



## Earnings management of Chinese central state-owned enterprises – the effects of state level incentives

Hong Fan & Xiaofei Song

To cite this article: Hong Fan & Xiaofei Song (2017): Earnings management of Chinese central state-owned enterprises – the effects of state level incentives, Asia-Pacific Journal of Accounting & Economics, DOI: [10.1080/16081625.2017.1386576](https://doi.org/10.1080/16081625.2017.1386576)

To link to this article: <http://dx.doi.org/10.1080/16081625.2017.1386576>



Published online: 06 Oct 2017.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



# Earnings management of Chinese central state-owned enterprises – the effects of state level incentives\*

Hong Fan and Xiaofei Song

Department of Accounting, Sobey's School of Business, Saint Mary University, Halifax, Canada

## ABSTRACT

This study builds upon the argument of alignment effect and posits that the close alignment of the interests between Chinese central state-owned enterprises (CSOEs) and those of the Chinese central government creates state-level incentives (e.g. GDP volatility mitigation) for CSOEs to manage earnings. Consistent with our proposition we find that Chinese CSOEs engage in earnings management to reduce GDP volatility. Furthermore, we find that Chinese CSOEs only use the real earnings management approaches that also reduce enterprise earnings volatility to mitigate GDP volatility.

## ARTICLE HISTORY

Received 11 September 2016  
Accepted 19 September 2017

## KEYWORDS

Earnings management;  
central state-owned  
enterprises; alignment effect;  
China

## Introduction

This study investigates the earnings management of Chinese central state-owned enterprises (CSOEs) from the perspective of an extended alignment effect. The argument of alignment effect suggests that when the controlling shareholder of a firm is sufficiently large, the controlling shareholder's interests will be closely aligned with the firm's interests. The close alignment between the interests of the controlling shareholder and those of the firm could affect the firms' earnings management behavior (Shleifer and Vishny 1986). Alignment effects are stronger in countries with weaker legal and institutional environments such as China (Ding, Zhang, and Zhang 2007). We extend the alignment effect to argue that the close alignment between the interests of Chinese CSOEs and those of their state owner could induce state-level incentives for CSOEs to manage earnings.

State-owned enterprises (SOEs) have traditionally been dominant forms of business in China. Although traditional SOEs have declined significantly in both number and importance in China, Chinese CSOEs, a new type of Chinese SOE, have become more important in the Chinese economy. Chinese CSOEs are over-sized and well-funded national-champion conglomerates that monopolize strategic industries domestically and that compete aggressively in investment and acquisitions arenas internationally. The Chinese central government maintains close control of the Chinese CSOEs, not only by controlling shareholdings but also through its supervisory authority and policy-making power (Lin and Milhaupt 2013). We argue that the Chinese central government's control over Chinese CSOEs gives rise to state-level earnings management incentives. One of the Chinese government's greatest achievements has been its initiation of unprecedented economic growth while maintaining stability. Therefore, we posit that state-level incentives motivate Chinese CSOEs to engage in earnings management to mitigate GDP volatility, allowing the Chinese population to feel more stable and secure.

**CONTACT** Xiaofei Song  xiaofei.song@smu.ca

\*Accepted by Suresh Radhakrishnan upon recommendation by Yuan Zhang

Our test sample includes 100 Chinese CSOEs drawn from the China Securities Index (CSI) Central SOEs 100 Index, which includes the largest 100 public CSOEs that are ultimately controlled by the central government.<sup>1</sup> Using a control sample of 100 local SOEs included in the CSI local SOE index and 200 non-SOEs included in CSI non-SOE index, from 2003 to 2015, we find that Chinese CSOEs chose real earnings management approaches that enabled them to increase (decrease) their contributions to the national GDP in low (high) GDP growth years. Furthermore, we find that the earnings management approaches chosen by CSOEs also increase (decrease) reported enterprise earnings in low (high) GDP growth years.

This study's contributions to the SOE earnings management literature are twofold. First, to the best of our knowledge, this study is the first to explore earnings management by Chinese CSOEs for state-level incentives. While limited prior studies have examined earnings management by Chinese SOEs, none have focused on powerful Chinese CSOEs. Also, although state-level incentives have been found to affect SOE tax behaviors (e.g. Chen et al. 2015; Deng and Luo 2011; Li, Feng, and Cao 2016), the effects of state-level incentives on SOEs' earnings management have never been explored. The close alignment of the interests of Chinese CSOEs and the central government differentiates CSOEs from local SOEs, whose interests are aligned with local governments. The findings of this study provide understandings of the behavior of the dominant force in one of the world's largest economies. Second, this study furthers the literature on earnings management by examining the additional effects of various accrual and real earnings management approaches (e.g. on GDP volatility). We argue and show evidence that ownership concentration not only influences firms' objective of earnings management but also choices of earnings management approaches. While diverse corporate ownership structures are dominant in the United States, firms with more concentrated ownership structures similar to those of SOEs are more commonly found in China and many other countries and jurisdictions around the world (La Porta et al. 2000). Information on the earnings management behaviors of SOEs should be of interest to researchers, policy makers, business executives and investors in this time of globalization. This study presents a new perspective to further the investigation of SOE earnings management schemes.

The findings of this study also have practical implications. Chinese CSOEs play unique and significant roles in China's economic growth and development. The Chinese government recently issued a new policy directive seeking the expansion of the mixed-ownership of CSOEs and the relaxation of restrictions on roles played by private investors in an effort to improve the performance of SOEs. The Chinese government's new reform initiative could potentially create vast investment opportunities for international investors in the world's second largest and fastest growing economy.<sup>2</sup> A challenge faced by international businesses and investors operating in emerging markets such as China pertains to the more profound information asymmetry compared to those of established markets (Chan, Menkveld, and Yang 2008). Thus, the findings of this study should also be of interest to potential international businesses and investors in their assessments of the relevance and reliability of Chinese SOE accounting information and in making business and investment decisions.

This paper is organized as follows. The first section summarizes the evolution of Chinese SOEs throughout post-Cultural Revolution economic reforms and introduces the CSOEs; the next section reviews the earnings-management literature, particularly the literature regarding SOE earnings management, and develops hypothesis; the sections following present the research design, a discussion of the results and final remarks.

## The evolution of Chinese SOEs

Chinese SOEs have evolved significantly since the start of post-Cultural Revolution economic reforms. Prior to these economic reforms, all Chinese enterprises were state-owned. Beginning in the late 1970s, along with the rise of both commercial enterprises and a market economy, many small- and medium-sized SOEs that suffered from low levels of productivity and persistent losses were privatized. By the late 1990s, less than 40% of Chinese business enterprises were SOEs, and they controlled roughly 70% of all assets (Xu, G. 2010). Since then, Chinese SOEs have continued to decline in number. By the

end of 2008, less than 5% of all Chinese enterprises were SOEs. However, the remaining small number of Chinese SOEs controlled nearly half of all total assets and generated nearly half of all industrial and business profits (Cary 2013). The shrinking number of SOEs was a result of concerted efforts to consolidate disparate SOEs, which led to the emergence of CSOEs in strategic industries (Anonymous 2012).

Of the 144,777 Chinese SOEs currently in operation, less than 0.1% are CSOEs controlled by the central government through the State-Owned Assets Supervision and Administration Commission (SASAC) (Cary 2013). These centrally controlled SOEs are the largest and most important Chinese enterprises. Through their multiple subsidiaries, Chinese CSOEs include almost all the most familiar Chinese companies (Scissors 2011). Three Chinese companies were among the top 10 of the 2016 Fortune Global 500 list, and they were all CSOEs: State Grid, China National Petroleum and Sinopec Group.<sup>3</sup> These Chinese CSOEs also serve as key instruments of China's international expansion; of China's \$60 billion in investments and acquisitions overseas in 2011, 80% came from CSOEs (Cary 2013). For instance, in February 2017 ChemChina acquired Swiss agribusiness giant, Syngenta. The two entities will merge to create what will be the world's largest chemical group.<sup>4</sup>

The SASAC is a government agency that reports to the State Council (China's cabinet). Through the various wholly state-owned holding companies, the SASAC maintains controlling ownership (>50%) over all Chinese CSOEs. More importantly, the SASAC exercises additional control as a supervisory authority and policy-maker, subjecting Chinese CSOEs to tight governmental controls not typically applied to businesses (Lin and Milhaupt 2013). For instance, the SASAC has the responsibility to 'appoint or remove the responsible persons for the invested enterprises and evaluate their performance in accordance with the statutory procedures and granting rewards impose punishments based on the evaluation results' (State Council of the People's Republic of China's 2003). While SOEs are for-profit enterprises according to the Chinese government, countless anecdotes show that when state interests do not fully coincide with business interests, state interests trump business decisions (Canadian Trade Commissioner Service in China). As quasi-state apparatus, Chinese CSOEs also enjoy tremendous support and privileges, which include access to more markets (Luo 2003), lower borrowing rates and preferential policy treatment (Chen et al. 2016; Fan and Hope 2013).

As China is rapidly becoming the world's largest economy and the second-largest trading partner to both the US and Canada,<sup>5</sup> Chinese CSOEs are becoming key players in the global economy. Understating the behaviors of Chinese CSOEs could be helpful to companies that compete directly or that are given opportunities to form partnerships with Chinese CSOEs. In an effort to promote continuous economic growth and to reduce inefficiency levels, the third Plenum of the Chinese Communist Party's 18th Congress (October 2013) and the National Peoples' Congress have formally approved a plan to expand CSOE mixed ownership to attract private and foreign capital (March 2014). Fifty-two percent of the CSOEs and their subsidiaries already host some form of private investment according to the SASAC, but the roles of private investors have remained rather restricted thus far. Such expansion could create significant investment opportunities for international investors. Knowledge that could help reduce information asymmetry often encountered in emerging market investment should be of great interest to international investors.

Information on the accounting decisions of Chinese CSOEs could also further our understanding of the financial reporting of SOEs in general. SOEs play significant roles in many emerging and transitional economies (Government of Canada 2014). Even in established market economies such as the US and Canada, SOEs are critical in certain economic sectors. The recent global financial crisis that resulted in increased governmental intervention in certain industries also brought to light certain hidden problems in these enterprises. A better understanding of SOE behaviors could facilitate more effective regulation and supervision in these jurisdictions.

## Earnings management research

The traditional earnings management literature is based on agency theory (Jensen and Meckling 1976), which focuses on conflicts of interests between shareholders (principals) and management (agents).

SOEs and corporations with more concentrated ownership face a different set of institutional factors and corporate governance issues from those faced by typical North American corporations. According to La Porta, Lopez-De-Silanes, and Shleifer (1999) agency problems faced by firms like SOEs involve the expropriation of minority shareholders by controlling shareholders rather than the expropriation of shareholders by management.

One of the main research questions of SOE earnings management studies is whether SOEs engage in more earnings management than non-SOEs. Corporate governance studies often associate state ownership with poor corporate governance, low levels of corporate efficiency, corporate corruption and fraud, more frequent earnings management and low earning quality (Boardman and Vining 1989; Megginson, Nash, and Van Randenborgh 1994; Shleifer 1998). On the other hand, Wang and Yung (2011) argue that political costs and state protection could 'mitigate the pressure on managers to manipulate firm-specific information.' The empirical evidence on this matter is inconclusive. Liu, Saidi, and Bazaz (2014) note that Chinese SOEs manage their earnings more frequently and achieve lower levels of earnings quality than non-SOEs. Contrary to this, Chen et al. (2011) and Wang and Yung (2011) show that compared to their private counterparts, Chinese SOEs exhibit significantly lower levels of earnings management.

Ding, Zhang, and Zhang's (2007) non-linear model may reconcile the seeming conflicting empirical findings of SOE earnings management studies. Ding, Zhang, and Zhang (2007) used an inverted U-shaped configuration to capture the relationship between SOE state ownership and SOE earnings management levels and referred to it as the alignment effect. Specifically, they argued and found evidence that, compared to non-SOEs, SOEs exhibited higher levels of earnings management because the state as a controlling owner had a greater capacity to expropriate minority owners. However, highly concentrated ownership aligned the interests of controlling owners and firms to such an extent that earnings management activities that could harm firm value were also detrimental to controlling owners. They concluded that extremely concentrated majority ownership was associated with reduced earnings management.

We argue that the unique institutional characteristics of Chinese CSOEs subject them to incentives to manage earnings that can be different from those of other companies. First, all Chinese CSOEs are tightly controlled by the same central Chinese government. Through the SASAC, the Chinese central government controls all aspects of CSOEs, including management performance evaluations and rewards. Thus, it is highly important for the managers of Chinese CSOEs to gain government approval by supporting the government's political, social, and financial goals. Second, there are fundamental differences between the ultimate goals of a government and those of a corporation. While a government is responsible for the political, social, and financial benefits of its citizens or constituents, corporations are primarily profit seeking. The Chinese government requires SOEs to assist the government in achieving its goals (Deng and Luo 2011). For instance, in its 13th five-year plan,<sup>6</sup> the state proposes to maintain a GDP growth rate of 6.5% over the next five years (2016–2020)<sup>7</sup> and requires SOEs to increase efficiency levels and to transform to a mixed-ownership economy.<sup>8</sup> In China, it is a widely held view that the success of SOEs as national champion enterprises are often measured by their contributions to national interests, such as successful prestige projects, not necessarily by firm level profits (Cary 2013).

One of China's chief accomplishments lies in its unprecedented economic growth, which has created the foundation for China's political and social stability. Although the ruling Chinese Communist Party has had no serious political challengers over more than two decades of democratic election history, the government is keen to prevent murmuring discontent concerning issues of inequality, corruption, pollution, human rights, etc. from escalating into open protests. Continuous and sustained economic growth requires careful pacing. Growing too fast could cause the economy to overheat, which inevitably would lead to a slowdown. For instance, like most countries, China experienced astonishingly rapid growth in 2006 and 2007 prior to the recent global financial crisis. Economic policies imposed by the Chinese government throughout this period were mainly designed to prevent the economy from becoming overheated. During the major slowdown of the global financial crisis of 2008 and 2009, the

government applied various stimulus policies to revive growth. Chinese CSOEs should be motivated to collaborate with the government in its efforts to maintain economic stability. Stated alternatively, our hypothesis regarding Chinese CSOE state-level earnings management incentives is as follows:

**Hypothesis:** *Chinese CSOEs are motivated to engage in GDP-increasing (GDP-decreasing) earnings management in low (high) GDP growth years.*

Although Chinese CSOEs are influenced by institutional factors that are different from those faced by other types of business enterprises, Chinese CSOEs are business enterprises nevertheless. As is the case for all for-profit businesses, profitability is a relevant performance measure and has implications for valuation. Prior studies have established that a steady reported earnings stream could enhance firm value and could benefit managers in many ways (Lambert 1984; Trueman and Titman 1988). We argue that in addition to state-level incentives, Chinese CSOEs are subject to similar institution-level earnings management incentives, e.g. to mitigate earnings volatility. Given that the economic factors that give rise to GDP volatility are also likely to affect Chinese CSOE earnings volatility, Chinese CSOE earning smoothing efforts could be associated with GDP smoothing efforts.

Three methods of GDP calculation are available: the Expenditure Approach, the Production Approach and the Income Approach.<sup>9</sup> Chinese GDP calculations are mainly based on the Production Approach, while the results of the other two methods are used as a reference (Xu, X. 2010). The Production Approach is also referred to as the Net Product or Value Added method. When using this method, the GDP is the difference between the output, which is calculated as the quantity of products multiplied by the market value of products, and the intermediate consumption (e.g. materials, labor costs, etc.). Different earnings management approaches affect Chinese GDP differently. As a result, we expect that Chinese CSOEs prefer the earnings management approaches that can mitigate both GDP volatility and firm earnings volatility.

## Research design

### The model

To test the hypothesis of this study, we use the regression model expressed as Equation (1):

$$\begin{aligned}
 EM_{it} = & \beta_0 + \beta_1 CSOE_i + \beta_2 HighGDPGrowth_{t-1} + \beta_3 LowGDPGrowth_{t-1} \\
 & + \beta_4 CSOE_i \times HighGDPGrowth_{t-1} + \beta_5 CSOE_i \times LowGDPGrowth_{t-1} \\
 & + \beta_6 SIZE_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 LEV_{i,t-1} + \beta_9 MTB_{i,t-1} \\
 & + \beta_{10} Marketization_{i,t-1} + \beta_{11} AUDITOR_{i,t-1} + \varepsilon
 \end{aligned} \tag{1}$$

In Equation (1), *EM* denotes the various measures of both accrual-based and real earnings management; *CSOE*, *LowGDPGrowth* and *HighGDPGrowth* are dummy variables that identify Chinese CSOEs and extremely low and extremely high GDP growth years, respectively; *ROA*, *LEV*, *SIZE*, *AUDITOR*, *Marketization* and *MTB* are control variables (returns on assets, financial leverage, firm size, big-8 auditors, the Marketization index, and the market-to-book ratio, respectively) that are identified by the earnings management literature as having an impact on a firm's earnings management activities (e.g. Cheng, Wang, and Wei 2015).  $\varepsilon$  is the error term. Subscripts *i* and *t* identify the firm and year, respectively. The GDP growth year dummy variables and all control variables in the model are lagged by one year.

### Dependent variables – The earnings management variables

The literature has identified different approaches to earnings management. We follow Cohen and Zarowin (2010) in measuring accrual earnings management and Roychowdhury (2006) in computing three metrics of real earnings management: overproduction, abnormal cash flows from operations, and reductions of discretionary expenses.

The earnings-management measure estimates and their impacts on GDP are described below.

(1) *Accrual earnings management* (Accrual EM)

We use the following model to estimate normal accruals.

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \varepsilon_{it} \quad (2)$$

In Equation (2),  $TA_{i,t}$  denotes Total Accruals calculated as earnings before extraordinary items and discontinued operations minus operating cash flows;  $Assets_{i,t-1}$  denotes total assets from the preceding year;  $\Delta Sales_{i,t}$  denotes changes in revenue calculated as the current year's revenue minus last year's revenue; and  $PPE_{i,t}$  is the gross value of property, plants and equipment. The normal accruals (NA) of each firm and year are estimated using Equation (2). Discretionary accruals is the difference between actual accruals and normal accruals,  $TA_{i,t}/Assets_{i,t-1} - NA_{i,t}$ .

Accrual-based earnings management achieves desirable reported earnings by manipulating the timing of revenue and expense recognition. To illustrate the impacts of an accrual-based earnings management approach on GDP, we use the example of a manufacturer who 'manages' inventories and costs of goods sold in a low GDP growth year. According to the cost of goods sold model, the sum of Beginning Inventory and Production equals the sum of Ending Inventory and Cost of Goods Sold. In a low GDP growth year, to increase reported earnings using this approach, a CSOE would need to assign a higher value to Ending Inventory and a lower value to Cost of Goods Sold. This would not have any impact on the output of the CSOE's total production level and would thus have no effect on production based GDP. As a result, accrual EM is not an effective approach for state-level incentives since there is no significant impact on GDP.

(2) *Real earnings management*

Roychowdhury (2006) presents a detailed discussion of the three measures of real earnings management: abnormal production costs, abnormal cash flows from operations (CFO), and abnormal discretionary expenses.

(1) Abnormal production costs (APROD)

Normal production costs are estimated using Equation (3):

$$\frac{PROD_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + k_4 \frac{\Delta Sales_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{it} \quad (3)$$

In Equation (3),  $PROD_{i,t}$  is the sum of the cost of goods sold and the change in inventory for this year, while all other variables are defined as those in Equation (2). The APROD is the difference between the actual and normal production cost, which is estimated using Equation (3). Holding unit sales constant, a higher APROD indicates that firms have lowered the cost of goods sold, and thus reported higher earnings, through overproduction (Roychowdhury 2006). Overproduction would contribute positively to Chinese production-based GDP. Thus, the APROD is an effective earnings management approach to smooth GDP as well as enterprise earnings simultaneously.

(2) Abnormal cash flow from operations (ACFO)

A normal CFO is estimated using Equation (4):

$$\frac{CFO_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + k_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{it} \quad (4)$$

In Equation (4),  $CFO_{i,t}$  denotes cash flow from operations in period t, and all other variables are as defined as above. Abnormal CFO is the difference between the actual and normal CFO calculated

using the estimated coefficients from Equation (4), and the ACFO is the negative value of Abnormal CFO. We take the negative value here to capture the upward effect on GDP and earnings. A higher ACFO (i.e. lower abnormal CFO) indicates that a firm might have provided additional discounts and/or more lenient credit terms to temporarily increase sales and thus the earnings of the period. Such forms of sales management are expected to lead to lower current period CFO levels, as the cash collection of such sales often are slower than normal (Roychowdhury 2006). Additional sales would be counted as additional spending by customers, and spending would be expected to lead to more production, thus resulting in more indirect contributions to GDP from the customers. Consequently, ACFO could serve as an effective earnings management approach for both GDP smoothing as well as enterprise earnings smoothing.

Both real earnings management approaches based on overproduction and on abnormal CFO have the same direction effects on GDP and CSOE earnings, therefore, could reduce the volatilities of earnings and GDP at the same time, if the volatilities in GDP and CSOE earnings happen concurrently, which we expect. We argue that overproduction-based real earnings management is more efficient than abnormal CFO-based real earnings management for GDP smoothing. First, the overproduction-based approach manipulates the timing of production and is not likely to cause real economic losses, whereas the abnormal CFO-based approach manipulates the timing of sales at a real economic cost, i.e. the additional discount offered for early sales. Second, overproduction may require additional purchases during the period, whereas the abnormal CFO-based approach may require additional sales from a willing partner. As companies tend to have more control over buying than selling, the overproduction-based approach is easier to apply than the abnormal CFO-based approach. We predict that the overproduction-based approach is preferred by Chinese CSOEs to the abnormal CFO-based approach for the purposes of earnings management.

### (3) Abnormal discretionary expenses (ADISX)

We model the normal level of discretionary expenses using Equation (5):

$$\frac{DISX_{i,t}}{Assets_{i,t-1}} = k_1 \frac{1}{Assets_{i,t-1}} + k_2 \frac{Sales_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{it} \quad (5)$$

In Equation (5),  $DISX_{i,t}$  denotes discretionary expenses defined as the sum of advertising expenses, research and development expenses and sales and general and administrative expenses. The ADISX is the difference between actual and normal discretionary expenses predicted through Equation (5). A higher ADISX denotes more firm spending. Other things being equal, a higher ADISX should lead to higher GDP, but lower firm earnings.

All measures of real earnings management are signed measures. Further, the signs are set so that all measures of real earnings management have an upwards effect on GDP. Accruals based earnings management has no impact on GDP.

We used a cross-sectional model to measure accrual based earnings management and the three metrics of real earnings management, where we estimated the models for each 2-digit industry for each year. Following Cohen and Zarowin (2010), we required at least eight observations for each industry and year group and sufficient data to calculate all four earnings management variables. This approach reduced our sample size and might have biased our sample by including more successful firms. However, we believe that this approach also reduces variations in earnings management metrics, 'resulting in a more conservative test of our research questions' (Cohen and Zarowin 2010, 6).

### **The independent variables**

Chinese CSOE is a dummy variable that is equal to 1 if a firm is included in the CSI Central State-Owned Enterprises 100 Composite Index and that is equal to 0 otherwise. The GDP growth rate is calculated as the current year's GDP minus last year's GDP divided by last year's GDP. *LowGDPGrowth*



is a dummy variable that takes a value of 1 if GDP growth falls within the lowest 25% for 2003–2015 (i.e. equal to or lower than  $-6\%$ ) and that takes a value of 0 otherwise. Low GDP growth years include 2008, 2011, and 2012. *HighGDPGrowth* is a dummy variable taking a value of 1 when GDP growth is in the top 25% for 2003–2015 (i.e. equal to or higher than  $11\%$ ) and taking a value of 0 otherwise. High GDP growth years include 2005, 2006, 2007 and 2010. In our regressions, the lagged variables are used.

The use of high and low GDP growth years to proxy for high economic pressure periods is supported by the GDP growth targets set periodically by the Chinese central government in its Report on the Work of the Government. The Chinese government set fairly constant GDP growth targets during our sample period: from  $7\%$  to  $8\%$ . The years identified as the periods in which China experienced economic growth pressure, i.e. the years with low or high lagged GDP growth years, are supported by patterns of Chinese economic and financial cycles: China experienced rapid growth before 2007; it was hit by the global financial crisis in 2008, 2011 and 2012.<sup>10</sup> The Chinese central government uses fiscal and monetary policies to boost GDP growth when it slows down and to cool down GDP growth when it is high. For instance, from 2006 to 2007, which are the high GDP years in our sample, the Chinese central bank increased the required reserve ratio seven times for commercial banks to cool the investment and the economy.<sup>11</sup> In late 2008, which is the low GDP year in our definition, the Chinese central government announced a four trillion yuan ( $\$586$  billion) investment plan to stimulate the economy and to avoid the economic downturn caused by the financial crisis.<sup>12</sup> In addition, we calculated the GDP difference between the current year's GDP growth rate and the previous year's GDP growth rate, and we define the top 25% as the high GDP growth years and the bottom 25% as the low GDP growth years. Using this definition yielded the same low and high economic growth pressure years.

Our hypothesis posits that Chinese CSOEs manage earnings to smooth GDP. A negative  $\beta_4$  ( $CSOE_i \times HighGDPGrowth_{t-1}$ ) and a positive  $\beta_5$  ( $CSOE_i \times LowGDPGrowth_{t-1}$ ) in Equation (1) from regressions on all real earnings management dependent variables will support our hypothesis of GDP smoothing. To the extent that the same economic factors that cause GDP volatility also cause CSOEs' earnings volatility, a negative  $\beta_4$  and a positive  $\beta_5$  from regressions on ARPOD and ACFO mean the real earnings management to smooth GDP with APROX and ACFO also results in lower earnings volatility. However, a negative  $\beta_4$  and a positive  $\beta_5$  from regressions on ADISX mean the real earnings management to smooth GDP with ADISX results in higher earnings volatility. Accruals based earnings management has no impact on GDP. Consequently, we expect that Chinese CSOEs prefer APROD- and ACFO-based real earnings management approaches over accrual- and ADISX-based earnings management approaches to smooth GDP.

Control variable *SIZE* is the natural logarithm of total assets. *LEV* is calculated as long-term debt at the current year-end divided by the book value of equity at the current year-end. *ROA* is calculated as the net income of the current year divided by the beginning balance of total assets of this year. *MTB* is the market value of a firm divided by the book value of a firm for this year. *AUDITOR* is a dummy variable that is equal to 1 if the auditor is a big-8 auditor in China (Cheng, Wang, and Wei 2015), and it is equal to 0 otherwise. Big-8 auditors include the big 4 international auditing firms (i.e. PwC, E&Y, Deloitte, and KPMG) and the four largest Chinese auditing firms identified by Cheng, Wang, and Wei (2015), which are RSM China, Shu Lun Pan, Zhejiang Pan-China, and Shine Wing. Marketization denotes the extent of marketization development in each province, and the index is obtained from Fan (2011).<sup>13</sup>

Most of the data we used (e.g. *ROA*, *LEV*, *SIZE*, *AUDITOR*, *MTB* and data for calculating earnings management levels) were retrieved from Capital IQ. Chinese GDP data were collected from Statistics of China.<sup>14</sup> Firm types (i.e. central SOEs, local SOEs and non-SOEs) are categorized based on indexes provided through the China Securities Index Co. Ltd.<sup>15</sup>

### Sample and summary statistics

The sample includes 400 public firms from the Shanghai and Shenzhen Stock Exchanges: 100 firms from the CSI Central State-Owned Enterprises 100 Index as a test sample, 100 firms from the CSI

Local State-Owned Enterprises 100 Index and 200 firms from the CSI Private-Owned Enterprises 200 Index as a control sample. The index defines CSOEs as public companies that are ultimately controlled by the central government through various holding companies wholly-owned by the SASAC.<sup>16</sup> For instance, Datong Telecom Technology Co. Ltd, a public CSOE listed on the Shanghai Stock Exchange, is controlled by the holding company Datang Telecom Technology & Industry Group, which is fully owned and supervised by the SASAC.<sup>17</sup> All firm the in indexes are the largest, most liquid and most representative of their respective constituents.

The sample period runs from 2003 to 2015 and is inclusive. The initial sample includes 5200 observations (firm-years): 1300 CSOE observations, 1300 local SOE observations and 2600 non-SOE observations. Our sample selection is based on indexes for 2015, and our sample was reduced because some firms went public after 2003. After eliminating observations with missing values for earnings management measures and control variables, the final sample consisted of 2475 observations (647 CSOE observations, 739 local SOE observations and 1089 non-SOE observations). Table 1 describes the sample selection process.

Table 2 presents statistical descriptions of the variables for CSOE, local SOE and non-SOE subsamples. The average accrual EM level is 0.064 for CSOEs and is 0.091 for local SOEs and non-SOEs. CSOEs appear to engage in less upward accrual-based earnings management activities, and the difference is significant. Differences between the means of all real earnings management measures for the two subsamples are insignificant.

The CSOEs are significantly larger on average compared to local SOEs and non-SOEs. However, the CSOEs are more highly leveraged and are less profitable with a leverage of 109% and an ROA of 5.2% compared to the mean leverage of 59.1% and mean ROA of 9.20% for the control group. These differences are statistically significant. The CSOE market-to-book ratio is lower on average (3.6) than that of the control companies (3.9), but the difference is not significant. More than half of the CSOEs use big-8 auditors, while only 35% of local SOEs and non-SOEs use big-8 auditing firms. This difference is also statistically significant. The two subgroups do not have significant differences in marketization scores.

The correlation coefficients of the key regression variables are presented in Table 3. Overall, the variable correlations are low, except the correlation between *MTB* and *LEV*. We removed one of them from the regressions, and the results do not change qualitatively. Therefore, we keep both variables in the regressions.

## Results

### Hypothesis tests

Regressions of the coefficient test results are presented in Table 4. We performed a Hausman test to compare the random effects model and ordinary least squares model with the fixed effects model. The

**Table 1.** Sample selections.

Variables	Central SOEs	Local SOEs & Non-SOEs
Initial sample (firm-year)	1300	3900
Deletions due to missing data for:		
$ACFO_{it}$	-442	-1393
$ROA_{it-1}$	-6	-20
$Market\ to\ book\ ratio_{it-1}$	-194	-641
$Marketization_{it-1}$	-11	-18
Final sample	647	1828
Total final sample (firm-year)		2475

Notes: The initial sample consists of 100 central SOEs, 100 local SOEs and 200 non-SOEs for the period of 2003–2015 (400 firms  $\times$  13 years).

The variables are defined in Table 2.

**Table 2.** Statistic description.

Panel A: Continuous variables							
Variables	Central SOEs ( $n = 647$ )			Local SOEs & Non-SOEs ( $n = 1828$ )			T-test $p$ -value
	Mean	Median	SD	Mean	Median	SD	
$Accrual\ EM_{it}$	0.064	0.048	0.075	0.091	0.075	0.093	<b>0.000</b>
$APROD_{it}$	-0.002	0.000	0.093	-0.007	-0.001	0.170	0.508
$ACFO_{it}$	0.008	0.001	0.081	0.004	0.005	0.112	0.517
$ADISX_{it}$	-0.002	0.003	0.051	-0.007	0.002	-0.107	0.256
$SIZE_{it-1}$	10.560	10.339	2.334	9.042	8.881	1.556	<b>0.000</b>
$ROA_{it-1}$	0.052	0.034	0.067	0.092	0.070	0.105	<b>0.000</b>
$LEV_{it-1}$	1.093	0.617	4.519	0.591	0.394	0.783	<b>0.000</b>
$MTB_{it-1}$	3.598	2.118	13.797	3.915	2.950	3.225	0.361
$AUDITOR_{it-1}$	0.586	1.000	0.493	0.358	0.000	0.479	<b>0.000</b>
$Marketization_{it-1}$	8.934	9.630	2.320	8.952	9.360	2.074	0.839
Panel B: Discrete variables							
	Value	Ob.	Percent	Value	Ob.	Percent	
$CSOE_i$	1	647	26.14	0	1828	73.86	
$HighGDPGrowth_{t-1}$	1	782	31.60	0	1693	68.40	
$LowGDPGrowth_{t-1}$	1	768	31.03	0	1707	68.97	
$AUDITOR_{it-1}$	1	1033	41.74	0	1442	58.26	

Variable definition: *Accrual EM*: is abnormal accrual estimated based on modified Jones' model (1991); *APROD*: abnormal production following Roychowdhury (2006); *ACFO*: abnormal cash flow from operations following Roychowdhury (2006) multiplied by -1; *ADISX*: abnormal discretionary expenses following Roychowdhury (2006). *SIZE*: the natural logarithm of total assets; *ROA*: calculated as the net income in the current year divided by the beginning balance of total assets in this year; *LEV*: calculated as long-term debt at current year-end divided by book value of equity at current year-end; *MTB*: calculated as the market value of the firm divided by the book value of the firm in this year; *AUDITOR*: a dummy variable that is equal to 1 if the auditor is the big-8 auditor in China as identified by Cheng, Wang, and Wei (2015), and 0 otherwise; *Marketization*: the marketization development index of the province the firm is located (Fan 2011); *CSOE*: a dummy variable that takes value of 1 if the company is included in the China Security Index (CSI) State-owned Enterprises 100 index (Central SOE 100), and 0 otherwise; *HighGDPGrowth*: a dummy variable that takes value of 1 for years 2005, 2006, 2007 and 2010, and 0 otherwise; *LowGDPGrowth*: a dummy variable that takes value of 1 for years 2008, 2011, 2012 and 2015, and 0 otherwise.

test results favor the fixed effects model (untabulated). Therefore, we chose to use fixed effects model and controlled industry fixed effects to account for all industry level factors.

In Table 4, dependent variables for the four regressions are the four earnings management measures: *Accrual EM*, *APROD*, *ACFO* and *ADISX*. The adjusted R-squares based on real earnings management measures are comparable to those of prior studies on Chinese SOE earnings management (Chen et al. 2011; Ding, Zhang, and Zhang 2007; Liu and Lu 2007; Wang and Yung 2011).

As discussed in detail above, positive values of *Accrual EM* increase reported enterprise earnings. However, *Accrual EM* has no effects on GDP. Positive values of real earnings management variables *APROD* and *ACFO* increase GDP as well as enterprise reported earnings. Positive values of *ADISX* also increase GDP but decrease enterprise earnings.

For the regression on *Accrual EM*, the regression coefficients for interaction terms  $CSOE \times HighGDPGrowth$  and  $CSOE \times LowGDPGrowth$  are both negative but not significant. This result indicates that CSOEs do not engage in additional accrual-based earnings management activities in extremely high and low GDP growth years relative to the control companies.

For the regression on abnormal production-based real earnings management (*APROD*), regression coefficients for the interaction terms  $CSOE \times HighGDPGrowth$  are negative at -0.043 and significant at 1%. This means that during high GDP growth years, Chinese CSOEs decrease production levels, resulting in lower contributions to national GDP and lower reported firm earnings. Compared to the summary statistics of *APROD* in Panel A of Table 2, this result suggests that CSOEs on average reduced abnormal production by 0.46 of standard deviation in extremely high GDP growth years to reduce earnings as well as contributions to GDP. The regression coefficient for the interaction term  $CSOE \times LowGDPGrowth$  is positive at 0.035 and significant at 5%, meaning that during low GDP

**Table 3.** Regression variable correlations.

	CSE <sub><i>it</i></sub>	Accrual EM <sub><i>it</i></sub>	APROD <sub><i>it</i></sub>	ACFO <sub><i>it</i></sub>	ADISX <sub><i>it</i></sub>	SIZE <sub><i>it</i></sub>	ROA <sub><i>it</i></sub>	LEV <sub><i>it</i></sub>	MTB <sub><i>it</i></sub>	AUDITOR <sub><i>it</i></sub>	Marketization <sub><i>it</i></sub>	HighGDP Growth <sub><i>t-1</i></sub>
Accrual EM <sub><i>it</i></sub>	-0.135 (0.000)	1.000										
APROD <sub><i>it</i></sub>	0.013 (0.508)	0.100 (0.000)	1.000									
ACFO <sub><i>it</i></sub>	0.013 (0.517)	-0.088 (0.000)	-0.544 (0.000)	1.000								
ADISX <sub><i>it</i></sub>	-0.023 (0.256)	0.102 (0.000)	-0.485 (0.000)	0.090 (0.000)	1.000							
SIZE <sub><i>it</i></sub>	0.349 (0.000)	-0.411 (0.000)	-0.010 (0.628)	0.023 (0.253)	0.046 (0.022)	1.000						
ROA <sub><i>it</i></sub>	-0.181 (0.000)	0.297 (0.000)	-0.189 (0.000)	0.194 (0.000)	-0.033 (0.105)	-0.255 (0.000)	1.000					
LEV <sub><i>it</i></sub>	0.091 (0.000)	0.056 (0.005)	0.045 (0.026)	-0.025 (0.216)	0.029 (0.153)	0.106 (0.000)	-0.151 (0.000)	1.000				
MTB <sub><i>it</i></sub>	-0.018 (0.361)	0.277 (0.000)	-0.041 (0.044)	0.042 (0.035)	-0.035 (0.084)	-0.181 (0.000)	0.116 (0.000)	0.831 (0.000)	1.000			
AUDITOR <sub><i>it</i></sub>	0.203 (0.000)	-0.144 (0.000)	-0.008 (0.699)	-0.010 (0.620)	-0.047 (0.019)	0.405 (0.000)	-0.163 (0.000)	0.037 (0.069)	-0.078 (0.000)	1.000		
Marketization <sub><i>it</i></sub>	-0.004 (0.839)	-0.048 (0.016)	0.034 (0.092)	-0.035 (0.084)	-0.004 (0.856)	0.121 (0.000)	0.002 (0.931)	-0.002 (0.927)	-0.022 (0.266)	0.122 (0.000)	1.000	
HighGDPGrowth <sub><i>t-1</i></sub>	0.033 (0.103)	0.037 (0.069)	-0.018 (0.363)	0.027 (0.178)	-0.022 (0.272)	-0.174 (0.000)	0.039 (0.053)	0.023 (0.253)	0.105 (0.000)	-0.045 (0.026)	-0.132 (0.000)	1.000
LowGDP Growth <sub><i>t-1</i></sub>	-0.039 (0.051)	-0.017 (0.406)	0.022 (0.280)	-0.040 (0.046)	0.007 (0.735)	0.042 (0.039)	0.013 (0.521)	-0.015 (0.467)	-0.078 (0.000)	0.061 (0.002)	0.076 (0.000)	-0.456 (0.000)

Notes: The variables are defined in Table 2. The *p*-values of correlations are presented in parentheses.

**Table 4.** Test of hypothesis.

	Accrual EM	APROD	ACFO	ADISX
$CSOE_i$	-0.009* (1.66)	0.005 (0.38)	-0.010 (1.26)	-0.003 (0.39)
$HighGDPGrowth_{t-1}$	0.009** (2.30)	0.009 (1.03)	-0.002 (0.38)	-0.001 (0.17)
$LowGDPGrowth_{t-1}$	0.003 (0.82)	-0.005 (0.65)	0.001 (0.18)	0.003 (0.52)
$CSOE_i \times HighGDPGrowth_{t-1}$	-0.002 (0.26)	-0.043*** (2.59)	-0.000 (0.01)	0.011 (1.08)
$CSOE_i \times LowGDPGrowth_{t-1}$	-0.005 (0.65)	0.035** (2.11)	0.019* (1.68)	-0.007 (0.71)
$SIZE_{i,t-1}$	0.014*** (10.93)	-0.011*** (3.82)	-0.008*** (4.27)	-0.000 (0.19)
$ROA_{i,t-1}$	0.410*** (24.72)	-0.241*** (6.83)	-0.196*** (8.11)	-0.027 (1.19)
$LEV_{i,t-1}$	-0.010*** (7.16)	0.015*** (5.26)	0.007*** (3.51)	-0.008*** (4.32)
$MTB_{i,t-1}$	0.003*** (7.30)	-0.005*** (5.33)	-0.003*** (3.90)	0.003*** (4.28)
$Marketization_{i,t-1}$	-0.002** (2.40)	0.004** (2.22)	0.002* (1.82)	0.000 (0.11)
$AUDITOR_{i,t-1}$	-0.002 (0.51)	-0.007 (1.07)	0.002 (0.42)	0.016*** (3.63)
Intercept	-0.144*** (10.15)	0.091*** (3.02)	0.074*** (3.61)	-0.001 (0.04)
Industry fixed effect	Included	Included	Included	Included
$R^2$	0.27	0.06	0.05	0.02
$N$	2475	2475	2475	2475

Notes: The variables are defined in Table 2.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

growth years, Chinese CSOEs increase production levels, leading to increases in their contributions to GDP as well as increases in firm earnings. This result suggests that CSOEs on average increased abnormal production by 0.38 of standard deviation in extremely low GDP growth years to increase earnings as well as contributions to GDP. Taken together, these results support the predictions of our hypothesis, i.e. indicate that CSOEs engage in production-based real earnings management to smooth GDP. Additionally, the CSOEs' production-based earnings management activities in extreme high and low GDP growth years are likely to have resulted in smoother CSOE earnings as well.

For the regression on abnormal CFO-based real earnings management (*ACFO*), the regression coefficient of the interaction term  $CSOE \times HighGDPGrowth$  is negative but not significant. However, the regression coefficients of the interaction term  $CSOE \times LowGDPGrowth$  are positive at 0.019 and marginally significant at 10%. Although results are not significant to support the prediction that Chinese CSOEs engage in GDP decreasing CFO-based earnings management in high GDP growth years, they are significant to indicate that CSOEs do engage in GDP increasing CFO-based earnings management in low GDP growth years. One possible explanation for the asymmetric results with CFO-based earnings management is, that for the purpose of maintaining stability, it is more important to avoid perceived economic decline than economic boom. In addition, as discussed previously, CFO-based real earnings management could cause real economic loss due to the additional discount offered. CSOEs may be cautious and more likely to use it to boost the economy than to slow down the economy. The results partially support the predictions of our hypothesis.

For the regression on the discretionary expense-based earnings management measure, *ADISX*, the regression coefficients of interaction terms  $CSOE \times HighGDPGrowth$  and  $CSOE \times LowGDPGrowth$  are both insignificant. This result indicates that CSOEs do not engage in more discretionary expense-based real earnings management activities during extremely high and low GDP growth years compared to the control companies.

In combining the results of the regressions on all four earnings management measures, we make the following observations. First, Chinese CSOEs do engage in additional earnings management activities compared to the control companies in extreme high and low GDP growth years. Second, the documented earnings management activities of Chinese CSOEs are consistent with the predictions of our hypothesis, i.e. Chinese CSOEs are motivated by state-level incentives to engage in earnings management to mitigate GDP volatility. Further, Chinese CSOEs select earnings management approaches with consideration of their impact on enterprise earnings as well. Chinese CSOEs prefer earnings management approaches that smooth both GDP and firm earnings during extremely high or low GDP growth years (e.g. APROD and ACFO based earnings management). Finally, Chinese CSOEs apply earnings management approaches to manage earnings effectively. Of the two earnings management approaches that satisfy both state- and institution-level incentives (APROD and ACFO), the results for the more effective earnings management approach is much stronger (i.e. the results of APROD).

Consistent with the prior literature, the control variables have significant impact on the earnings management metrics, but the signs differ for different earnings management metrics (Wongsunwai 2013).

### **Robustness tests**

Our study focuses on the earnings management of Chinese CSOEs due to their critical roles in the Chinese economy and close relationships with the central government. We believe that the interests of Chinese local SOEs, which are controlled by local governments that are primarily motivated by regional interests, are less aligned with those of the central Chinese government. Anecdotal evidence suggests that local SOEs pursue diverse and sometimes conflicting interests (Walder 1995). We thus included local SOEs and non-SOEs in our control sample to highlight the homogeneity of Chinese CSOEs in terms of the unique earnings management incentives that they share. However, it may be argued that state-level incentives can trickle down to local SOEs through the central government's effects on local governments. To test this possibility and possible misspecification of the model associated with it, we introduce an additional dummy variable, *LSOE*, to distinguish local SOEs from non-SOEs in all four regressions. *LSOE* is a dummy variable that takes a value of 1 if the firm is included in the CSI Local SOEs 100 Index and takes a value of 0 otherwise. The regression results are presented in Table 5.

In Table 5, the regression coefficients of test variables  $CSOE \times HighGDPGrowth$  and  $CSOE \times LowGDPGrowth$  for all four regressions remain qualitatively the same, though a marginally significant regression coefficient for  $CSOE \times LowGDPGrowth$  drawn from the regression on ACFO is now no longer significant. The regression coefficients of variables  $LSOE \times HighGDPGrowth$  and  $LSOE \times LowGDPGrowth$  for all four regressions are not significant, indicating the LSOEs do not engage in more earnings management to smooth GDP in extremely high or low GDP growth years relative to non-SOEs.

Interestingly, the coefficient for the Local SOE dummy variable, *LSOE* of the regression on accrual EM is positive and significant, meaning that local SOEs generally engage in earning increase management that do not affect GDP. This may be related to competition between the numerous local SOEs for resources and recognition. Why and how local SOEs engage in earnings management is beyond the scope of this paper. We encourage further research on this relevant issue.

Additional tests of robustness are conducted by first removing CSOEs from all regressions and by then focusing on only comparisons of local SOEs and non-SOEs. The results, untabulated, show that the earnings management activities of local SOEs and non-SOEs are not significantly different in extremely high or low GDP growth years. We also run all the regressions with local SOEs removed and focus only on comparisons of CSOEs and non-SOEs. The corresponding results, untabulated, confirm our main finding that CSOEs manage production to smooth both GDP and earnings during extremely high or low GDP growth years. Overall, our finding that Chinese CSOEs are motivated by both state- and institution-level incentives to manage earnings is strong and robust.

**Table 5.** Additional test – CSOEs, Local SOEs, and Non-SOEs.

	Accrual EM	APROD	ACFO	ADISX
$CSOE_i$	0.004 (0.61)	0.007 (0.54)	<b>0.015*</b> (1.65)	-0.004 (0.51)
$HighGDPGrowth_{t-1}$	<b>0.012**</b> (2.32)	0.008 (0.73)	0.002 (0.23)	0.000 (0.05)
$LowGDPGrowth_{t-1}$	0.007 (1.33)	-0.004 (0.33)	-0.002 (0.29)	-0.005 (0.67)
$CSOE_i \times HighGDPGrowth_{t-1}$	-0.006 (0.72)	<b>-0.042**</b> (2.35)	0.000 (0.00)	0.010 (0.86)
$CSOE_i \times LowGDP Growth_{t-1}$	-0.008 (1.03)	<b>0.033*</b> (1.87)	-0.018 (1.48)	-0.001 (0.06)
$LSOE_i$	<b>0.025***</b> (4.24)	0.005 (0.40)	0.008 (0.97)	-0.004 (0.51)
$LSOE \times HighGDPGrowth_{t-1}$	-0.011 (1.39)	0.001 (0.05)	-0.001 (0.08)	-0.003 (0.32)
$LSOE*LowGDPGrowth_{t-1}$	-0.009 (1.13)	-0.005 (0.31)	0.003 (0.23)	0.020 (1.80)
$SIZE_{it-1}$	<b>0.012***</b> (9.01)	<b>-0.011***</b> (3.74)	<b>0.007***</b> (3.56)	-0.001 (0.27)
$ROA_{it-1}$	<b>0.413***</b> (24.98)	<b>-0.241***</b> (6.81)	<b>0.197***</b> (8.15)	-0.026 (1.18)
$LEV_{it-1}$	<b>-0.010***</b> (6.95)	<b>0.016***</b> (5.26)	<b>-0.007***</b> (3.40)	<b>-0.008***</b> (4.31)
$MTB_{it-1}$	<b>0.003***</b> (7.11)	<b>-0.005***</b> (5.33)	<b>0.002***</b> (3.79)	<b>0.003***</b> (4.26)
$Marketization_{it-1}$	-0.001 (1.41)	<b>0.004**</b> (2.26)	-0.002 (1.48)	0.000 (0.14)
$AUDITOR_{it-1}$	-0.003 (0.99)	-0.008 (1.10)	-0.003 (0.56)	<b>0.016***</b> (3.62)
<i>Intercept</i>	<b>-0.142***</b> (9.89)	<b>0.091***</b> (2.97)	<b>-0.072***</b> (3.40)	0.002 (0.10)
<i>Industry fixed effect</i>	Included	Included	Included	Included
$R^2$	0.30	0.06	0.06	0.02
$N$	2475	2475	2475	2475

Notes: The variables are defined in Table 2.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

## Conclusion

This study empirically investigates the earnings management of Chinese CSOEs. We found that CSOEs engage in certain forms of real earnings management activities to help reduce GDP volatility in low (high) GDP growth years, which is consistent with the principles of the extended Alignment Effect that high level state ownership induces strong earnings management incentives at state level. Such earnings management activities help lessen the appearance of economic volatility, which can be conducive to state political and social stability. In addition, the earnings management methods chosen by Chinese CSOEs for state-level incentives also result in reduced enterprise earnings volatility. This study contributes to the SOE earnings management literature by extending the existing Alignment Effect argument and by contributing to our understanding of SOE earnings management incentives and opportunities. In doing so, we present a new perspective that other scholars can use to examine other non-traditional earnings management incentives that SOEs may be subjected to.

## Notes

1. [http://www.csindex.com.cn/sseportal\\_en/csiportal/zs/jbxx/report.do?code=000955&&subdir=1](http://www.csindex.com.cn/sseportal_en/csiportal/zs/jbxx/report.do?code=000955&&subdir=1).
2. <http://www.bloomberg.com/news/articles/2010-08-16/china-economy-passes-japan-s-in-second-quarter-capping-three-decade-rise>.
3. <http://fortune.com/global500/>.
4. <https://www.ft.com/content/dbf8a4a4-4130-11e7-82b6-896b95f30f58?mhq5j=e3>.

5. <http://www.theglobeandmail.com/report-on-business/international-business/asian-pacific-business/china-passes-canada-as-uss-largest-trading-partner/article27134249/>.
6. <http://www.china-un.org/eng/zt/China123456/>.
7. <http://english.cntv.cn/2015/11/03/ARTI144659744633822.shtml>.
8. <http://www.chinabusinessreview.com/13th-five-year-plan-stresses-economic-restructuring/>.
9. <https://mic.com/articles/14943/gdp-and-the-us-economy-3-ways-to-measure-economic-production#A0TImtviC>.
10. <https://www.theguardian.com/business/2012/aug/07/credit-crunch-boom-bust-timeline>.
11. [http://www.chinadaily.com.cn/china/2007-04/29/content\\_863622.htm](http://www.chinadaily.com.cn/china/2007-04/29/content_863622.htm)
12. <http://www.economist.com/node/12585407>
13. Fan (2011) provides a marketization index for China's provinces for 1997–2009. For the 2010–2013 period, we use the same value for 2009 to proxy the 2010–2013 values. We recognize the limitations of these data.
14. <http://www.stats.gov.cn/english/>.
15. <http://www.csindex.com.cn/>.
16. [http://www.csindex.com.cn/sseportal\\_en/csiportal/zs/jbxx/report.do?code=000955&&subdir=1](http://www.csindex.com.cn/sseportal_en/csiportal/zs/jbxx/report.do?code=000955&&subdir=1).
17. [http://www.datangroup.cn/templates/T\\_Second/index.aspx?nodeid=309](http://www.datangroup.cn/templates/T_Second/index.aspx?nodeid=309) (in Chinese).

## Disclosure statement

No potential conflict of interest was reported by the authors.

## References

- Anonymous. 2012. "State-Owned Enterprises: The State Advances." *The Economist*, October 6. Accessed November 6, 2014. <http://www.economist.com/node/21564274>
- Boardman, A. E., and A. R. Vining. 1989. "Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises." *The Journal of Law and Economics* 32 (1): 1–33.
- Cary, E. 2013. "Reforming China's State-Owned Enterprises." *The Diplomat*. Accessed November 6, 2014. <http://thediplomat.com/2013/06/reforming-chinas-state-owned-enterprises/>
- Chan, K., A. J. Menkveld, and Z. Yang. 2008. "Information Asymmetry and Asset Prices: Evidence from the China Foreign Share Discount." *The Journal of Finance* 63 (1): 159–196.
- Chen, D., J. Li, S. Liang, and G. Wang. 2011. "Macroeconomic Control, Political Costs and Earnings Management: Evidence from Chinese Listed Real Estate Companies." *China Journal of Accounting Research* 4: 91–106.
- Chen, H., S. Tang, D. Wu, and D. Yang. 2015. *The Political Dynamics of Corporate Tax Avoidance: The Chinese Experience*. Accessed from SSRN 2640111.
- Chen, J., W. Dong, S. Li, and Y. Zhang. 2016. "Perceived Audit Quality, State Ownership, and Stock Price Delay: Evidence from China." *Asia-Pacific Journal of Accounting and Economics* 1–23.
- Cheng, C. A., J. Wang, and S. X. Wei. 2015. "State Ownership and Earnings Management around Initial Public Offerings: Evidence from China." *Journal of International Accounting Research* 14 (2): 89–116.
- Cohen, D. A., and P. Zarowin. 2010. "Accrual-Based and Real Earnings Management Activities around Seasoned Equity Offerings." *Journal of Accounting and Economics* 50 (1): 2–19.
- Deng, Y. H., and T. Luo. 2011. "Tax Revenue Manipulation by Local Taxation Administrations in China." *Asia-Pacific Journal of Accounting and Economics* 18 (1): 61–75.
- Ding, Y., H. Zhang, and J. Zhang. 2007. "Private Vs State Ownership and Earnings Management: Evidence from Chinese Listed Companies." *Corporate Governance: An International Review* 15 (2): 223–238.
- Fan, G. 2011. *NERI Index of Marketization of China's Provinces*. Beijing: National Economic Research Institute.
- Fan, G., & N. C. Hope. 2013. "The Role of State-Owned Enterprises in the Chinese Economy." China–U.S. 2022, Vol. Chapter 16. <https://www.chinausfocus.com/2022/wp-content/uploads/Part+02-Chapter+16.pdf>
- Government of Canada. 2014. *Working with State-Owned Enterprises in China*. The Canadian Trade Commissioner Service. October 3.
- Jensen, M., and W. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3: 305–360.
- Jones, J. 1991. "Earnings Management during Import Relief Investigations." *Journal of Accounting Research* 29 (2): 193–228.
- La Porta, R., F. Lopez-De-Silanes, and A. Shleifer. 1999. "Corporate Ownership around the World." *The Journal of Finance* 54 (2): 471–517.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 2000. "Investor Protection and Corporate Governance." *Journal of Financial Economics* 58 (1–2): 3–27.
- Lambert, R. A. 1984. "Income Smoothing as Rational Equilibrium Behavior." *The Accounting Review* 61: 604–618.



- Li, S., G. Feng, and G. Cao. 2016. "The role of regional institutional environment in the relationship between political participation and effective tax rates: evidence from Chinese listed private firms before the financial crisis." *Asia-Pacific Journal of Accounting & Economics* 23: 1–16.
- Lin, L. W., and C. J. Milhaupt. 2013. "We Are the (National) Champions: Understanding the Mechanisms of State Capitalism in China." *Revista Chilena De Derecho* 40: 801–858.
- Liu, Q., and Z. J. Lu. 2007. "Corporate Governance and Earnings Management in the Chinese Listed Companies: A Tunneling Perspective." *Journal of Corporate Finance* 13 (5): 881–906.
- Liu, X., R. Saidi, and M. Bazaz. 2014. "Institutional Incentives and Earnings Quality: The Influence of Government Ownership in China." *Journal of Contemporary Accounting & Economics* 10: 248–261.
- Luo, Y. 2003. "Industrial Dynamics and Managerial Networking in an Emerging Market: The Case of China." *Strategic Management Journal* 24 (13): 1315–1327.
- Meggison, W. L., R. C. Nash, and M. Van Randenborgh. 1994. "The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis." *The Journal of Finance* 49 (2): 403–452.
- Roychowdhury, S. 2006. "Earnings Management through Real Activities Manipulation." *Journal of Accounting and Economics* 42 (3): 335–370.
- Scissors, D. 2011. The Fall and Rise of Chinese State-Owned Enterprises. *Testimony before the U.S.-China Economic and Security Review Commission*. March 30, 2011.
- Shleifer, A. 1998. *State versus Private Ownership* (No. w6665). National bureau of economic research.
- Shleifer, A., and R. Vishny. 1986. "Large Shareholders and Corporate Control." *Journal of Political Economy* 94 (3, Part 1): 461–488.
- State Council of the People's Republic of China. 2003. *Interim Regulations on Supervision and Management of State-Owned Assets of Enterprise*. Accessed November 6, 2014. <http://en.sasac.gov.cn/n1408035/c1477199/content.html>
- Trueman, B., and S. Titman. 1988. "An Explanation for Accounting Income Smoothing." *Journal of Accounting Research* 26 127–139.
- Walder, A. 1995. "Local Governments as Industrial Firms: An Organizational Analysis of China's Transitional Economy." *American Journal of Sociology* 101 (2): 263–301.
- Wang, L., and K. Yung. 2011. "Do State Enterprises Manage Earnings More than Privately Owned Firms? The Case of China." *Journal of Business Finance and Accounting* 38 (7–8): 794–812.
- Wongsunwai, W. 2013. "The Effect of External Monitoring on Accrual-Based and Real Earnings Management: Evidence from Venture-Backed Initial Public Offerings." *Contemporary Accounting Research* 30 (1): 296–324.
- Xu, G. 2010. "State-Owned Enterprises in China: How Big Are They?" The World Bank East Asia & Pacific. Accessed November 6, 2014. <http://blogs.worldbank.org/eastasiapacific/state-owned-enterprises-in-china-how-big-are-they>
- Xu, X. 2010. "An Accurate Understanding of China's Economic Statistics." *Economic Research Journal* 5 (2010): 21–31.