Competing Interest

The authors report no declarations of interest.

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