

# Unification of rights and responsibilities and the innovation of Chinese local SOEs: evidence from the establishment of municipal SASACs

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## Abstract

**Purpose** – Based on Bernheim and Whinston's (1986) common agency theory, which posits that consolidating the authority of multiple principals into a single specialized principal can alleviate incentive deficiencies, this study investigates how the unification of rights and responsibilities in the supervision of Chinese local state-owned enterprises (SOEs) affects SOEs' innovation performance.

**Design/methodology/approach** – We use the establishment of municipal State-owned Assets Supervision and Administration Commissions (SASACs) as a quasi-natural experiment and employ a staggered difference-in-differences (DID) design. SOEs supervised by municipal SASACs constitute the treatment group, while SOEs overseen by other government agencies form the control group.

**Findings** – The results indicate that after the establishment of municipal SASACs, SOEs controlled by municipal SASACs exhibit a significant increase in innovation. This effect is driven by greater government authorization and reduced agency costs. The cross-sectional analysis reveals that the innovation effect is stronger for firms located in cities with higher governance quality, operating in more competitive industries, having higher state ownership, and led by older chairmen. Additionally, the economic consequences analysis shows that the enhanced innovation can boost firm value.

**Originality/value** – This study extends the principal-agent framework by incorporating common agency theory. This demonstrates that consolidating oversight authority into a single specialized government body can serve as an effective institutional response to coordination and incentive problems arising from multiple supervising principals. Furthermore, this paper challenges the assumption that government agents are homogeneous in SOE



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supervision and highlights how restructuring oversight—without changing property rights—can shape innovation in SOEs.

**Keywords** Common agency theory, Establishment of SASACs, Innovation, Government authorization, Agency costs

**Paper type** Research article

## 1. Introduction

Innovation is a key driver of a country's economic growth as well as a firm's competitive advantage, and an increasing number of studies focus on what influences corporate innovation (Chen, Li, Shapiro, & Zhang, 2014b; Jiang & Yuan, 2018; Zhou, Gao, & Zhao, 2017). Although Chinese state-owned enterprises (SOEs) enjoy preferential access to policy information, government support, and valuable resources for fostering innovation activities (Chen *et al.*, 2014b), extant empirical studies indicate that SOEs are less innovative than their private counterparts (Fang, Lerner, & Wu, 2017; Zhou *et al.*, 2017). One common explanation is agency costs within SOEs: when managers are not effectively monitored or incentivized, they may have weak motivation to pursue long-term value-enhancing activities such as innovation. (Cohen & Levin, 1989; Jia, Huang, & Zhang, 2019). Researchers find that reforms—including privatization, the 2005 split-share reform, and improvements in corporate governance—can reduce these agency problems and enhance SOE innovation (Aivazian, Ge, & Qiu, 2005; Du, Tang, & Young, 2012; Fang *et al.*, 2017; Tan, Tian, Zhang, & Zhao, 2020; Yu, Zhong, & Fan, 2016; Zhang, Yu, & Chen, 2020; Zhou *et al.*, 2017).

However, the governance structure of Chinese SOEs differs fundamentally from the typical owner–manager relationship observed in many Western firms (Guan, Gao, Tan, Sun, & Shi, 2021; Zhang & Fan, 2005). In China, the general public is the owner as well as the ultimate principal of SOEs, and they delegate the control rights of SOEs to the government, which in turn assigns supervisory authority to one or several of the government departments. SOE managers operate the firms as the final agents in this chain. While existing literature assumes that governmental agencies always use their control rights in rent-seeking or political resource allocation (Shleifer, 1998), the heterogeneity among governmental agents who represent the government to supervise and manage SOEs has been neglected.

In practice, since the 1970s, the role of governmental supervisory agencies for SOEs has been progressively adjusted with the advancement of China's state-owned asset management system reforms, of which the most notable is the establishment of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) in the 2000s. Prior to this institutional reform, SOEs were supervised under a multi-principal governance structure, under which they were concurrently managed by multiple governmental departments. This fragmented co-management model led to relatively high agency costs between the government and SOEs, as different principals held conflicting interests and engaged in free-riding behaviors, and no single department would efficiently monitor SOEs (Bernheim & Whinston, 1986). As Shao Ning, the first vice chairman of the State Council SASAC, later summarized: “Under this multi-headed governance structure, neither managerial accountability nor governmental responsibility could be clearly defined, and when an SOE collapsed, no individual or agency could be held to account” (SASAC, 2020). The establishment of SASAC fundamentally resolved this dilemma: it became the sole government principal responsible for overseeing and managing SOEs. By integrating the previously fragmented supervisory rights across multiple departments, SASAC effectively unified the rights and responsibilities in SOE supervision, thus solving the inefficiencies inherent in the former multi-principal governance model.

After the central SASAC was established in March 2003, provincial and municipal SASACs were gradually set up across China. This paper examines whether the unification of rights and responsibilities following the establishment of SASACs improves the innovation performance of SOEs. Given the central role of local governments in supervising local

enterprises and the staggered rollout of municipal SASACs, we use the establishment of municipal SASACs as a quasi-natural experiment and construct a staggered differences-in-differences (DID) model to empirically examine the impact of unifying the rights and responsibilities of supervising and managing SOEs on their innovation.

Our empirical results show that compared with SOEs controlled by other municipal government departments (i.e. the control group), those controlled by municipal SASACs (i.e. the treatment group) experience a significant increase in innovation. Mechanism analyses suggest two main channels. First, unified supervision strengthens government authorization, granting firms more consistent decision-making support and alleviating their policy burdens. Second, it reduces agency costs by clarifying responsibility and intensifying oversight. The cross-sectional analysis finds that this effect is more salient for firms in cities with higher governance quality, in competitive industries, in firms with higher state ownership, and in firms led by older chairmen. We also find that increased innovation enhances firm value. These findings remain robust across a range of tests, including the parallel trend test, placebo test, propensity score matched difference-in-difference (PSM-DID) test, excluding the four municipalities directly under the central government, adding the city-fixed effect and city-level control variables, and alternative measures of innovation.

This paper contributes to the literature in several ways. First, it extends the principal-agent framework by incorporating insights from common agency theory. Due to information asymmetry, conflicting objectives among principals, and free-riding problems, multiple principals face difficulties in supervising an agent at minimal cost, which results in insufficient monitoring and innovation incentives for the agent. [Bernheim and Whinston \(1986\)](#), through their theoretical model analysis, argue that consolidating the rights of multiple principals into a single specialized principal serves as a core institutional remedy, including introducing a principal of principals or an intermediary, which can alleviate incentive deficiencies caused by multiple principals. This paper provides empirical evidence for these institutional remedies. Offering such evidence is particularly valuable because the challenge of a common agency is not unique to China. According to the [OECD \(2024\)](#), which surveys SOEs across 55 jurisdictions, 27% of these jurisdictions operate under a dispersed ownership model, where the ownership is distributed across multiple government ministries rather than concentrated in a single institution, including advanced economies such as the United States, Canada, and Germany. Given this global context, our study utilizes a DID methodology to demonstrate that the establishment of SASAC—i.e., the unification of principals' rights and responsibilities in the supervision of SOEs—effectively enhances innovation in SOEs. Additionally, this study also enriches agency theory by highlighting heterogeneity among governmental principals. Existing literature often assumes homogeneous government agencies in SOE supervision ([Chen, Sun, Tang, & Wu, 2011](#); [Qian, 1996](#); [Tan et al., 2020](#); [Wang, Yi, Zhang, & Peng, 2022](#)), overlooking variations in agency costs based on the number and nature of supervising bodies. This paper challenges that assumption, showing that consolidating supervision bodies under local SASACs clarifies responsibilities and enhances SOE innovation compared with oversight by multiple departments.

Second, this paper adds to the existing literature on motivating corporate innovation by examining the consequences of state-owned asset management system reforms. Prior research proposes various solutions to reduce agency costs and enhance innovation in SOEs, including privatization or mixed-ownership reforms ([Fang et al., 2017](#); [Tan et al., 2020](#); [Zhang et al., 2020](#); [Zhou et al., 2017](#)), as well as corporate governance reforms, such as the implementation of new performance appraisal systems like Economic Value Added (EVA) ([Du et al., 2012](#); [Yu et al., 2016](#)) and bonus incentive reforms ([Cao & Zhang, 2020](#)). However, the state needs to keep its absolute control over certain business operations under the socialist market economy system, and corporate governance reforms alone may not be comprehensive enough to properly stimulate the innovation motivation of SOEs. The creation of SASACs offers an institutional alternative. As both supervisors and stewards responsible for preserving and increasing state asset value, SASACs combine authority with accountability. By aligning

control rights with responsibility, local SASACs can delegate authority more effectively and reduce agency frictions, thereby creating incentive compatibility: SASACs seek stronger innovation performance, and SOEs have both the motivation and capacity to deliver it (i.e. SASACs hope that SOEs can improve innovation while SOEs themselves have the willingness and ability to do well).

Third, by incorporating the establishment of municipal SASACs in our DID model, our paper improves the research design of previous studies on Chinese SOE reforms. Different SOEs are supervised by different levels of government. Due to the distance of local enterprises from the higher government and the complexity of information, most of the higher authorities delegate power to the lower government, so the actual supervisory authority resides primarily with local governments. After the establishment of SASACs, most local SOEs are also under the responsibility of the local SASACs. Because municipal SASACs were created at different times over roughly a decade, earlier studies that treat the establishment of the central SASAC in 2003 or provincial SASACs in 2004 as a single quasi-natural experiment (e.g. [Li & Zhang, 2022](#); [Liu, Wang, & Wang, 2020](#); [Sheng & Liu, 2016](#)) cannot capture this variation. We therefore constructed a staggered DID model accompanied by a battery of robustness tests to mitigate the influence of unobserved factors. This study is grounded in the same context as that of [Hu, Yu, Cao, Guo, and Wang \(2023\)](#), specifically the establishment of local SASACs in China. However, our theoretical frameworks and research focus diverge significantly. [Hu \*et al.\* \(2023\)](#) utilize property rights theory and empowerment theory to explore how the establishment of local SASACs influences government authorization, SOEs' pay-performance sensitivity, and total factor productivity. In contrast, we employ the common agency theory to investigate its impact on SOE innovation. Although government authorization is one of the mechanisms in our study, we also identify a novel agency cost mechanism that further enriches our understanding of the SOE supervision.

## 2. Institutional background

Reform of SOEs has been central to China's broader economic transformation. Among the various reform measures, changes to the state asset management system have been especially important. These reforms reshaped government institutions, clarified administrative authority, and reallocated decision-making power.

In November 2002, the 16th National Congress of the Communist Party proposed the establishment of an SOE management system in which the central government and local governments perform the duties of SOE owners on behalf of the nation, exercise the owners' rights, unify the rights and responsibilities, and combine the management of assets, personnel, and affairs. The reform also proposed integrating oversight of assets, personnel, and major business decisions. To implement this structure, the Congress called for the creation of a central SASAC and corresponding local SASACs. This marked the formal beginning of the management system reform. On April 6, 2003, the central SASAC was officially established, and local SASACs were established in the following two or three years. They both perform the owners' responsibilities on behalf of governments.

The establishment of the central and local SASACs marks a milestone in the reform of China's SOE management system. Before the reform, ownership authority formally rested with the State Council of the People's Republic of China, but in practice it was dispersed across multiple government departments. For instance, the Organization Department and the Ministry of Personnel appointed the SOE executives, the State Planning Commission managed project investments, the State Economic and Trade Commission oversaw production regulations and technological upgrading, the Ministry of Finance was responsible for state-owned asset administration and financial supervision, and the Ministry of Labor and Social Security determined wage policies. Consequently, the management of SOEs is decentralized and inefficient [1]. The establishment of SASACs put an end to this fragmented governance structure, unifying the rights and responsibilities effectively. To facilitate readers'

### 3. Hypotheses development

First, we argue that the establishment of SASACs fosters innovation by promoting government authorization. Prior to the establishment of SASACs, SOE supervision was fragmented among various governmental agencies that also carried broad social and administrative responsibilities. To achieve specific political or social objectives, these agencies often intervene in firm operations and impose policy burdens, such as maintaining excess employment or undertaking non-commercial tasks (Chen *et al.*, 2011; Fan, Wong, & Zhang, 2013; Lin & Li, 2008; Qian, 1996; Zhang, Ma, Zhang, & Yi, 2016) [2]. This interference severely constrained the autonomy of SOEs, diverting resources away from innovation.

The creation of SASACs changed these incentives. As specialized agencies solely responsible for overseeing state-owned assets, SASACs are evaluated primarily on the financial performance of the SOEs under their supervision and on the preservation and growth of state asset value (Naughton, 2007; Lin, Lu, Zhang, & Zheng, 2020). Therefore, the government's propensity to interfere and load SOEs with policy burdens is attenuated; instead, SASAC officials focus on the financial efficiency of SOEs. Since reducing government intervention and increasing managerial autonomy can enhance enterprise performance (Fan

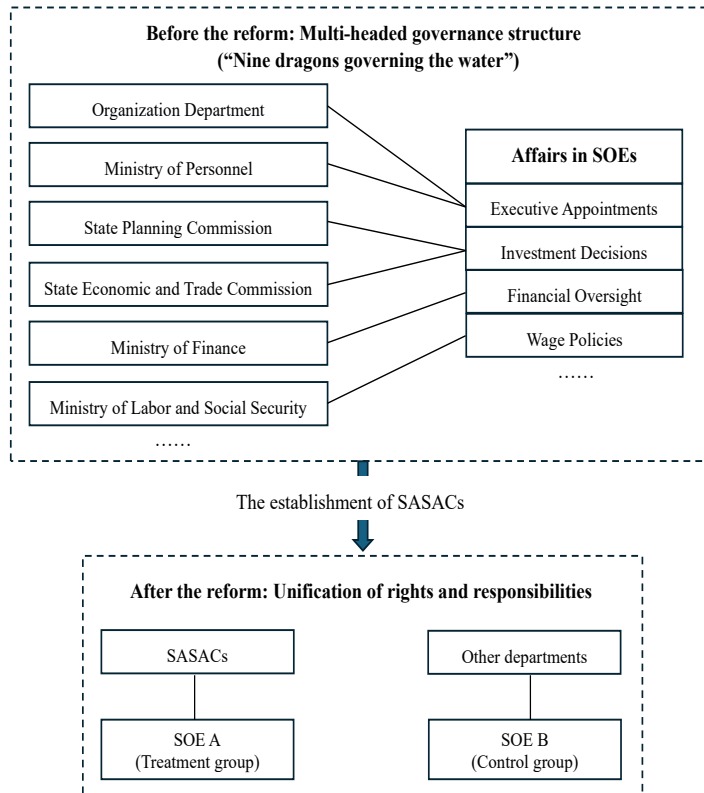


Figure 1. Governance structure of SOEs before and after the establishment of SASAC

*et al.*, 2013), SASAC officials possess strong incentives to delegate authority to ensure these performance targets are met. We therefore contend that the establishment of SASAC fosters innovation through two related channels. On the one hand, by stripping away the social functions and policy burdens previously imposed by multiple government departments, a significant amount of production and managerial resources in SOEs are available for innovation. On the other hand, this delegation expands managerial discretion over firm operation, serving as a powerful incentive mechanism. According to [Aghion and Tirole \(1997\)](#), delegating decision-making authority enhances efficiency by aligning decision rights with the local knowledge possessed by managers. Compared with managers under tight control, those with greater delegated authority are more motivated to leverage their firm-specific tacit knowledge to enhance performance and are more willing to undertake the risks associated with innovation ([Seidler-de Alwis & Hartmann, 2008](#); [Ganguly, Talukdar, & Chatterjee, 2019](#)).

Second, we argue that the establishment of SASACs can promote SOEs' innovation by alleviating agency problems and encouraging risk-taking. Agency theory posits that divergent goals between principals and agents generate agency costs, as agents may not always act in the best interests of principals ([Eisenhardt, 1989](#); [Fama, 1980](#); [Jensen & Meckling, 1976](#)). When self-interested managers (agents) are not effectively monitored, they tend to prioritize personal stability and prefer a "quiet life," avoiding risk-taking activities that could increase firm performance volatility but also create opportunities for innovation ([Bertrand & Mullainathan, 2003](#); [John, Litov, & Yeung, 2008](#); [Mohsni & Otchere, 2014](#); [Wu, Liu, Zeng, & Luo, 2022](#); [Zeng, Zhao, & Zhu, 2023](#)).

Before SASACs were established, supervisory authority over SOEs was divided among multiple government departments. Specifically, multiple government departments acted as the governmental principals responsible for supervising and managing state-owned assets, yet no single department had sufficient incentive or exclusive authority to effectively monitor SOE managers ([Chen, Huyghebaert, Lin, & Wang, 2019](#); [Qian, 1996](#); [Siqueira, Sandler, & Cauley, 2009](#)). According to common agency theory, the coexistence of multiple principals leads to information asymmetry, conflicting objectives, and severe free-rider problems ([Bernheim & Whinston, 1986](#)). Under this fragmented system, each department bears the cost of supervision individually, while the benefits of improved firm performance are shared. Under such conditions, monitoring tends to be insufficient. Because innovation is uncertain and resource-intensive ([García-Granero, Llopis, Fernández-Mesa, & Alegre, 2015](#); [Jia \*et al.\*, 2019](#); [Lee & O'Neill, 2003](#)), this lack of effective monitoring discouraged managers from disrupting the status quo to engage in necessary risk-taking.

The establishment of SASACs provided an institutional remedy by unifying the rights and responsibilities of state asset supervision. By replacing multiple principals with a single specialized principal, this reform mitigates the free-rider problem inherent in the multi-headed structure. Crucially, this unification aligns managerial incentives with the state's goal of asset value preservation and appreciation. Specifically, the unification allows SASACs to implement a consistent assessment system that links performance with rewards and penalties. Effective monitoring curtails the "quiet life" by holding managers accountable for asset value preservation and appreciation, thereby motivating them to undertake value-enhancing risk-taking behaviors. Furthermore, prior studies document that greater risk-taking under alleviated agency problems can enhance firms' innovation outcomes ([He & Tian, 2020](#); [Wu \*et al.\*, 2022](#)). In summary, by resolving the common agency problem, SASACs reduce agency costs and create an incentive-compatible environment that encourages managerial risk-taking, thereby fostering corporate innovation ([Bernheim & Whinston, 1986](#)).

Therefore, we develop the following hypothesis:

- H1.* The innovation performance of SOEs is significantly improved after the establishment of SASACs.

## 4. Sample selection and research design

### 4.1 Sample and data

Our sample consists of all Chinese A-share SOEs controlled by municipal governments (including municipal SASACs and non-SASAC governmental divisions) from 2001 to 2011, where municipal governments include municipalities directly under the central government, sub-provincial cities, and prefecture-level cities [3]. Financial firms and loss firms listed under the special treatment (ST) or particular transfer (PT) status [4] are excluded from our sample. Data on the establishment time of municipal SASACs are collected from the official websites of local governments, and if missing, we manually search media announcements or news reports on the internet to fill in. Firms' patents, financial statements, and corporate governance data are all retrieved from the CSMAR database. Corporate pyramid level data is manually collected from each SOE's annual reports. We finally obtain 4,630 firm-year observations of 667 unique companies. In addition, we winsorize all continuous variables at the 1% and 99% percentiles to mitigate biases caused by extreme values, and all models were robust to White heteroskedasticity.

### 4.2 Regression model

To empirically examine the impact of the establishment of municipal SASACs on SOEs' innovation, we constructed a staggered DID model following Bertrand and Mullainathan (2003). Specifically, we used the establishment of municipal SASACs as a quasi-natural experiment to set up our staggered DID model.

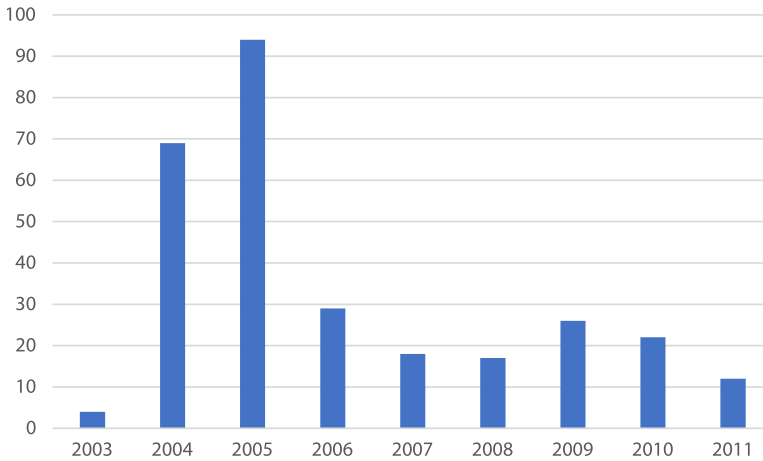
China's administrative hierarchy consists of central, provincial, prefectural (municipal), and county levels. We focus on municipal SASACs—rather than central or provincial SASACs—for two main reasons. First, in practice, municipal governments play a more crucial role in Chinese SOE reforms compared with central and provincial governments (Xu, Zhu, & Lin, 2005; Hsieh & Song, 2015; Huang, Li, Ma, & Xu, 2017). Since the 1990s, under the reform strategy commonly described as “Keep only large firms and let small ones go (抓大放小)”, control rights over many small and medium-sized SOEs have been transferred from the central government to local governments. Alongside the transfer of control rights in these SOEs, cash flow rights and personnel appointment rights were also handed over, underscoring the importance of municipal governments in guiding local SOE reform. Second, the timing of reform supports our research design. The central SASAC was established on April 6, 2003, and most provincial SASACs were created within a short period between 2003 and 2004. This limited variation makes it difficult to separate the reform effect from other contemporaneous shocks. In contrast, the establishment of municipal SASACs occurred at different times: four municipal SASACs were established in 2003, an additional 163 were established in 2004 and 2005, and 124 were established during 2006–2011. We show a histogram of the annual number of municipal SASACs created during 2003–2011 in Figure 2. This relatively dispersed timeline offers a plausible opportunity to construct a staggered DID model, allowing us to infer the causal effect of SASAC establishment on SOE innovation.

We construct the following model (1) to test our hypothesis:

$$Innovation_{i,t+1} = \beta_0 + \beta_1 GZW_{i,t} + \sum Control_{i,t} + Firm + Year + \varepsilon_{i,t} \quad (1)$$

where  $Innovation_{i,t+1}$  is calculated as the natural logarithm of one plus the number of patent applications of firm  $i$  in year  $t+1$ . Prior literature measure firms' innovation by R&D expenditures or patents, the former gauging the innovation inputs, while the latter gauges the innovation outputs. To examine the impact of creating local SASACs on the efficiency and productivity in SOEs, output-based measures provide a more direct indicator of realized innovative performance.

Under *The Patent Law of the People's Republic of China*, patents are classified into three types: invention patents, utility model patents, and design patents. Invention patents are



**Figure 2.** Histogram of the annual number of municipal SASACs created during 2003–2011

usually granted to new methods and products, such as technological program inventions and product inventions. Utility model patents usually relate to technical improvements in structure or form, while design patents protect aesthetic features such as shape or pattern. The application for invention patents requires “novelty, inventiveness, and practical applicability” and is much harder than utility and design patents. Although firms may increase the number of patent applications to signal innovative activity, not all patents reflect meaningful technological advances. Prior research suggests that some firms prioritize the quantity of patents over their novelty or technological significance (Katila, 2000; Jia *et al.*, 2019). Thus, invention patents are considered as innovations of high quality, while the novelty and value of the other two types of patents are difficult to determine and considered as innovations of low quality (Cheung & Ping, 2004; Dang & Motohashi, 2015; Shang, Poon, & Yue, 2012). Then, following prior literature (Pang & Wang, 2020), we measure innovation with the invention patents, which represent high-quality innovation outputs.

The independent variable  $GZW_{i,t}$  is a dummy variable, which equals 1 if an SOE is controlled by a municipal SASAC, and 0 otherwise. Specifically,  $GZW$  is the interaction item between  $TREAT$  and  $POST$ .  $TREAT$  equals 1 if SOE  $i$  is controlled by municipal SASAC during the sample period (i.e. the treatment group), and 0 if SOE  $i$  is controlled by other governmental divisions, such as the municipal Economic Committee, the Transportation Bureau, and the Urban Construction Bureau (i.e. the control group) [5], [6].  $POST$  equals 1 in the year and the subsequent years after establishing municipal SASACs, and 0 otherwise. Then,  $GZW$  equals 0 prior to the establishment of municipal SASACs. After the SASAC’s establishment,  $GZW$  equals 1 if SOE  $i$  is controlled by the municipal SASAC in year  $t$ , and it equals 0 if SOE  $i$  is controlled by other governmental divisions in year  $t$ . It measures the difference in innovation between SOEs controlled by municipal SASACs and other governmental divisions before and after the establishment of the SASAC, and thus the coefficient  $\beta_1$  captures the effect of the staggered DID.

We control for a vector of variables about firm characteristics, including firm size (*Size*), leverage (*Lev*), return on assets (*Roa*), net cash flow from operating activities (*Cash*), firm age (*Age*), percentage ownership by institutional investors (*Insti*), percentage of independent directors (*Indep*), percentage ownership by the largest shareholder (*Top1*), and the number of analyst coverage (*Analyst*). We also control for some characteristics of the executives of SOEs, including political connection (*Pc*), CEO tenure (*Tenure*), and percentage ownership by managers (*Tmt*). Firm-fixed effects (*Firm*) and time-fixed effects (*Year*) are included in the

model to control the unobserved differences in SOEs between those monitored by municipal SASACs and other government departments, as well as the differences associated with changes in the macro-environment before and after the establishment of municipal SASACs. The definitions of variables are presented in [Appendix A. H1](#) predicts  $\beta_1$  to be positive in model (1).

## 5. Empirical results

### 5.1 Correlation analysis and summary statistics

Panel A of [Table 1](#) presents the correlation matrix for the variables used in the regression. The results show that the correlation coefficient between *GZW* and *Innovation* is 0.250 and significant at the 1% level. The preliminary pairwise correlation results indicate a positive relationship between the creation of municipal SASACs and corporate innovation.

Panel B of [Table 1](#) reports the summary statistics for regression variables after winsorization. The mean value of *Innovation* is 0.603, with its corresponding raw value being 0.828. This result suggests that, on average, each SOE in our sample files has fewer than one invention patent per year, indicating the challenge involved in generating invention patents. The mean value of *GZW* is 0.515, indicating that slightly more than 50% of the samples are controlled by local SASACs. The summary statistics for the control variables were similar to those found in prior studies.

### 5.2 Baseline results

[Table 2](#) reports the regression results of model (1), which examines the effects of the establishment of municipal SASACs on SOE innovation. In column (1), we only include firm and year fixed effects. The coefficient of *GZW* is positive and statistically significant at the 1% level. In column (2), we incorporate all control variables in model (1), and the coefficient of *GZW* is 0.138 and statistically significant at the 1% level, suggesting that after controlling for firm characteristics and time trends, the creation of a municipal SASAC leads to a meaningful increase in innovation. In terms of economic magnitude, the estimate in column (2) implies that treated SOEs experience a 13.8% greater increase in invention patent applications following the establishment of a municipal SASAC, relative to untreated firms. The coefficients of control variables are generally consistent with those found in prior studies (e.g. [Jiang & Yuan, 2018](#)). For instance, larger firms and firms covered by more analysts show a higher number of patent applications. In summary, the unification of supervision rights and responsibilities has some positive effects on SOEs' innovation after the establishment of municipal SASACs, which supports [H1](#).

### 5.3 Mechanism analysis

Having established that the creation of local SASACs increases SOE innovation, we next examine the underlying channels. Based on our theoretical framework, we propose two mechanisms through which the reform may enhance both innovation resources and managerial incentives: (1) increased government authorization and (2) reduced agency costs. We test each mechanism in turn.

**5.3.1 The government authorization mechanism.** We first explore whether the reform promotes innovation by increasing government authorization—that is, by reducing direct administrative intervention in SOE operations. Greater authorization should lower policy burdens imposed by government departments and grant firms more autonomy in allocating resources. To capture policy burdens, we focus on excess employment (*Burden*). Before the establishment of SASACs, local governments often required SOEs to maintain redundant workers to meet social stability or employment objectives. If the creation of SASACs reduces such non-commercial mandates, excess employment should decline.

**Table 1.** Correlation matrix and summary statistics

Panel A correlation matrix of main variables													
VAR	<i>Innovation</i>	<i>GZW</i>	<i>Size</i>	<i>Lev</i>	<i>Roa</i>	<i>Cash</i>	<i>Age</i>	<i>Insti</i>	<i>Indep</i>	<i>Top1</i>	<i>Analyst</i>	<i>Pc</i>	<i>Tenure</i>
<i>GZW</i>	0.250***	1											
<i>Size</i>	0.320***	0.293***	1										
<i>Lev</i>	0.077***	0.072***	0.276***	1									
<i>Roa</i>	0.100***	0.065***	0.186***	-0.384***	1								
<i>Cash</i>	0.013	0.042***	0.035**	-0.185***	0.332***	1							
<i>Age</i>	0.217***	0.364***	0.270***	0.230***	-0.032**	0.006	1						
<i>Insti</i>	0.166***	0.219***	0.317***	0.036**	0.278***	0.194***	0.197***	1					
<i>Indep</i>	0.188***	0.404***	0.225***	0.100***	0.065***	0.026*	0.371***	0.185***	1				
<i>Top1</i>	-0.089***	-0.048***	0.042***	-0.139***	0.105***	0.021	-0.434***	-0.147***	-0.095***	1			
<i>Analyst</i>	0.324***	0.330***	0.527***	0.003	0.351***	0.201***	0.265***	0.609***	0.303***	-0.056***	1		
<i>Pc</i>	0.017	-0.102***	0.050***	-0.016	0.049***	0.004	-0.064***	0.103***	-0.033**	-0.054***	0.076***	1	
<i>Tenure</i>	0.067***	0.143***	0.070***	0.024	0.063***	0.077***	0.148***	0.157***	0.127***	-0.110***	0.154***	0.059***	1
<i>Tmt</i>	0.118***	-0.009	-0.019	-0.114***	0.129***	0.064***	-0.041***	0.087***	0.035**	-0.122***	0.161***	0.034**	0.034**

Panel B summary statistics									
VAR	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>	<i>Min</i>	<i>Max</i>	
<i>Innovation</i>	4,630	0.603	1.008	0	0	1.099	0	4.317	
<i>GZW</i>	4,630	0.515	0.500	0	1	1	0	1	
<i>Size</i>	4,630	21.525	0.951	20.837	21.434	22.072	19.695	24.286	
<i>Lev</i>	4,630	0.493	0.180	0.366	0.505	0.631	0.077	0.872	
<i>Roa</i>	4,630	0.027	0.055	0.011	0.030	0.052	-0.229	0.158	
<i>Cash</i>	4,630	0.050	0.075	0.010	0.052	0.093	-0.195	0.261	
<i>Age</i>	4,630	2.407	0.435	2.197	2.485	2.708	1.099	3.178	
<i>Insti</i>	4,630	0.049	0.082	0.000	0.012	0.0564	0	0.407	
<i>Indep</i>	4,630	0.307	0.115	0.333	0.333	0.364	0	0.545	
<i>Top1</i>	4,630	0.413	0.161	0.286	0.403	0.536	0.102	0.750	
<i>Analyst</i>	4,630	0.829	1.031	0	0.693	1.386	0	3.497	

(continued)

**Table 1.** Continued

Panel B summary statistics								
VAR	N	Mean	SD	P25	P50	P75	Min	Max
<i>Pc</i>	4,630	0.189	0.391	0	0	0	0	1
<i>Tenure</i>	4,630	3.723	2.841	1	3	5	1	13
<i>Tmt</i>	4,630	0.127	0.651	0	0.006	0.029	0	5.531
<i>Layer</i>	4,197	3.039	0.687	3	3	3	1	7
<i>Burden</i>	4,120	-0.096	0.233	-0.183	-0.010	0.066	-1.312	0.134
<i>Agencycost</i>	4,197	0.118	0.112	0.056	0.091	0.128	0.014	0.702
<i>Risktake</i>	4,197	0.026	0.033	0.009	0.015	0.028	0.002	0.221
<i>Gov_quality</i>	4,630	0.611	0.487	0	1	1	0	1
<i>Mono</i>	4,630	0.310	0.462	0	0	1	0	1
<i>Stateshare</i>	4,111	0.386	0.168	0.256	0.367	0.521	0.002	0.849
<i>Chairage</i>	4,550	50.817	5.957	46	51	56	28	81
<i>Tobinq</i>	4,560	1.745	0.945	1.153	1.396	1.975	0.918	6.167

**Note(s):** Table 1 presents the correlation matrix and summary statistics. Panel A reports the Pearson correlation matrix. \*\*\* represents that the  $p$ -value is smaller than 0.01, \*\* represents that the  $p$ -value is smaller than 0.05, and \* represents that the  $p$ -value is smaller than 0.1. Panel B presents the descriptive statistics of our main variables. See [Appendix A](#) for variable definitions

Table 2. Baseline results

VAR	(1) <i>Innovation</i> <sub><i>t</i>+1</sub>	(2) <i>Innovation</i> <sub><i>t</i>+1</sub>
<i>GZW</i>	0.140*** (2.90)	0.138*** (2.91)
<i>Size</i>		0.122* (1.79)
<i>Lev</i>		-0.140 (-0.72)
<i>Roa</i>		0.022 (0.07)
<i>Cash</i>		-0.230 (-1.46)
<i>Age</i>		-0.165 (-0.76)
<i>Insti</i>		-0.186 (-0.74)
<i>Indep</i>		-0.119 (-0.61)
<i>Top1</i>		-0.450 (-1.26)
<i>Analyst</i>		0.063** (2.41)
<i>Pc</i>		-0.048 (-0.56)
<i>Tenure</i>		-0.002 (-0.32)
<i>Tmt</i>		-0.035 (-0.68)
Constant	0.201*** (6.55)	-1.742 (-1.22)
Firm/year	YES	YES
Observations	4,630	4,630
R-squared	0.2216	0.2307

**Note(s):** Table 2 presents the baseline results for establishing local SASACs and SOEs' innovation. The dependent variables in columns (1) and (2) are innovation, measured as the natural logarithm of 1 plus the number of invention patent applications in year  $t+1$  ( $Innovation_{t+1}$ ). The key independent variable is the establishment of local SASACs (*GZW*). We report in parentheses  $t$ -statistics based on standard errors that are robust to heteroskedasticity. \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ ; two-tailed test. See Appendix A for variable definitions

Following Jiang (2016), we measure a firm's excess employment as the difference between its actual employment and expected employment. The expected employment level is estimated using the following model:

$$Empl_{i,t} = \alpha + \beta_1 Size_{i,t} + \beta_2 GOA_{i,t} + \beta_3 PPE_{i,t} + Ind + Year + \varepsilon_{i,t} \quad (2)$$

where *Empl* represents actual employment, measured as the number of employees divided by total annual sales revenue multiplied by 1,000; *Size* is the natural logarithm of total assets; *GOA* is the growth rate of total assets; and *PPE* is fixed assets divided by total assets. The regression residual captures the excess employment. We then calculate each firm's average excess employment prior to the establishment of its SASAC (*Burden*) [7]. Based on the median value of *Burden*, we divided the sample into two groups and re-estimated our baseline regressions.

We then examine whether the effect of the unification of rights and responsibilities is stronger for firms with higher *ex ante* excess employment burdens. The results are reported in columns (1) and (2) of Table 3. For firms with higher excess employment burdens ( $Hburden = 1$ ), the coefficient on *GZW* is 0.287 and statistically significant at the 1% level. In contrast, for firms with lower excess employment burdens ( $Hburden = 0$ ), the coefficient is statistically insignificant. The difference between the two groups was significant at the 1% level. These findings suggest that the unification of rights and responsibilities promotes innovation primarily among SOEs with heavier excess employment burdens by alleviating policy burdens through enhanced government authorization.

Second, we also measure government authorization based on the pyramid layers between the government and SOEs, as suggested by Fan *et al.* (2013), Wang *et al.* (2022), and Zhang, Lijun, Zhang, and Yi (2016). A pyramid ownership structure is common in many countries. In such a structure, the ultimate controlling shareholder—in this case, the government—controls a firm indirectly through several intermediate holding companies. Fan *et al.* (2013) argue that the creation of an organizational pyramid serves as a more credible commitment to decentralization than a simple policy announcement, because the complex organizational structure increases the government's cost of obtaining sufficient timely information to interfere in the day-to-day operations of the firm. In this sense, a greater number of pyramid layers reflect reduced direct intervention and stronger managerial autonomy. The number of layers therefore serves as an alternative proxy for government authorization. Supporting this interpretation, prior studies have found that firms with more pyramid layers tend to face lower tax burdens (Zhang *et al.*, 2016), receive fewer regulatory penalties (Liu & Li, 2015), and have more efficient investment (Opie, Tian, & Zhang, 2019), collectively validating the government authorization argument.

To test this mechanism, we first calculate each SOE's average number of pyramid layers between itself and the ultimate state owner in the years before the local SASAC was established (*Llayer*), and then split the sample at the industry-year median. The results are reported in columns (3) and (4) of Table 3. The results show that observations with fewer pyramid layers ( $Llayer = 1$ ) display a *GZW* coefficient of 0.227, which is significant at the 1% level, whereas the coefficient for observations with more pyramid layers ( $Llayer = 0$ ) is statistically insignificant; the difference across groups is significant at the 5% level. Thus, we document that the unification of rights and responsibilities spurs innovation primarily in SOEs with flatter *ex ante* pyramid layers by shielding managers from political interference.

**5.3.2 The agency costs mechanism.** To test the agency costs mechanism, we examine whether the effect of the unification of rights and responsibilities is more pronounced in firms with higher *ex ante* agency costs. First, we measure *ex ante* agency costs using the average ratio of administrative expenses to total revenue prior to the establishment of the municipal SASAC (*Agencycost*). Higher administrative expense ratios are commonly interpreted as reflecting greater managerial inefficiency or weaker oversight. Then, we split the sample at the industry-year median, and re-estimate the model separately for each subgroup. The results are reported in columns (5) and (6) of Table 3. It shows that the *GZW* coefficient equals 0.246 and is significant at the 1% level for observations with higher *ex ante* agency costs ( $Hagencycost = 1$ ), whereas it is insignificant for observations with lower *ex ante* agency costs ( $Hagencycost = 0$ ); the difference across groups is significant at the 5% level. These results provide evidence for the agency costs mechanism: the unification of rights and responsibilities promotes innovation primarily by mitigating the high agency costs, thereby promoting innovation [8].

We further employ risk-taking as an alternative proxy for agency costs. As mitigating agency problems can encourage managerial risk-taking, firms with lower *ex ante* risk-taking incentives are subject to more severe agency problems. Following John *et al.* (2008) and Boubakri, Cosset, and Saffar (2013), we measure corporate risk-taking (*Risktake*) as the average volatility of earnings during the pre-SASAC period, where earnings volatility is the standard deviation of return on assets (ROA) over the three-year window  $[t-1, t, t+1]$ . We

**Table 3.** Mechanism analysis

	(1) Government authorization mechanism <i>Hburden</i> = 1	(2) <i>Hburden</i> = 0	(3) <i>Llayer</i> = 1	(4) <i>Llayer</i> = 0	(5) Agency costs mechanism <i>Hagencycost</i> = 1	(6) <i>Hagencycost</i> = 0	(7) <i>Lrisktake</i> = 1	(8) <i>Lrisktake</i> = 0
<i>GZW</i>	0.287*** (4.73)	0.020 (0.28)	0.227*** (4.25)	0.041 (0.43)	0.246*** (4.34)	0.059 (0.78)	0.257*** (3.75)	0.068 (1.01)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Firm/year	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,060	2,060	2,654	1,543	2,088	2,109	2,046	2,151
<i>R</i> -squared	0.2164	0.2689	0.2356	0.2682	0.2450	0.2450	0.2592	0.2338
Diff	0.267***		0.186**		0.187**		0.189**	
<i>p</i> -value	0.0000		0.0231		0.0231		0.0332	

**Note(s):** This table presents the mechanism analysis results. Columns (1)-(4) report the government authorization mechanism, and columns (5)-(8) report the agency costs mechanism. The first government authorization measure *Burden* is the average excess employment during the pre-SASAC period, where excess employment is calculated as the residual from the expected employment regression model. The second government authorization measure *Layer* is the average number of pyramid layers between SOE and its ultimate state owner during the pre-SASAC period. The first agency cost measure *Agencycost* is the average ratio of administrative expenses to total revenue during the pre-SASAC period. The second agency cost measure *Risktake* is the average volatility of earnings during the pre-SASAC period, where earnings volatility is the standard deviation of return on assets (ROA) over the three-year window [ $t-1$ ,  $t$ ,  $t+1$ ]. We report in parentheses *t*-statistics based on standard errors that are robust to heteroskedasticity. \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ ; two-tailed test. See [Appendix A](#) for variable definitions

then split the sample at the industry-year median of *ex ante* risk-taking incentive and re-estimate the model for each subgroup. The results, reported in columns (7) and (8) of Table 3, show that for observations below the median (*Lrisktake* = 1), the coefficient of *GZW* is 0.257 and statistically significant at the 1% level, whereas for observations above the median (*Lrisktake* = 0), the coefficient of *GZW* is not significant, and the cross-group difference is significant at the 5% level. These findings suggest that the unification of rights and responsibilities reduces agency costs, thereby strengthening the risk-taking incentives of SOEs that were *ex ante* less inclined to take risks, and consequently stimulating innovation activities. These results are consistent with prior literature that increased risk-taking can enhance innovation (He & Tian, 2020; Wu *et al.*, 2022).

#### 5.4 Cross-sectional analysis

To investigate the cross-sectional difference in the impact of establishing SASACs on SOEs' innovation, we examine cross-sectional variation in its impact on SOE innovation. We consider factors from both the government and firm perspectives, including local government quality, industry competition, state ownership concentration, and board chair characteristics. We begin with the role of local government quality.

**5.4.1 The governance quality of local government and SOEs' innovation.** As local SASACs are subordinate to local governments in China, their effectiveness is largely contingent on the quality of local governments. However, there is a considerable disparity in the governance quality of local government across different regions in China. Chen, Kim, Li, & Liang (2018) and Jia *et al.* (2019) document that high-quality local governments diligently perform their roles as the principal of the state, and their public officials are less likely to intervene in the operational activities of SOEs under their control. Conversely, low-quality local governments are generally held less accountable for advancing the public interests, and their public officials can shirk their responsibilities, such as ignoring actions needed to enhance the SOEs' value.

The differences in public governance quality may shape how the establishment of municipal SASACs affects innovation in local SOEs. Specifically, when the rights and responsibilities of supervising SOEs are unified, municipal SASACs operating under high-quality governments are more likely to fulfill their supervisory role effectively and encourage innovation that enhances firm value. In contrast, under lower-quality governments, municipal SASACs may continue to intervene excessively in SOE operations. Such interference can weaken firms' incentives and capacity to innovate, thereby limiting the potential benefits of the reform.

To measure local government quality (*Gov\_quality*), we use a unique dataset from a 2006 World Bank survey, *Governance, Investment Climate, and Harmonious Society – Competitiveness Enhancements for 120 Cities in China*. The survey collected assessments from corporate executives in 120 major Chinese cities regarding the quality of their local governments, focusing on government effectiveness and progress toward building a harmonious society. These responses were aggregated into comprehensive city-level indices. This dataset is large-scale and representative and is commonly used by researchers to gauge government quality in China (Cull, Li, Sun, & Xu, 2015; Chen, Li, Xiao, & Zou, 2014a). *Gov\_quality* measures whether the governance quality of local government is high, and we set it equal to 1 when the municipal government ranks within the top 30 of the 120 listed cities, and 0 otherwise.

To investigate the effect of the governance quality of local government on SOE innovation, we partition the whole sample into SOEs controlled by high-quality governments and SOEs controlled by low-quality governments, and look at the effects of setting up municipal SASACs for these two groups of firms separately. The results are reported in columns (1) and (2) of Table 4. In column (1), when *Gov\_quality* equals 1 and the quality of local government is higher, the coefficients of *GZW* are positive and statistically significant at the 1% level. However, in column (2), when *Gov\_quality* equals 0 and the quality of local government is

**Table 4.** Cross-sectional results

VAR	(1) <i>Gov_</i> <i>quality</i> = 1	(2) <i>Gov_</i> <i>quality</i> = 0	(3) <i>Mono</i> = 1	(4) <i>Mono</i> = 0	(5) <i>Mshare</i> = 1	(6) <i>Mshare</i> = 0	(7) <i>Hage</i> = 1	(8) <i>Hage</i> = 0
<i>GZW</i>	0.258*** (3.59)	0.037 (0.58)	-0.009 (-0.11)	0.202*** (3.58)	0.195*** (2.95)	0.017 (0.27)	0.214*** (3.31)	0.078 (1.17)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Firm/year	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,916	2,714	1,434	3,196	1,924	2,187	2,486	2,144
<i>R</i> -squared	0.2655	0.2246	0.2645	0.2279	0.2234	0.2035	0.2352	0.1832
Diff	0.221***		-0.211***		0.178***		0.136**	
<i>p</i> -value	0.0012		0.0016		0.0077		0.0428	

**Note(s):** Table 4 presents the results of the cross-sectional analysis, including cross-sectional analysis for government quality, industry competition, the proportion of state-owned shareholdings, and the age of board chairmen. Columns (1) and (2) show the influence of local governments' quality; *Gov\_quality* = 1 (*Gov\_quality* = 0) means higher (lower) quality. Columns (3) and (4) show the influence of industry competition; *Mono* = 1 (*Mono* = 0) means monopolistic (competitive) firms. Columns (5) and (6) show the influence of the proportion of state-owned shareholdings; *Mshare* = 1 (*Mshare* = 0) means a higher (lower) proportion of state-owned shareholdings. Columns (7) and (8) show the influence of the age of board chairmen; *Hage* = 1 (*Hage* = 0) means older (younger) board chairmen. The dependent variables are innovation measured by the natural logarithm of 1 plus the number of invention patent applications in year  $t+1$  ( $Innovation_{t+1}$ ). The key independent variable is the establishment of local SASACs (*GZW*). We report in parentheses  $t$ -statistics based on standard errors that are robust to heteroskedasticity. \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ ; two-tailed test. See Appendix A for variable definitions

lower, the coefficients of *GZW* on *Innovation* are insignificant. Moreover, the difference in coefficients is statistically significant at the 1% level. These findings imply that the effect of establishing municipal SASACs on SOEs' innovation is more prominent when SOEs are controlled by a higher-quality government.

*5.4.2 The industry competition and SOEs' innovation.* Although unifying the supervision rights and responsibilities alleviates governmental agency problems, and municipal SASACs would promote SOEs to engage in innovation, the corporate agency problem arising from managerial shirking may still impede SOEs' innovation. Prior literature indicates that without effective monitoring and incentive mechanisms, managers tend to avoid innovation for their private benefits, as innovation activities are complex and the possibility of failure is high (Jia *et al.*, 2019; John *et al.*, 2008). Product market competition can mitigate this problem. Compared with a monopolistic market, a competitive market has some governance effects; namely, fierce market competition exerts downward pressure and leads to stronger incentives and higher managerial efforts (Baggs & De Bettignies, 2007; Nickell, 1996). Local SOEs in monopolistic industries can earn substantial monopoly profits and therefore face limited competitive pressure. By contrast, local SOEs operating in competitive industries resemble private firms in several respects (Li, Cui, & Lu, 2014), and their managers exhibit heightened motivation to innovate so as to secure competitive advantages. Therefore, we propose that the promotion effect of the establishment of SASACs on SOE innovation is stronger when SOEs face higher market competition.

To test the effect of industry competition on SOEs' innovation, we divided the whole sample into monopolistic firms and competitive firms. Following Xia and Chen (2007) and Luo and Liu (2009), we define monopolistic firms as those operated in extractive (B), petroleum, chemical, and plastics (C4), metals and nonmetals (C6), electricity, gas, and water production and supply (D), transportation and storage (F), and communication and cultural (L) industries [9], and competitive firms as those operated in the remaining industries. The regression results for the two subsamples are reported in columns (3) and (4) of Table 4. In column (3), when *Mono* equals 1 and SOEs operate in monopolistic industries, the coefficient of *GZW* is insignificant. On the contrary, in column (4), when *Mono* equals 0 and SOEs operate in competitive industries, the coefficient of *GZW* is positive and significant at the 1% level. Moreover, the difference in coefficients is statistically significant at the 1% level. These findings indicate that the effect of establishing local SASACs on SOEs' innovation is more prominent if SOEs face fiercely competitive markets.

*5.4.3 The proportion of state-owned shareholdings and SOEs' innovation.* The effectiveness of SASAC unifying the supervision rights and responsibilities is likely contingent upon the ownership structure of SOEs. Specifically, a higher shareholding proportion held by SASACs is apt to enhance the capability to monitor and mitigate agency problems within SOEs, thereby fostering the long-term development of SOEs (Kang, Anderson, Eom, & Kang, 2017), particularly in terms of innovation activities. By contrast, when SASACs hold a relatively small stake, their monitoring incentives may weaken. In such cases, the presence of other shareholders can create free-rider problems, as the benefits of supervision are shared while the costs are disproportionately borne by SASACs. If the marginal benefits of monitoring do not outweigh its costs, SASACs may reduce their oversight efforts (Jameson, Prevost, & Puthenpurackal, 2014), limiting the reform's impact on innovation.

To test our expectation, we divide the sample into two groups based on the mean value of the shareholding ratio of the ultimate controller in each year (*Stateshare*). The results are reported in columns (5) and (6) of Table 4. In column (5), when the state ownership is higher (*Mshare* = 1), the coefficient of *GZW* is positive and statistically significant at the 1% level. However, in column (6), when the state ownership is lower (*Mshare* = 0), the coefficient of *GZW* on *Innovation* is insignificant. Moreover, the difference in coefficients is statistically significant at the 1% level. These results suggest that the greater the influence of state capital in

SOEs, the more it can shape corporate decision-making, and the more pronounced the positive effect of unified supervision rights and responsibilities on SOE innovation.

**5.4.4 The age of chairmen and SOEs' innovation.** SOE executives possess quasi-official status, political ranks, and incentives to be promoted (Chen *et al.*, 2018). Promotion opportunities and political incentives systematically vary with age. According to the political promotion literature, younger chairmen—with longer career horizons and higher promotion potential—tend to adopt an innovation-driven orientation to demonstrate competence and get promoted (Bai, Li, Li, & Luo, 2021; Chen, Wang, & Wang, 2024). In contrast, older chairmen—whose room for promotion is limited and who are closer to retirement—may prefer stability and the preservation of their administrative legacy (Wang & Luo, 2019; Leutert & Vortherms, 2021).

However, the inherent uncertainty of innovation complicates these tendencies in the SOE context. As innovation is inherently risky, younger chairmen of SOEs have longer career horizons and greater promotion room, are more cautious and risk-averse, and may adopt a “no-mistake” strategy, prioritizing risk avoidance to protect their political prospects (Chen *et al.*, 2018; Hu *et al.*, 2023). Consistent with this view, Hu *et al.* (2023) show that firm risk declines significantly in the years immediately preceding executives' political promotion, suggesting strategic caution.

Conversely, older chairmen who are approaching the mandatory retirement age may pursue a “last-grasp” strategy. With limited time remaining in office, they may intensify innovation efforts to secure a final promotion or strengthen their political reputation before departure (Attah-Boakye, Adams, Yu, Mali, & Lim, 2024). Furthermore, the unification of rights and responsibilities strengthens personal accountability, which may encourage older chairmen to mobilize organizational and political resources toward innovation to consolidate their legacy and gain post-retirement recognition. Older executives often possess broader social networks and greater access to financial and political capital (Chen *et al.*, 2018), facilitating the coordination of innovation activities. Therefore, we expect the innovation-enhancing effect of unified rights and responsibilities to be more pronounced among firms led by older chairmen.

To test our expectations, we divided the sample into two groups based on the industry-year median of the chairman's age (*Chairage*). The results are reported in columns (7) and (8) of Table 4. In column (7), when the chairmen are older (*Hage* = 1), the coefficient of *GZW* is positive and statistically significant at the 1% level. However, in column (8), when the chairmen are younger (*Hage* = 0), the coefficient of *GZW* is insignificant. Moreover, the difference in coefficients is statistically significant at the 5% level. For SOEs with older executives, the effect of the unification of supervision rights on innovation is stronger.

### 5.5 Economic consequence analysis

We further conduct the economic consequences analysis from the perspective of firm value. We argue that after the establishment of SASACs, the increased innovation enhances firm value as innovation increases market performance and maintains and even improves firms' competitive advantage (Hou & Li, 2023; Kong, Yang, & Wang, 2023). We use Tobin's Q to measure firm value (Hao, Chen, & Chen, 2022; Hou & Li, 2023) and a two-stage model to examine the economic consequences (Kim, Su, Wang, & Wu, 2021). The results are reported in Table 5.

Specifically, we first estimate innovation by regressing *Innovation* on the indicator of SASAC establishment (*GZW*) in column (1) of Table 5. The predicted values estimated from the first-stage regressions reflect the impact of the unification of rights and responsibilities on firm innovation. Then, in the second stage, we examine the effect of the predicted innovation on firm value by regressing *Tobinq* on *Innovation\_pred*. The results are reported in column (2) of Table 5. The coefficient of *Innovation\_pred* is 0.588 and statistically significant at the 5% level, indicating that the predicted increase in innovation leads to a significant increase in firm value.

**Table 5.** Test of economic consequences

VAR	(1) <i>Innovation<sub>t+1</sub></i>	(2) <i>Tobinq<sub>t+1</sub></i>
GZW	0.138*** (2.91)	
<i>Innovation_pred<sub>t+1</sub></i>		0.588** (1.99)
Controls	YES	YES
Firm/year	YES	YES
Observations	4,630	4,560
R-squared	0.2307	0.5290

**Note(s):** This table presents the results of the effect of the economic consequences analysis. The dependent variable in column (1) is invention patents (*Innovation<sub>t+1</sub>*). The dependent variable in column (2) is firm value measured by Tobin’s Q (*Tobinq<sub>t+1</sub>*). The key independent variable is the establishment of local SASACs (GZW). We report in parentheses *t*-statistics based on standard errors that are robust to heteroskedasticity. \*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.10; two-tailed test. See [Appendix A](#) for other variable definitions

**6. Robustness checks**

*6.1 Parallel trend test*

The validity of the DID estimate depends critically on the satisfaction of the parallel trend assumption ([Roberts & Whited, 2013](#)). This assumption requires that, prior to the establishment of municipal SASACs, innovation trends were similar between SOEs that later came under municipal SASAC control and those that remained under other local government divisions. To assess this assumption, we follow [Liao, Tsang, Wang, and Zhu \(2022\)](#) and [Gao, Pittman, Wang, and Wang \(2023\)](#) and construct the following dummy variables capturing the yearly trend: *Before2* (*Before1*) equals 1 if an observation is from two years (one year) before the establishment of its municipal SASACs, and 0 otherwise; *Current* equals 1 if an observation is from the establishment year of its municipal SASACs, and 0 otherwise; *After1* (*After2*) equals 1 if an observation is from one year (two years) after the establishment of its municipal SASACs; *After3* equals 1 if an observation is from three or more years after the establishment of its municipal SASACs. The omitted group (benchmark) therefore comprises the observations three or more years prior to the establishment of the municipal SASAC (year ≤ −3).

Column (1) of [Table 6](#) presents the results of the parallel trend assumption test. We find that the coefficients on *Before2* and *Before1* are not significantly different from zero, supporting the validity of the parallel trend assumption between SOEs controlled by municipal SASACs and those controlled by non-SASAC divisions before the establishment of local SASACs. Turning to the post-establishment period, the coefficients of *Current*, *After2*, and *After3* on *Innovation* are all statistically significant at least at the 10% level. Although the coefficient for *After1* is not statistically significant, the overall effect exhibits an upward trend from *Current* to *After3*. In summary, the parallel trend assumption is satisfied in our DID model.

*6.2 Placebo test*

We conducted a placebo test to move the actual establishment time of SASACs three years back (i.e. from year *t* to year *t*−3) and constructed a pseudo treatment dummy, *Assume\_GZW*, which equals 1 if an SOE *i* is controlled by a municipal SASAC in year *t*−3 and 0 if it is controlled by other government departments in year *t*−3. We re-estimate model (1) using this placebo sample, and the results are displayed in column (2) of [Table 6](#). The coefficient of *Assume\_GZW* is not significantly different from zero, which implies that our empirical results are not interrupted by unobserved factors as well as the inherent difference between the treatment group and control group.

**Table 6.** Robustness checks

VAR	(1) <i>Innovation</i> <sub><i>t</i>+1</sub>	(2) <i>Innovation</i> <sub><i>t</i>+1</sub>	(3) <i>Innovation</i> <sub><i>t</i>+1</sub>	(4) <i>Innovation</i> <sub><i>t</i>+1</sub>	(5) <i>Innovation</i> <sub><i>t</i>+1</sub>	(6) <i>Innovation</i> <sub><i>t</i>+1</sub>	(7) <i>Patent</i> <sub><i>t</i>+1</sub>	(8) <i>R&amp;D</i>	(9) <i>IE_inv</i>	(10) <i>Innovation</i> <sub><i>t</i>+2</sub>	(11) <i>Innovation</i> <sub><i>t</i>+3</sub>
<i>GZW</i>			0.175*** (3.10)	0.105* (1.84)	0.131*** (2.76)	0.153*** (3.09)	0.223*** (3.66)	0.002* (1.76)	0.128** (2.27)	0.124** (2.38)	0.198*** (3.60)
<i>Before2</i>	0.047 (0.97)										
<i>Before1</i>	0.005 (0.08)										
<i>Current</i>	0.130** (2.03)										
<i>After1</i>	0.093 (1.22)										
<i>After2</i>	0.223** (2.38)										
<i>After3</i>	0.266** (2.38)										
<i>Assume_GZW</i>		0.051 (1.12)									
<i>GDP</i>						-0.131 (-1.55)					
<i>Fiscal</i>						-0.023 (-1.04)					
<i>Unemploy</i>						-2.251 (-1.51)					
<i>Cityinnov</i>						0.192*** (3.09)					
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm/year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
City					YES						
Observations	4,630	4,630	1,008	3,336	4,630	4,459	4,630	2,350	664	4,621	4,610
R-squared	0.2356	0.2078	0.0985	0.2637	0.2384	0.2427	0.2157	0.1547	0.0738	0.2303	0.2284

**Note(s):** Column (1) of this table presents the results of the parallel trend test. *Before2* and *Before1* equal 1 if an observation is two years and one year before the establishment of its local SASACs, respectively, and 0 otherwise. *After3*, *After2*, and *After1* equal 1 if an observation is three or more years, two years, and one year after the establishment of its local SASACs, respectively, and 0 otherwise. Column (2) presents the results of the placebo test. *Assume\_GZW* is a dummy variable which equals 1 if an SOE *i* is controlled by a local SASAC in year *t*−3 and 0 if it is controlled by other government departments in year *t*−3. Column (3) presents the results for the innovation of SOEs around the initial establishment (from *t*−1 to *t*+1) of SASACs using the PSM-DID method. Column (4) of this table shows the result of excluding samples located in Beijing, Shanghai, Tianjin, and Chongqing. Column (5) shows the result of adding the city-fixed effect. Column (6) shows the result of controlling the city-level variables, including the gross domestic product of a city (*GDP*), the amount of fiscal revenue of a city (*Fiscal*), the unemployment rate of a city (*Unemploy*), and the total number of patent applications of a city (*Cityinnov*). Columns (7) to (9) show the results of alternative measures of SOE innovation, including the total number of patent applications (column (7)), R&D expenditures (column (8)), and R&D efficiency (column (9)). Columns (10) and (11) show the results of innovation performance over a longer horizon. The dependent variables in columns (1) to (6) are innovation measured by the natural logarithm of 1 plus the number of invention patent applications in year *t*+1 (*Innovation*<sub>*t*+1</sub>). *R&D* is calculated as the ratio of R&D expenditures to the total assets; *IE\_inv* is R&D efficiency, calculated as the number of total patents (invention patents) scaled by R&D expenditures. We report in parentheses *t*-statistics based on standard errors that are robust to heteroskedasticity. \*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.10; two-tailed test. See [Appendix A](#) for other variable definitions

### 6.3 PSM-DID test

To further investigate the innovation of SOEs around the initial establishment of SASACs, we performed a PSM-DID test. First, in the PSM procedure, we utilize a one-to-one nearest-neighbor matching without replacement approach based on the control variables used in model (1). Subsequently, we apply the DID framework to the matched sample and compare SOE innovation one year before and one year after the establishment of SASACs. The results, as shown in column (3) of [Table 6](#), indicate that the coefficient of *GZW* is significantly positive at the 1% level, which is consistent with our baseline results.

### 6.4 Excluding Beijing, Shanghai, Chongqing, and Tianjin

A remaining concern is that SOEs with stronger innovation performance may influence the timing of SASAC establishment. Although the staggered DID design can address this issue to some extent, we perform additional robustness tests to minimize the concern of region-level omitted variables driving our results. For instance, Beijing, Shanghai, Chongqing, and Tianjin are four municipalities directly under the central government. Compared with other municipal cities, these four cities have a higher level of economic development and have more companies located in them. The SASACs of Beijing, Shanghai, and Chongqing were established in 2003, and Tianjin's SASAC was established in June 2004.

Moreover, the four directly controlled municipalities exhibit distinct advantages in governance structures, market access, and innovation ecosystems compared with other regions, which may disproportionately influence the results. First, in terms of governance structures, these municipalities hold a higher administrative status and political importance. Consequently, they tend to possess more capable government officials and more efficient policy execution. SOEs in these regions are typically larger, better resourced, and enjoy greater decision-making autonomy. Second, regarding market access, these municipalities frequently serve as pilot regions for national policies. For instance, the central government often implements pilot projects in emerging industries within these cities first, granting local enterprises early market access that is advantageous for innovation. Third, concerning innovation ecosystems, these municipalities host many of the nation's top universities, research institutions, venture capital firms, and the R&D centers of multinational corporations. They are also prioritized for national innovation policy support.

Given these factors, there is a concern that our main results might be driven by the specific characteristics of these four cities. To address this, we re-estimate our model after excluding all observations from these four municipalities. The results are presented in column (4) of [Table 6](#) and remain consistent with our baseline findings. We find that the coefficient of *GZW* in column (4) is 0.105 and is significantly positive at the 10% level. These results are all consistent with our main results, indicating that our conclusions are unchanged and that our findings are unlikely to be driven by unobservable factors.

### 6.5 Adding the city-fixed effect

As there might be other unobservable city-level variables that affect the dependent and independent variables at the same time, we include city-level fixed effects in our model. The regression results are presented in column (5) of [Table 6](#). In column (5), we observe a significantly positive coefficient of *GZW* on *Innovation*. Overall, we confirm that our results are robust in controlling for the effect of time-invariant and unobservable regional factors.

### 6.6 Adding city-level control variables

We further control the city-level factors that could influence the establishment of SASAC as well as firms' innovation, including the gross domestic product of a city (*GDP*), the amount of fiscal revenue of a city (*Fiscal*), the unemployment rate of a city (*Unemploy*), and the total

number of patent applications of a city (*Cityinnov*). The regression results in column (6) of Table 6 show that the coefficient of *GZW* on *Innovation* is significantly positive at the 1% level.

### 6.7 Alternative measures of innovation

We verify the baseline result by incorporating alternative measures of innovation. First, we use the total number of patent applications (*Patent*), calculated as the natural logarithm of 1 plus the total number of applications for invention patents, utility model patents, and design patents, as the dependent variable. Column (7) of Table 6 shows that the results are consistent with our baseline findings, indicating that the total number of patent applications increased after the establishment of the SASACs. In addition, we replace innovation output with innovation input calculated as the ratio of R&D expenditures to the total assets (*R&D*). Since the data on R&D expenditures is not publicly disclosed until 2006, and many firms did not incur these expenditures, the sample size reduces to 2,350. Column (8) of Table 6 shows that the coefficient of *GZW* is 0.002 and significant at the 10% level, indicating that R&D expenditures of local SOEs increase significantly after the establishment of the SASACs. We also use innovation efficiency (*IE\_inv*) as an alternative measure, which is calculated as invention patents scaled by R&D expenditures (Hirshleifer, Hsu, & Li, 2013). After removing the samples with missing or zero R&D expenditures, the sample size becomes 664. As shown in column (9) of Table 6, the coefficient of *GZW* is significantly positive. The above results suggest that the innovation outputs as well as the innovation efficiency of SOEs are significantly enhanced by the establishment of SASACs.

To test the effect of the establishment of local SASACs on SOEs' innovation over a longer horizon, we use *Innovation* in  $t+2$  and  $t+3$  as the dependent variables. As shown in columns (10) and (11) of Table 6, when the dependent variables are *Innovation* in  $t+2$  and  $t+3$ , the coefficients of *GZW* are all significantly positive. The above results indicate that our findings are robust to these measures and that the establishment of SASACs has a long-term effect on SOEs' innovation outputs.

## 7. Conclusion

Using the establishment of municipal SASACs as a quasi-natural experiment, we empirically explore the impact of unifying supervision rights and responsibilities of SOEs on their innovation performance. Our findings suggest that establishing municipal SASACs has a significantly positive impact on SOEs' innovation. These findings indicate that the common agency problem arising from multiple government departments (principals) supervising SOEs (agents) can be mitigated by unifying the rights of supervising SOEs to a single and specialized governmental principal. Mechanism tests reveal that the establishment of SASACs promotes SOE innovation by promoting government authorization and mitigating agency problems. The cross-sectional analyses show that the main effect is more salient when SASACs are subordinate to high-quality governments, when firms operate in more competitive industries, when firms have a higher proportion of state-owned shareholdings, and when firms have older board chairmen. In addition, our economic consequence tests indicate that the increase in innovation translates into higher firm value.

Our study provides several important theory and policy implications. First, we demonstrate that unifying rights and responsibilities under a single specialized principal—namely, the SASAC—effectively mitigates the common agency problem and boosts innovation. By analyzing the establishment of the SASAC, which took over the management of SOEs from multiple government departments (i.e. multiple principals), we find a significant improvement in SOE innovation performance. This empirical evidence confirms the theoretical prediction of Bernheim and Whinston (1986) that non-cooperative multiple principals induce incentive distortions. Specifically, when separate agencies design performance and incentive schemes independently, they do not internalize the externalities imposed on one another, leading firms

away from efficient outcomes. Overall, our results indicate that unifying rights and responsibilities under one specialized governmental principal (i.e. the SASAC) can resolve these conflicts and enhance performance without resorting to privatization. As multiple-principal conflicts impact SOEs in developed and developing economies (OECD, 2024) as well as multinational SOEs (Aharoni, 2017), our findings extend beyond China to offer a practical global solution for SOE reform, particularly for emerging economies seeking to boost SOE efficiency while maintaining state control. This is also crucial for strategic sectors where state ownership remains essential, as pursuing privatization at the current stage is often unfeasible for these industries.

Second, we identify two key mechanisms through which unified supervision enhances innovation: greater government authorization and reduced agency problems. Because innovation is central to long-term competitiveness, SOEs and their supervising authorities can promote innovative performance by strengthening oversight coherence while granting firms clearer and more credible decision-making authority.

Third, although our research setting began in 2003, the policy implications remain highly relevant today. Since the 18th National Congress of the CPC, both the central SASAC and its local counterparts have accelerated efforts to unify the supervision of operational state-owned assets, such as the financial assets and cultural assets held by party and government offices as well as the public institutions. Our findings offer both theoretical evidence and practical implications for these reforms, highlighting, for instance, that government quality is a crucial determinant of success in unifying supervisory authority.

#### Notes

1. We use China National Heavy Duty Truck Group Co., Ltd. (Sinotruk) as an illustrative case and summarize the detailed responsibilities of those government departments engaged in SOE supervision. The detailed case and documents are included in [Appendix B](#).
2. Micro-mechanisms of multi-principal conflicts are detailed in [Appendix C](#).
3. In China, there are a total of 333 prefecture-level administrative regions (including 293 municipal cities, 7 districts, 30 autonomous prefectures, and 3 leagues), and 4 municipalities directly under the central government. Over 290 prefecture-level SASACs had been established by 2011. During the period of 2012–2019, less than ten local SASACs were established each year, and many of them do not control any public SOEs. Consequently, the sample during 2001–2011 effectively captures the majority of local SASAC establishment.
4. In China, public firms are listed as ST firms if they have two consecutive years of losses and have received a delisting warning, and public firms are listed as PT firms if they have three consecutive years of losses and have been suspended from listing.
5. Given that the ownership structure is disclosed annually by public firms, we can empirically distinguish the SOEs controlled by SASAC from those controlled by other governmental departments. For example, Inner Mongolia Lantai Industrial Co., Ltd. (SH. 600328) was controlled by the Economic Committee of Alxa League in 2004, and GZW equals 0. Luzhou Laojiao (SZ. 000568) was controlled by the SASAC of Luzhou in 2004, and GZW equals 1.
6. There are a few SOEs not consistently controlled by SASACs during our sample period. Specifically, among the 667 sample firms, 16 firms experienced changes in their ultimate controllers during our sample period, shifting between SASACs and other governmental divisions. Consequently, GZW for those samples does not consistently equal 1 after SASAC's establishment. Nevertheless, we argue that these transitions of control rights also indicate how the unification of rights and responsibilities by SASACs affects SOEs' innovation.
7. It should be noted that our panel is unbalanced. Specifically, 111 firms (433 firm-year observations) had not yet gone public when their local SASAC was established, so their pre-SASAC attributes cannot be calculated. Excluding these observations leaves 4,197 firm-year observations. After further removing observations with missing values for the variable *Burden*, our sample comprises 4,120 firm-year observations.

8. To rule out potential confounding effects between agency costs and government authorization (i.e. the administrative expenses may simply reflect government-imposed policy burdens), we examine the correlation between *Burden* and *Agencycost*. The correlation coefficient is  $-0.018$ , with a  $p$ -value of  $0.2527$ , suggesting that the two variables capture different dimensions of firm characteristics and mitigating the concern that administrative expenses merely reflect policy burdens imposed by the government.
9. The industry classification is based on the “Industry Classification Guidelines for Public Firms” issued by the China Securities Regulatory Commission in 2001.

### Supplementary material

The supplementary material for this article can be found online.

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