Macroeconomic control, political costs and earnings management: Evidence from Chinese listed real estate companies

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ABSTRACT

Firms in China have faced high political costs during China's economic transition, because they are affected by macroeconomic policies. However, research to date has offered no consistent conclusions on the relationship between political costs and earnings management in China. This study tests whether real estate firms attempt to decrease earnings during periods of macroeconomic control, using variables related to the national real estate market as proxies for political costs. We find that political costs are negatively related to earnings management in listed real estate firms. In addition, we find that non-state-owned enterprises utilized more income-decreasing accruals during this period. Our results are consistent with the political costs hypothesis.

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1. Introduction

The political costs hypothesis of earnings management, which is one of three basic hypotheses of positive accounting theory, has long been an important issue in positive accounting research (Watts and Zimmerman, 1986). However, prior research has mainly focused on mature Western market economies (e.g., Zmijewski and Hagerman, 1981; Daley and Vigeland, 1983; McKee et al., 1984; El-Gazzar et al., 1986; Boynton et al., 1992; Han and Wang, 1998; Monem, 2003). The existing research on transition and emerging economies is limited. For instance, there has been relatively little research on China and prior studies have not been able to draw uniform conclusions (e.g., Wang, 2000; Wu et al., 2004; Liu and Jing, 2005; Liu et al., 2005; Zhang, 2008). In addition, there are huge political and economic differences in the institutional backgrounds of mature and emerging markets. These differences are clearly observable between China and most Western countries. Accordingly, the motivation for this study is to explore whether the political costs hypothesis of earnings management differs between emerging and mature markets.

This study aims to address the following questions. Is the political costs hypothesis applicable to China? Do listed companies in China face different political costs compared to listed companies in Western countries? Which variables best

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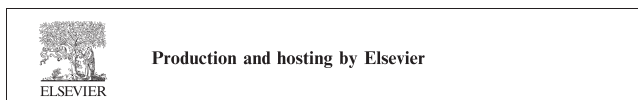
characterize the political costs of listed companies in China? Do China's listed companies consider political costs when they manipulate earnings?

This study examines a sample of real estate firms in China. The real estate industry is highly capital intensive and its health is vital to national well-being and people's livelihoods in general. The development and stability of the real estate market can greatly affect macroeconomic operations and social stability (Huang et al., 2009). Accordingly, the Chinese government has shown interest in regulating the development of the domestic real estate market. Nation-wide real estate development boomed in 2001 placing huge upward pressure on prices and led to strong growth of the real estate industry in China. This growth generated huge profits for real estate businesses. However, excessive development distorted the allocation of resources to such a degree that it threatened the health of China's macroeconomic operations. Since 2003, the Chinese government has promulgated a series of policy documents on the macroeconomic regulation of the real estate industry. Overall, the government's aim is to use various policy tools to control real estate prices to achieve a more reasonable price level. To avoid being subject to more stringent regulations and public scrutiny, real estate companies are likely to adopt earnings decreasing accounting policies. Thus, the rapid development of China's real estate market and the subsequent regulatory changes provide an excellent research and experimental setting in which to examine the relationship between political costs and corporate earnings management behavior in an emerging market.

Using data from listed real estate companies in China from 2002 to 2007, we conduct an empirical study to determine whether the political costs hypothesis is applicable to China. The results show that, with the implementation of increasingly tight macroeconomic controls, listed real estate companies adopted earnings decreasing accounting policies. In addition, because state-owned real estate companies have a different sensitivity to political costs, non-state-owned listed companies have more incentive to adopt earnings decreasing accounting policies.

Our study makes several contributions to the literature on earnings management. First, we associate macro-level government regulation with the micro-level corporate use of earnings management in the economic development of a transition economy. We find that macroeconomic controls can provide an incentive for earnings management, which is different from the effects of political costs found in Western countries. Second, due to the asymmetric effects of the same macroeconomic policies, different political cost sensitivities are found to exist between different types of companies. These findings enrich the political costs hypothesis and our understanding of the impact of macroeconomic policies in the institutional setting of China.

The remainder of this paper is organized as follows. Section 2 presents the literature review, theoretical analysis and hypothesis development. Section 3 describes the sample, variables and the empirical results. The final section concludes the paper, outlines the limitations of our study and proposes future research directions.

2. Literature review, theoretical analysis and hypothesis development

2.1. Literature review

There is a considerable body of research on political costs. Early research focused on the selection of political cost variables, such as the size of a company's assets that are considered to be positively correlated with political costs. Watts and Zimmerman (1978) found that, compared with small companies, large companies are more likely to accept GPLA (General Price Level Adjusted) accounting standards, because profits adjusted by the guidelines are lower than unadjusted profits. Watts and Zimmerman (1986) analyzed the reasons for this phenomenon and found that larger companies have a greater motivation to hide profits, because once profits are considered to be derived from monopoly situations, the government may institute wealth transfer policies. Zmijewski and Hagerman (1981) conducted a number of empirical tests and found that larger firms are more likely to use accounting policies that may lead to reduced profits. McKee et al. (1984) later used sales as an alternative variable for political costs and found similar results. Daley and Vigeland (1983) found that companies with higher income tend to expense rather than capitalize research and development costs. Although Daley and Vigeland (1983) analyzed a different political cost issue, unlike Zmijewski and Hagerman (1981), their results were only found in small companies.

Corporate tax rates are also an important alternative measure of political costs. In this case, corporations that are free from political involvement generally have lower tax rates. Alternatively, companies with higher profits are more easily identified by governments and tend to have higher tax rates. Therefore, enterprises have motives to reduce their current profits to reduce the amount of tax payable. El-Gazzar et al. (1986) conducted a number of tests and found that companies with high tax rates tend to capitalize their leases. Boynton et al. (1992) conducted an empirical study on the relationship between earnings management and clauses of the US Tax Reform Act of 1986 and confirmed the existence of earnings management for tax avoidance. Han and Wang (1998) showed that during the 1990 Persian Gulf crisis, many US oil processing enterprises adopted measures to reduce current profits, such as changing accounting policies and reducing their closing inventory, to avoid being liable for the windfall profit tax as a result of the sharp rise in oil prices.

A limitation of most of the previous studies on political costs is that they do not focus on particular events (Wong, 1988). However, the following studies on the relationship between political costs and earnings management do focus on specific events, which are discussed with regard to their particular political background. For example, as some industries are more likely to attract the attention of regulators, they have a greater motivation to decrease earnings to avoid regulation. Jones (1991) investigated 23 companies influenced by the US International Trade Commission (ITC) scheme to restrict imports

and found that, during the investigation, managers tended to decrease earnings through manipulating accruals. Cahan (1992) conducted a similar study of companies subject to antitrust investigations and also found that, during the investigation, companies' accruals were significantly negative. Cahan et al. (1997) carried out a study of the US chemical industry in late 1979, when companies were facing condemnation for environmental pollution. During the investigation period, when Congress discussed establishing a pollution clean-up draft fund (subsidized by the polluting companies) the reported profits of the polluting companies were significantly lower. Han and Wang (1998) studied the accounting policies used by oil companies during the 1990 Gulf crisis when oil prices were rising. They found that oil companies decreased their earnings in 1990 through inventory and special accruals in the third and fourth quarters to reduce the high political costs associated with this large abnormal growth in income. Monem (2003) studied the Australian gold mining industry. Prior to 1991, Australia had implemented a tax-free policy for the gold mining industry. However, during a period of rapid economic development in the early 1980s the gold mining industry generated very high profits and the government came under increasing public pressure to impose a tax on gold. Monem's (2003) investigation began in 1985, after the government released a draft bill on the taxation of the gold industry. The draft was adopted in 1988, and implemented in 1991. Using the Jones (1991) model, Monem (2003) found a significant reduction in accruals in the Australian gold mining industry during the 1985–1988 period. As the accruals were also significantly lower than those of Canadian gold mining companies in the same period, the findings support the political costs hypothesis.

The political costs hypothesis has been investigated in various countries over many years and has been widely verified. However, as yet, there is little consensus on whether it is applicable to China. Some scholars believe that the political costs hypothesis cannot be verified in China, because firm size has no significant effect on the choice of accounting policy. Large companies may have more robust financial systems and greater supervision over financial control, which may reduce their ability to manipulate their accounting policies (Wang, 2000). Liu et al. (2005) analyzed the effects of macroeconomic control mechanisms on listed companies from transitional markets in relation to voluntary changes in accounting policies. They found that listed companies are more willing to smooth their income. On the other hand, Wu et al. (2004) and Liu and Jing (2005) found that firm size is negatively related to big bath accounting. Zhang (2008) found that petrochemical companies decreased their earnings because of political costs in 2005 and 2006 when oil prices were high.

2.2. Background

Prior studies generally agree with the theory of "political costs of profit management" in Western contexts. However, the circumstances are quite different in China, especially as it is not suitable to use "company size" as a proxy for "political costs" in this market. This raises a series of interesting problems with regard to why "company size" is not a suitable proxy and which variables could serve as alternative measures.

To resolve this problem, it is necessary to understand the political and economic differences between China and the West. The first difference relates to the system of governance. In Western countries, political power belongs to the elected parliament. However, in China, power is distributed among many government departments (Li, 2005; Mao, 2007). Furthermore, as emerging countries invariably have weak legal systems, political power is much more easily co-opted by large corporations (Zingales, 2009). In emerging countries, settlement costs are much lower for large corporations, as a result of their imperfect and inefficient legal systems. In addition, the governments of emerging countries tend to be reliant on large corporations in various ways, which may eventually eliminate their power of governance.

A second difference is political reasons for managing the economy. In the West, the main purposes are to avoid monopolies, protect the environment or increase tax revenues (Zmijewski and Hagerman, 1981; Cahan et al., 1997; Han and Wang, 1998). In relation to industry, these aims are realized by regulating certain characteristics of large corporations. However, the goal of emerging countries, such as China, is not to limit the scale of companies, but to encourage them to become stronger and more competitive. This is clearly manifest in the Chinese government's strategies of "big over small" and "become bigger and stronger". Therefore, the development of large corporations is less restricted in China. Nonetheless, economic stability is also very important for this emerging and transforming nation. For this reason, the government often pays closest attention to firms in industries that have the greatest impact on the welfare of its citizens.

A third difference is the objective of the government's economic management. There are few state-owned companies in the West, but there are many large state-owned companies in China. These state-owned companies can earn some benefits from banks, such as "recessive guarantees" (Brandt and Li, 2003; Sun et al., 2006; Lu et al., 2009), because they are following the government's requirement for diversification. Therefore, it is unlikely that state authorities in China will control the size of a company. If there is such a possibility, the company will be non-state-owned. For example, when monetary policy is tightened, state-owned companies' requests for loans will be satisfied before those from non-state companies. Thus, non-state-owned companies are affected by government economic management more than state-owned companies.

The last difference concerns the form of economic management. It is significant that the Chinese economy started from a planned economy. Thus, the government is used to implementing industrial policies. When a company's development matches the government's industrial policies, it will be encouraged. Otherwise, it will be strictly limited.

In summary, China is an emerging country in the process of economic transition. The political costs of companies in China are quite different from those faced by companies in Western countries. These differences are reflected in many aspects of the system of government, such as the motivation for governing, the form of government and the different circumstances that are subject to economic control.

Within China, the real estate industry is quite unique. As real estate is a capital intensive industry, real estate companies are strongly affected by macroeconomic control policies. Furthermore, real estate is central to the national economy and people's livelihoods. Thus, the real estate industry provides an excellent research and experimental setting for testing the relationship between earnings management behavior and political costs in an emerging market.

During the last 30 years of reforms to China's economy, the Chinese real estate industry has evolved and developed from a state of depression to a booming industry. With the development of the real estate market, real estate has become China's most important and largest industry. In addition to the essential productive factors relating to real estate development, the real estate market has become an important investment target for families and companies. With the increase in the scale of the real estate market, its development and change now affect not only financial security and social stability, but also the health of the entire national economy.

Considering the importance of the real estate industry to people's lives, a jump or slump in house prices may create social and economic turmoil. Therefore, another priority for the government has been to determine how to control and manage the development of the real estate market. According to rule no. 30 of the "Price Law of the PRC" issued in 1997, the State Council and local governments have the right to restrict the prices of essential commodities and services, when prices appear to have risen significantly. The government may take intervention measures such as restricting the price differential ratio or profit ratio, prescribing restricted prices, or instituting a price rise submission system and price adjustment record system with respect to specific aspects of prices. The importance of the real estate industry is beyond question and it is also undoubtedly within the scope of intervention. When house prices rise too fast and cause broad public concern, or even threaten macroeconomic stability, the government can take necessary measures to manage the real estate industry.

After the real estate market stagnated between 1994 and 1997, China carried out a series of policies between 1998 and 2002 to support and encourage the growth of the real estate industry. After 2001, the real estate industry in China gradually entered a trend of rapid growth, which soon resulted in overinvestment, soaring real estate prices, an irrational structure of housing demand and supply, market disorder and other problems. In 2003, real estate investment in China increased by 30.33% compared to the previous year, which was the highest rate of growth since the last macroeconomic controls. In the first quarter of 2004, fixed asset investment nationwide increased 15.2–43% on a quarter to quarter basis. In 2004, the price of condominiums increased by 15.02% and the price of commercial and residential buildings rose by 15.99%. In the same year, house prices rose much faster than in past years, where the growth rates had been between 3% and 5%. In 2005, the prices for condominiums increased by 16.72%. In early 2006, house prices soared in Shenzhen, Beijing, Guangzhou and other cities, which was difficult for low-income people to bear. Accordingly, the sharp rise in house prices eventually became a social problem.

With the ongoing increase in house prices and enthusiasm for investing in the real estate industry, the government began to implement a number of macroeconomic policies in 2003, which lasted until 2007. The policies included: (1) credit policies, such as increasing the required percentage of capital investment in real estate projects, strengthening the risk management of real estate loans, increasing the interest rates on bank savings and loans, and increasing the initial deposit required on second homes; (2) restrictions on foreign capital, such as the policy promulgating "Opinions on Regulating the Entry of Foreign Investment into the Real Property Market and the Administration" and the reform of regulations covering real estate in the "Catalogue for the Encouragement of Foreign Investment Industries"[1]; (3) tax policies, such as imposing income tax on the sale of second homes, collecting value-added land taxes and strengthening the management of lodging business tax returns; and (4) reforming the policy on land transfer, such as strengthening the control of the supply of realty development land, implementing strict regulations to protect cultivated land and adopting strict measures for the examination and approval of the sale of all kinds of non-agricultural land.

These macroeconomic controls had a long-term impact and deeply affected the real estate industry. The policies were based on the high prices of housing and the huge profits being earned by real estate companies. Therefore, the data on real estate companies' net profits play an important and sensitive role in our analysis. Because the restrictive policy was instituted by the government, real estate companies have an incentive to decrease their reported company profits to avoid political costs.

2.3. Hypotheses

Whether government regulation can influence the behavior of listed real estate companies and whether listed real estate companies manage their earnings because of political costs, depends on the government's motivation and ability to deter and restrict the operations of real estate companies.

First, in terms of motivation, stability has important additional implications for emerging and transitional countries. Fluctuations in the economic and political environment can cause great damage to the development of an emerging country. Thus, in emerging and transitional countries, industries that have a close relationship with ordinary people, have excessive profits or are vulnerable to public opinion are more likely to face strict regulations. For the real estate industry, if prices rise

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[1] The National Development and Reform Commission (NDRC) and Ministry of Commerce issued the law "Catalogue for the Encouragement of Foreign Investment Industries (Version 2007)" on December 2007. Compared with the 2004 version, the 2007 version made three main revisions in regard to the real estate industry: (1) deleted "ordinary housing development construction" from the catalogue of encouraged investments; (2) added "real estate secondary market transactions and real estate intermediary companies" into the regulated catalogue; and (3) deleted "large scale theme park construction and management" from the regulated catalogue.

too fast and go considerably beyond the purchasing power of consumers, the public will become dissatisfied, eventually leading to social conflict. In this case, the government may issue stricter regulations. After 2003, real estate prices rose so rapidly nationwide that universal complaints were heard from all parts of the country. The complaints were voiced at all levels of public opinion, thereby placing the government under tremendous pressure. To solve this problem, the government made it a priority to regulate the growth of house prices at a reasonable rate. Furthermore, excessive expansion of the real estate industry leads to the abnormal development of upstream and downstream industries, such as energy, raw materials and construction, and therefore creates a hidden danger for national industries undergoing a structural adjustment. Accordingly, strict regulation of the real estate industry was imperative.

Second, in terms of capacity, China's economic transformation has been carried out in typical government-driven style (Zhu and Dong, 2005). Formulating industry policies is an integral part of this economic growth model. New policy goals can be achieved faster by using coercive power to carry out industrial regulations. The companies that are in accordance with the national industrial policies will be supported at every level, such as through IPOs, SEOs, bank loans or even tax preferences. Companies that do not meet the industrial policies will be subject to more constraints from government. For example, between 2003 and 2007, the real estate industry was subject to higher lending rates, incremental taxes on land value and strict control of approval for non-agricultural land use. Therefore, in terms of capacity, the government is able to affect real estate companies' levels of risk, costs and profits by using policy controls.

Generally speaking, the government is capable of effectively implementing policy controls in relation to motivation and capacity. These regulations may indeed affect the behavior of real estate companies. The aim of the macroeconomic policies introduced during 2003–2007 was to stabilize housing prices, decrease real estate industry profits and promote the rational allocation of resources. Real estate companies have incentives to manage their earnings to avoid further regulatory policies and allay suspicions of excessive profit making. Moreover, real estate companies are more likely to decrease their earnings to remove suspicion of excessive profits when house prices are rapidly increasing. In summary, we predict that:

Hypothesis 1. Listed real estate companies are more likely to decrease earnings when there are greater political costs.

Furthermore, according to the theory of ultimate property rights, listed enterprises can be classed as either state-owned or non-state-owned. The property rights of state-owned enterprises belong to the public. Because of their special relationship with the government, state-owned listed enterprises gain more protection from the government. Moreover, generating profit is not the only goal of state-owned enterprises. State-owned enterprises also undertake various social responsibilities, such as maintaining social stability and providing employment. Therefore, there are significant differences between state-owned and non-state-owned companies. Early research showed that state-owned companies gain more financial and political support from the government than non-state-owned companies (Qian, 1994). This is because the government can also gain a lot of resources to improve their political capital and promotional opportunities from the success of state-owned companies (Li and Zhou, 2005). Furthermore, Brandt and Li (2003), Sun et al. (2006) and Lu et al. (2009) show that state banks are inclined to give preferential treatment to state-owned companies. Therefore, if the government tightens its credit policy, state-owned companies are expected to have greater access to loans from state banks than non-state-owned enterprises. In other words, the actual effects of the control policies are expected to be different for state-owned and non-state-owned companies, which results in different motivations for profit management. In relation to this macroeconomic control policy, because state-owned companies endure less political pressure than private companies, state-owned companies' motivation for profit management is weaker than that of private companies. On the basis of the foregoing research we predict that:

Hypothesis 2. The potential for negative profit management in non-state-owned listed real estate enterprises is greater than that in state-owned listed real estate enterprises.

It must be noted that macroeconomic controls can also have some direct effects on corporate profitability. For example, the capital value of development projects and the increment tax on land value may increase. These policies can affect the risks and costs faced by real estate companies and ultimately affect their business profits. Encouraged by these policies, real estate companies may earn more money or their profits may be reduced. In addition, the macroeconomic control policies may have no effect on a company's profit management.[2] If a company does not take political costs into account, then negative profit management will not be necessary under these policies. This reminds us that the level of company profits should be taken into account in the following analysis.

3. Sample, variables and empirical results

3.1. Sample

The sample used in this study comprises all A-share real estate companies listed in China between 2002 and 2007, according to the industry classification system of the China Securities Regulatory Commission. Because there is an insufficient

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[2] However, it may influence discretionary accruals systematically by stock, etc.

Table 1
Sample selection process.

Year	N	Listed less than 1 year	ST	Value missing	Sample
Panel A					
2002	42	8	3	2	29
2003	52	8	6	1	37
2004	53	10	6	1	36
2005	56	8	4	1	43
2006	56	10	6	1	39
2007	68	12	7	1	48
Sum	327	56	32	7	232

Year	All	SOE	Non-SOE
Panel B			
2002–2003	66	45	21
2004–2007	166	105	61
Sum	232	150	82

This table gives the sample selection process in Panel A and shows the distribution of all enterprises as well as the distribution of SOEs and Non-SOEs in the two periods of macroeconomic control in Panel B.
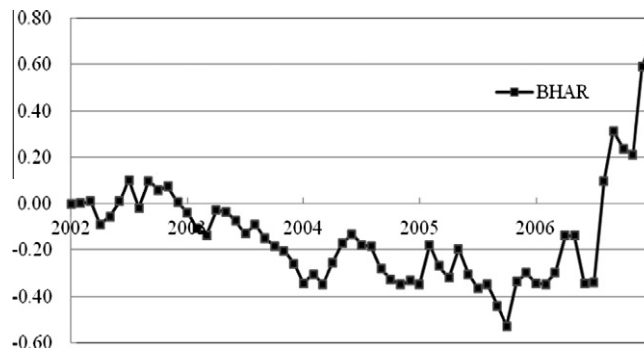

Fig. 1. The annual cumulative abnormal returns of listed real estate companies from 2002 to 2006. This figure shows the annual cumulative abnormal returns of listed real estate companies from 2002 to 2006, which are significant lower than zero during the retrenchment period (2004–2006).

sample and too much missing data prior to 2002, we choose 2002 as the starting point. With respect to the government regulation of the real estate market in China, 2002–2003 can be defined as an incentive period and 2004–2007 can be defined as a retrenchment period. Accordingly, we define 2007 as our finishing point.[3] Further selection of the data from the CSMAR database was conducted on the basis of the following points: (1) to avoid the IPO effect, companies listed for less than 1 year were removed; (2) special treatment (ST) companies, specifically for the years during, before and after the ST, were removed (Lu, 1999); (3) missing financial data was collecting manually and companies that still lacked financial data after the manual collection process were removed from the sample. Finally, we collected a total of 232 firm-year observations. The sample selection process is depicted in Table 1, Panel A. Panel B of Table 1 shows the distribution of all enterprises as well as the distribution of state-owned and non-state-owned companies in the two periods of macroeconomic control.

3.2. Event study

In this section, we investigate the impact of the real estate market control policies using event study methodology, before discussing the descriptive statistics and presenting the regression analysis.

The annual cumulative abnormal returns of listed real estate companies from 2002 to 2006 are shown in Fig. 1.[4] As can be seen in Fig. 1, there is no clear trend in the cumulative abnormal returns of the real estate industry during the incentive period (2002–2003). However, during the retrenchment period (2004–2006), the cumulative abnormal returns are significantly lower than zero.[5] This suggests that the government's real estate control policies may indeed have had a significant impact. In particular, the control policies during the retrenchment period may have had an adverse effect on the value of listed real estate companies.

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[3] We also consider the lagged effects of policy implementation, as some tightening policies had in fact been introduced as early as April 2003.

[4] Because real estate companies generated huge returns in 2007, Fig. 1 ends at 2006. If the window ended at 2007, the prior fluctuations would not be obvious. The cumulative abnormal returns (BHAR) are calculated as follows: $BHAR_t = \frac{1}{N}\sum_{i=1}^{N}\Pi_{t=1}^{t}(1 + \text{Return}_{i,t} - \Pi_{t=1}^{t}(1 + \text{ReturnM}_t)$ Return_i is monthly accumulated returns of each stock, ReturnM is monthly accumulated returns of the capital market, N is the number of stocks, and t is the observation time.

[5] The cumulative abnormal returns after the middle of 2006 are positive at which point the market changes into a bull market. There may be some correlation between these two periods.
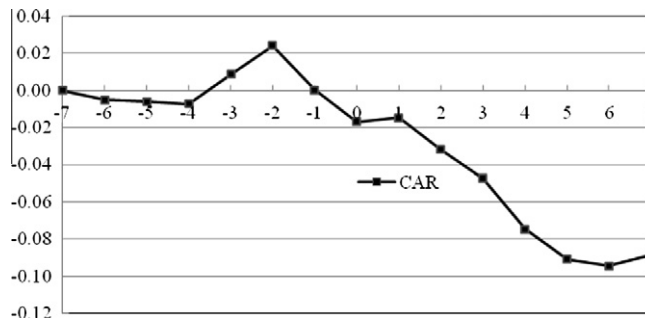
Fig. 2. The cumulative abnormal returns around 'Action Six'. This figure shows the cumulative abnormal returns of listed real estate companies around 'Action Six', which seems to have a negative effect on the market value of listed real estate companies.

Here, we also study a specific example of a single event. On May 29, 2006, the State Council issued a document titled, "Guidance on the adjustment of housing supply structure and stabilizing housing prices" (SCS (2006) 37, called "Action Fifteen" by the nine government ministries). This document supplemented the earlier "Action Six" in limiting dwelling size and the percentage of small units, and increasing the down payment on a first house. Specifically, houses smaller than 90 square meters were required to occupy at least 70% of the total construction area and at least 70% of new residential land should be used to construct affordable housing.

Why have we chosen to study this event? The main reason is that this policy had a direct impact on the future scale and standards of housing construction. It also changed people's housing needs and the supply structure of real estate companies, increasing the risks and uncertainties faced by real estate enterprises. Furthermore, as the policy makes clear reference to future housing control policies, it indicates that any subsequent regulations will be substantial. Therefore, we predict that the market will interpret this news as a negative event for listed real estate companies and that we will find negative cumulative returns.[6]

The results shown in Fig. 2 are consistent with our expectations. The figure indicates that the government's macroeconomic control policy had a negative effect on the market value of listed real estate companies.

3.3. Variable definitions

3.3.1. Dependent variables

To test our hypotheses, we use discretionary accruals (DA) as the dependent variable. Dechow et al. (1995) and Xia (2003) test earnings management measurement models in the United States and China, respectively. Their results indicate that the modified Jones model (Jones, 1991) provides a good estimation of corporate earnings management. Therefore, we follow their methodology to calculate discretionary accruals. Eq. (a):

$$TA_{it}/A_{it-1} = \alpha_i[1/A_{it-1}] + \beta_{1i}[\Delta REV_{it}/A_{it-1} - \Delta REC_{it}/A_{it-1}] + \beta_{2i}[PPE_{it}/A_{it-1}] + \xi_{it} \tag{a}$$

where TA_{it} is total accruals of company i in year t, which equals net profit minus net operating cash flow; ΔREV_{it} is the yearly change in operating income of company i in year t; PPE_{it} is fixed assets of property, plant and equipment of company i in year t; A_{it-1} is the previous year's total assets of company i; and ΔREC_{it} is the change in the receivables of company i in year t.

Each company's non-discretionary accruals are calculated using Eq. (b):

$$NDA_{it}/A_{it-1} = \alpha_i[1/A_{it-1}] + \beta_{1i}[\Delta REV_{it}/A_{it-1} - \Delta REC_{it}/A_{it-1}] + \beta_{2i}[PPE_{it}/A_{it-1}] \tag{b}$$

Each company's discretionary accruals are calculated by Eq. (c):

$$DA_{it} = TA_{it} - NDA_{it} \tag{c}$$

3.3.2. Independent variables

In this section, we focus on finding an appropriate proxy for political costs. We consider this issue from multiple viewpoints and by integrating the theoretical analysis presented in earlier sections of this paper. First, following previous research (Cahan et al., 1997; Key, 1997), we use the two periods of macroeconomic control of the real estate industry as the basis for the dummy variable GROUP. GROUP is a dummy variable that equals 1 if the year is between 2004 and 2007, and 0 otherwise. If companies are more sensitive to political costs during tightening years, GROUP will be significantly negative. Second, if the real estate industry is booming, the government may introduce regulations that focus on house prices, which are directly related to real estate companies' profits. Therefore, real estate companies may be more likely to decrease their earnings when real estate prices are rapidly increasing. As a result, we select the national average growth rate of house

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[6] Notes: $CAR_t = \frac{1}{N}\sum_{i=1}^{N}\sum_{t=1}^{t} YReturn_{i,t} - ReturnM_t Y$. $Return_i$ is the monthly accumulated returns of each stock, $ReturnM$ is the monthly accumulated returns of the capital market, N is the number of stocks, and t is the observation time.

prices (*GROWTH*) as an alternative measure for political costs. Furthermore, we also derive a variable that includes the purchasing power of residents, the average growth in house prices divided by the increase in the average worker's wage (*RATIO*), as another alternative measure.

3.3.3. Control variables

Based on previous research, we control for the following variables:

Company type (*SOE*) is a dummy variable that equals 1 if company is a state-owned listed company, and 0 otherwise.

Company size (*SIZE*) is the natural logarithm of a company's total fiscal year assets. Watts and Zimmerman (1978) pointed out that, with respect to antitrust legislation, large companies are more likely to manage earnings to avoid regulation. Many Western scholars have since used size as a proxy for political costs. However, in the institutional context of China, the government does not impose regulations on large enterprises because of their monopoly situation and, on the contrary, encourages enterprises to become "become bigger and stronger". In addition, Wang (2000) and Qiao et al. (2005) agree that size is not suitable as a measure of political costs in research on China. Nevertheless, to ensure our findings are comparable with previous studies, we still take firm size (*SIZE*) into account in this paper.

We use *ROA* (return on total assets) as a measure for corporate operating conditions. A company's choice of accounting policy may be affected by its current economic condition. Companies in good operating and financial condition are more willing to adopt accounting policies that can reduce current earnings or smooth earnings. Dechow et al. (1995) found that it is necessary to control for *ROA*, which is a variable for operating conditions, when the manipulation of accruals is associated with company performance. Lei and Liu (2006) also found that company earnings management is positively related to *ROA* in China.

Asset liability ratio (*LEV*). Under uniform conditions, companies that face the risk of violating their debt contracts are more likely to choose accounting procedures that can shift future earnings to the current period to avoid default costs. Studies have found that the asset-liability ratio is positively associated with earnings management (Dechow et al., 1995, 1996; Bartov et al., 2000). This shows that, to avoid violating their debt contracts, companies will carry out aggressive accounting policies.

Accruals during the previous period (*L_TA*). Previous research has shown that accrual reversals do actually occur (Dechow et al., 1995; Sloan, 1996). The higher the accruals during the previous period, the less possible it is for managers to introduce accounting policies capable of increasing current earnings.

Change of board chairman (*CHANGE*), is a dummy variable equal to 1 if the chairman of the board changes, and 0 otherwise. A change of manager can bring changes to a company's production plan and investment and financing strategies. These changes can depreciate the original value of assets. To better fulfill a company's future profitability goals, a new manager may manage earnings to shift responsibility to the previous manager. Warner and Wruck (1988) found that a change of manager is negatively related to corporate performance in the United States. In addition, Zhu (2002) found that a change of chairman is associated with earnings management in China.

Largest shareholder (*TOP*). Whether in developed or developing countries, once in a position of majority control, the largest shareholder may accrue private benefits through certain channels within the corporation, such as payments of special dividends and connected transactions. These practices can lead to the exploitation of minority shareholders (Claessens et al., 2000). Li and Guan (2004) found that in the case of extreme shareholder concentration, large shareholders have incentives to supervise managers and to become actively involved in corporate governance. However, once they gain complete control of the company, largest shareholders often exploit the interests of minority shareholders by decreasing the quality of accounting information.

The main variables and their definitions are shown in Table 2.

Table 2
The variables.

Variables	Name	Symbols	Definitions
Dependent variables	Handling accruals	*DA*	Calculated by Jones model
Independent variables	Year groups	*GROUP*	Equals 1 if year is between 2004–2007; and 0 otherwise
	National average growth rate of house prices	*GROWTH*	National average growth rate of house prices
	Average house price growth divided by growth rate of the average worker's wage	*RATIO*	Average house price growth divided by growth rate of the average worker's wage
Control variables	Company's nature	*SOE*	Equals 1 if company is a state-owned listed company, 0 otherwise
	Company size	*SIZE*	Equals natural logarithm of total fiscal year assets
	Return on total assets	*ROA*	Return on total assets
	Asset liability ratio	*LEV*	Total liabilities divided by total assets
	Accruals of previous period	*L_TA*	Accruals of previous period divided by assets of previous year
	Change of board chairman	*CHANGE*	Equals 1 if chairman of the board changes, 0 otherwise
	Largest proportion of shareholding	*TOP*	Largest proportion of shareholding

This table describes the variables collected for the 232 sample in our study. The first column gives the types of the variable, the second column gives the name of the variables, the third column gives the symbols of the variable and the last column gives the definitions of the variables.

Table 3
Descriptive statistics of the main variables.

Variables	N	Mean	Lower quartile	Medium	Upper quartile	Standard deviation
GROUP	232	0.7155	0.0000	1.0000	1.0000	0.4521
GROWTH	232	0.1070	0.0484	0.1404	0.1476	0.0531
RATIO	232	0.7014	0.3719	0.7886	0.9614	0.3408
SOE	232	0.6466	0.0000	1.0000	1.0000	0.4791
SIZE	232	21.7153	21.0406	21.7601	22.2994	0.9656
ROA	232	0.0292	0.0118	0.0308	0.0492	0.0392
LEV	232	0.5634	0.4667	0.5825	0.6801	0.1577
L_TA	232	0.0341	−0.0471	0.0262	0.1063	0.1548
CHANGE	232	0.2974	0.0000	0.0000	1.0000	0.4581
TOP	232	0.3801	0.2592	0.3326	0.5052	0.1700

This table lists the descriptive statistics of the main variables used in this paper.

Table 4
DA in different groups.

Variable	Year group	N	Mean	Medium	T value	Z value
Panel A						
DA	2002–2003	66	0.0391	0.0078	−0.13	0.17
	2004–2007	166	0.0357	0.0276		
Panel B						
SOEs	2002–2003	45	0.0416	−0.0142	0.87	1.41
	2004–2007	105	0.0705	0.0453		
Non-SOEs	2002–2003	21	0.0338	0.0082	−1.48	−1.51
	2004–2007	61	−0.0242	−0.0201		

Variable	Year group	Nature	N	Mean	Medium	T value	Z value
Panel C							
DA > 0	2002–2003	SOEs	22	0.1723	0.1287	−1.00	−0.85
		Non-SOEs	12	0.1109	0.0745		
	2004–2007	SOEs	65	0.1694	0.1070	−1.05	−1.27
		Non-SOEs	27	0.1327	0.0872		
DA < 0	2002–2003	SOEs	23	−0.0834	−0.0634	0.48	1.01
		Non-SOEs	9	−0.0690	−0.0563		
	2004–2007	SOEs	40	−0.0902	−0.0677	−2.33**	−2.53**
		Non-SOEs	34	−0.1488	−0.1242		

Note: ***,**,* Indicate statistical significance at the 1%, 5%, and 10% levels.
Panel A shows that there is no significant difference in DA between the 2002-2003 and 2004-2007 groups. Panel B shows that the mean and median DA of non-state-owned companies in 2004-2007 is lower than that of 2002-2003, but the difference is not significant. Panel C shows that in the group in which DA are negative in 2004-2007, the DA of Non-SOEs is less than those of SOEs.

3.4. Descriptive statistics

Table 3 lists the descriptive statistics of the main variables used in this paper. Table 3 shows that the mean (median) of GROWTH is 0.1070 (0.1404), indicating that China's housing market has experienced a high rate of growth in recent years. In this case, the government is likely to impose regulations on listed real estate companies. Table 3 also shows that the mean (median) of RATIO is 0.7014 (0.7886), which means that 70% of the growth in wages was offset by increases in housing prices.

Next, we compare discretionary accruals (DA) for different years and for different types (state-owned and non-state-owned) of listed real estate companies. Table 4 Panel A shows that there is no significant difference in DA between the 2002–2003 and 2004–2007 groups. Table 4 Panel B shows that the mean and median DA of non-state-owned companies in 2004–2007 is lower than that of 2002–2003, but the difference is not significant. Furthermore, the observations were divided into two groups according to whether DA is positive or negative. Table 4 Panel C shows that in the group in which DA are negative in 2004–2007, the DA of non-state-owned real estate companies is less than those of state-owned real estate companies. The mean (median) DA is −0.0902 (−0.0677) in the state-owned group, and −0.1488 (−0.1242) in the non-state-owned group. Both mean and median tests are significant.

3.5. Regression analysis

3.5.1. Political costs and earnings management

To test Hypothesis 1: listed real estate companies are more likely to decrease earnings when there are greater political costs, we build Model (1) based on Bo and Wu (2009). POLI is the variable for political costs, specifically measured by the

three variables: *GROUP*, *GROWTH* and *RATIO*. According to Hypothesis 1, *POLI* should be significantly negative. Model (1) is as follows:

$$DA = \beta_0 + \beta_1 POLI + \beta_2 SIZE + \beta_3 ROA + \beta_4 LEV + \beta_5 L\_TA + \beta_6 CHANGE + \beta_7 TOP + \varepsilon \qquad (1)$$

Table 5
Correlations.

	DA	GROUP	GROWTH	RATIO	SIZE	ROA	LEV	L_TA	CHANGE	TOP
DA	1	0.0113	0.0140	−0.0282	0.3260	0.2696	0.1071	0.2513	−0.0706	−0.0158
		0.8644	0.8322	0.6692	<.0001	<.0001	0.1036	0.0001	0.2842	0.8107
GROUP	−0.0083	1	0.7933	0.7932	0.1608	0.1026	0.0474	−0.0127	−0.0287	−0.1171
	0.9002		<.0001	<.0001	0.0142	0.1192	0.4728	0.8475	0.6642	0.0752
GROWTH	−0.0519	0.7570	1	0.9068	0.1250	0.1297	0.0482	0.0715	−0.0707	−0.0351
	0.4317	<.0001		<.0001	0.0573	0.0485	0.4653	0.2782	0.2837	0.5944
RATIO	−0.0697	0.7043	0.9627	1	0.0579	0.0661	0.0581	0.0241	−0.1119	−0.0230
	0.2908	<.0001	<.0001		0.3803	0.3161	0.3782	0.7147	0.0890	0.7278
SIZE	0.3808	0.1647	0.0986	0.0426	1	0.2653	0.1233	0.1645	−0.1261	0.0556
	<.0001	0.0120	0.1342	0.5186		<.0001	0.0608	0.0121	0.0551	0.3993
ROA	0.2373	0.0775	0.0645	0.0257	0.1865	1	−0.2596	0.1365	−0.1565	0.0063
	0.0003	0.2399	0.3283	0.6973	0.0044		<.0001	0.0378	0.0171	0.9235
LEV	0.1190	0.0480	0.0339	0.0487	0.1433	−0.2934	1	0.1296	−0.0032	−0.0778
	0.0705	0.4667	0.6071	0.4608	0.0292	<.0001		0.0487	0.9617	0.2376
L_TA	0.2550	−0.0328	0.0478	0.0400	0.1965	0.1565	0.1337	1	−0.1274	−0.0523
	<.0001	0.6196	0.4687	0.5443	0.0026	0.0171	0.0419		0.0527	0.4279
CHANGE	−0.0770	−0.0287	−0.0847	−0.1178	−0.0992	−0.1096	−0.0302	−0.0922	1	−0.0179
	0.2430	0.6642	0.1984	0.0733	0.1318	0.0958	0.6476	0.1615		0.7865
TOP	0.0008	−0.1091	−0.0241	−0.0111	0.0126	0.0384	−0.0922	−0.0288	−0.0024	1
	0.9899	0.0974	0.7150	0.8664	0.8487	0.5610	0.1615	0.6622	0.9710	

This table provides the correlation matrix of the main variables, comprising Pearson correlation coefficients in the lower triangular matrix and Spearmen correlation coefficients in the upper triangular matrix.

Table 6
The relation between *DA* and political costs in pooled samples.

Variable	Symbol	GROUP	
		Coefficient	T value
Panel A			
Intercept	CONS	−1.3586***	−5.24
Political costs	POLI	−0.0316	−1.26
Company size	SIZE	0.0603***	4.93
Return on total assets	ROA	0.9346***	3.00
Asset liability ratio	LEV	0.1372*	1.79
Accruals of previous period	L_TA	0.1746**	2.33
Change of board chairman	CHANGE	−0.0041	−0.17
Largest proportion of shareholding	TOP	−0.0045	−0.07
Adj R^2		0.1923	
F value		8.86	
N		232	

Variable	Symbol	GROWTH		RATIO	
		Coefficient	T value	Coefficient	T value
Panel B					
Intercept	CONS	−1.3250***	−5.15	−1.3006***	−5.04
Political costs	POLI	−0.3781*	−1.80	−0.0558*	−1.71
Company size	SIZE	0.0595***	4.93	0.0583***	4.84
Return on total assets	ROA	0.9320***	3.01	0.9163***	2.96
Asset liability ratio	LEV	0.1368*	1.79	0.1383*	1.81
Accruals of previous period	L_TA	0.1845**	2.48	0.1847**	2.48
Change of board chairman	CHANGE	−0.0068	−0.28	−0.0084	−0.34
Largest proportion of shareholding	TOP	0.0021	0.03	0.0040	0.06
Adj R^2		0.1983		0.1971	
F value		9.16		9.10	
N		232		232	

Note: ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels.
This table shows the regression results of model 1, which is to test the relation between *DA* and political costs in the pooled samples.

Table 7
The relation between *DA* and political costs in SOEs group and non-SOEs group.

Variable	Symbol	SOEs		Non-SOEs	
		Coefficient	T value	Coefficient	T value
Panel A					
Intercept	*CONS*	−1.1052***	−3.20	−1.3894***	−2.65
Year group	*GROUP*	−0.0130	−0.42	−0.0962**	−2.17
Company size	*SIZE*	0.0488***	3.09	0.0664**	2.61
Return on total assets	*ROA*	0.8934**	1.98	1.0134**	2.31
Asset liability ratio	*LEV*	0.1429	1.49	−0.0060	−0.04
Accruals of previous period	*L_TA*	0.3294***	3.20	−0.0435	−0.39
Change of board chairman	*CHANGE*	0.0140	0.45	−0.0565	−1.34
Largest proportion of shareholding	*TOP*	−0.0526	−0.66	0.1178	0.82
Adj R^2		0.1821		0.1815	
F value		5.74		3.57	
N		150		82	
Panel B					
Intercept	*CONS*	−1.0857***	−3.17	−1.1361**	−2.24
National average growth rate of house prices	*GROWTH*	−0.0281	−0.11	−1.1978***	−3.43
Company size	*SIZE*	0.0477***	3.05	0.0564**	2.32
Return on total assets	*ROA*	0.8942**	1.98	1.0375**	2.48
Asset liability ratio	*LEV*	0.1400	1.47	0.0074	0.06
Accruals of previous period	*L_TA*	0.3294***	3.19	0.0018	0.02
Change of board chairman	*CHANGE*	0.0137	0.44	−0.0648	−1.60
Largest proportion of shareholding	*TOP*	−0.0503	−0.63	0.1492	1.08
Adj R^2		0.18		0.25	
F value		5.71		4.83	
N		150		82	
Panel C					
Intercept	*CONS*	−1.0836***	−3.17	−1.0501**	−2.02
Average house price growth divided by growth rate of the average worker's wage	*RATIO*	−0.0095	−0.24	−0.1751***	−3.10
Company size	*SIZE*	0.0477***	3.08	0.0516**	2.08
Return on total assets	*ROA*	0.8922**	1.98	0.9751**	2.31
Asset liability ratio	*LEV*	0.1404	1.47	0.0347	0.27
Accruals of previous period	*L_TA*	0.3303***	3.20	0.0031	0.03
Change of board chairman	*CHANGE*	0.0132	0.43	−0.0694*	−1.68
Largest proportion of shareholding	*TOP*	−0.0500	−0.63	0.1414	1.01
Adj R^2		0.18		0.23	
F value		5.72		4.45	
N		150		82	

Note: ***,** indicate statistical significance at the 1% and 5% levels.
This table shows the relation between *DA* and political costs in SOEs group and Non-SOEs group.

Table 8
Test using interaction variable method.

Variable	Symbol	GROUP	GROWTH	RATIO
Intercept	*CONS*	−1.2227***	−1.1070***	−1.0873***
Political costs	*POLI*	−0.0673	−1.0892***	−0.1589***
Company's nature	*SOE*	−0.0179	−0.0910*	−0.0790
Company's nature * political costs	*SOE∗POLI*	0.0567	1.0738**	0.1508**
Company size	*SIZE*	0.0549***	0.0525***	0.0512***
Return on total assets	*ROA*	0.9694***	0.9892***	0.9469***
Asset liability ratio	*LEV*	0.1360*	0.1378*	0.1457*
Accruals of previous period	*L_TA*	0.1659**	0.1773**	0.1768**
Change of board chairman	*CHANGE*	−0.0066	−0.0095	−0.0121
Largest proportion of shareholding	*TOP*	−0.0172	−0.0113	−0.0138
Adj R^2		0.19	0.21	0.21
F value		7.10	8.02	7.82
N		232	232	232

Note: ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels.
This table shows the regression results of model 2 using interaction variable *SOE* ∗*POLI* to test the difference of political costs between SOEs and Non-SOEs.

Table 9
Analysis of central government enterprises.

Variable	Symbol	GROUP	GROWTH	RATIO
Intercept	CONS	−1.0285***	−1.0444***	−1.0463***
Political costs	POLI	−0.0169	0.0189	0.0055
Companies' nature	CEN	0.0211	0.0918	0.1438
Companies' nature * political costs	CEN*POLI	0.0402	−0.3609	−0.1281
Company size	SIZE	0.0451***	0.0452***	0.0453***
Return on total assets	ROA	0.7976*	0.7729*	0.7572
Asset liability ratio	LEV	0.1395	0.1316	0.1305
Accruals of previous period	L_TA	0.3188***	0.3278***	0.3313***
Change of board chairman	CHANGE	0.0089	0.0082	0.0057
Largest proportion of shareholding	TOP	−0.036	−0.0255	−0.0247
Adj R^2		0.18	0.18	0.18
F value		4.63	4.62	4.76
N		150	150	150

Note: ***,* indicate statistical significance at the 1% and 10% levels.
This table shows the regression results to test the difference of political costs between ordinary SOEs and central government enterprises. *CEN* is a dummy variable, which equals 1 if the firm is a central government enterprise, and 0 otherwise.

Table 5 provides the correlation matrix of the main variables, comprising Pearson correlation coefficients in the lower triangular matrix and Spearmen correlation coefficients in the upper triangular matrix. Table 5 shows that *DA* is negatively correlated with political costs and positively correlated with *SIZE*. This confirms that *SIZE* is not an appropriate variable for political costs in China. As the correlation matrix also shows, *DA* has a stronger relationship with *ROA*, *LEV*, *L_TA* and other variables.

The regression results of Model 1 are displayed in Table 6. Table 6 Panel A shows that the coefficient on *GROUP* is negative, but not significant. Table 6 Panel B shows that *DA* is significantly negatively related to *GROWTH* and *RATIO*. These results are consistent with our hypothesis, that the faster house prices grow, the more likely companies will manage earnings.

3.5.2. State-owned versus non-state-owned companies

We also compare the political costs of state-owned versus non-state-owned companies to test Hypothesis 2.

Table 7 shows the regression results. Table 7 Panel A shows that the coefficient on *GROUP* is negative in the state-owned group, but not significant. However, the coefficient on *GROUP* is significantly negative in the non-state-owned group, at the level of 5%. This shows that non-state-owned real estate companies had a stronger motivation to decrease their current earnings in the 2004–2007 period compared with the 2002–2003 period. However, this difference is not found in state-owned real estate listed companies.

Table 7 Panel B and Panel C show that the coefficients on *GROWTH* and *RATIO* are not significant in the state-owned group. However, in the non-state-owned group, the coefficient on *GROWTH* is −1.1978 and the coefficient on *RATIO* is −0.1751, both are significant at the 1% level. This suggests that, when house prices are used as a reference for political costs, non-state-owned companies are more sensitive to government regulation compared to state-owned enterprises. As political pressure increases, non-state-owned listed companies have a stronger motivation to decrease their current earnings. As state-owned real estate companies are able to get more implicit benefits from the government, such as more bank loans, they are not so sensitive to political costs.

To show our results are robust to different specifications, we use an additional model with interaction terms on the full sample. According to Hypothesis 2, the interaction term *SOE*POLI* should be significantly positive. Model (2) is as follows:

$$DA = \beta_0 + \beta_1 POLI + \beta_2 SOE + \beta_3 SOE*POLI + \beta_4 SIZE + \beta_5 ROA + \beta_6 LEV + \beta_7 L\_TA + \beta_8 CHANGE + \beta_9 TOP + \varepsilon \qquad (2)$$

Table 8 shows the regression results. The coefficients on *SOE*GROWTH* and *SOE*RATIO* are both positive and significant at the 5% level, while the coefficient on *SOE*GROUP* is positive but not significant. These results confirm that non-state-owned enterprises are more sensitive to political costs than state-owned enterprises.

3.5.3. Analysis of central government enterprises

If non-state-owned enterprises are relatively more sensitive to political costs than state-owned enterprises, then it should also be the case that ordinary state-owned enterprises are more sensitive to political costs than central government enterprises. Therefore, we segregate our sample of state-owned enterprises by adding a dummy variable *CEN*, which equals 1 if the firm is a central government enterprise, and 0 otherwise to test our hypothesis. If ordinary state-owned enterprises are more sensitive to political costs than central government enterprises, then *CEN*POLI* should be significantly positive.

Table 9 shows these regression results. However, the coefficients on *CEN*POLI* are not significant, which means that ordinary state-owned enterprises are no more sensitive to political costs than central government enterprises.

Table 10
Robustness test on deposits.

Variable	Symbol	SOEs		Non-SOEs	
		Coefficient	T value	Coefficient	T value
Panel A					
Intercept	CONS	−13.4479***	−5.31	−19.3200***	−3.28
Year group	GROUP	−0.4744**	−2.08	1.4918***	−3.07
Company size	SIZE	1.4299***	−12.40	1.5531***	−5.48
Return on total assets	ROA	2.5751	−0.78	8.1250*	−1.68
Asset liability ratio	LEV	2.8971***	−4.11	5.4331***	−3.63
Accruals of previous period	L_TA	−1.3533*	−1.81	−0.0098	−0.01
Change of board chairman	CHANGE	−0.0015	−0.01	0.7896*	−1.71
Largest proportion of shareholding	TOP	−0.5369	−0.92	−0.6835	−0.44
Adj R^2		0.58		0.43	
F value		30.43		9.76	
N		148		81	
Panel B					
Intercept	CONS	−12.8344***	−5.04	−21.4755***	−3.52
National average growth rate of house prices	GROWTH	−1.6310	−0.85	8.8298**	−2.15
Company size	SIZE	1.3952***	−12.09	1.6759***	−5.77
Return on total assets	ROA	2.6087	−0.79	9.3873*	−1.90
Asset liability ratio	LEV	2.8159***	−3.95	5.0865***	−3.31
Accruals of previous period	L_TA	−1.3427*	−1.77	−0.8164	−0.67
Change of board chairman	CHANGE	−0.0194	−0.08	0.7638	−1.6
Largest proportion of shareholding	TOP	−0.4463	−0.75	−1.0199	−0.63
Adj R^2		0.57		0.40	
F value		29.17		8.58	
N		148		81	
Panel C					
Intercept	CONS	−12.7059***	−5.00	−22.4959***	−3.68
Average house price growth divided by growth rate of the average worker's wage	RATIO	−0.2220	−0.76	1.5482**	−2.37
Company size	SIZE	1.3886***	−12.10	1.7221***	−5.94
Return on total assets	ROA	2.5809	−0.78	9.6211*	−1.97
Asset liability ratio	LEV	2.8132***	−3.95	4.8591***	−3.19
Accruals of previous period	L_TA	−1.3432*	−1.76	−0.8074	−0.67
Change of board chairman	CHANGE	−0.0228	−0.10	0.8343*	−1.74
Largest proportion of shareholding	TOP	−0.4406	−0.74	−0.9804	−0.61
Adj R^2		0.57		0.41	
F value		29.12		8.83	
N		148		81	

Note: ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels.
This table shows the regression results of model 3, which is to test the relation between deposits and political costs in SOEs group and Non-SOEs group.

3.6. Robustness tests

The magnitude of earnings management is an important issue to be explained in our paper. However, whether *DA* as calculated by the Jones model is applicable in this study is questionable for the following reasons. First, the Jones model has more explanatory power in relation to earnings management if there are a large number of sample years. However, as China's securities market has been in existence for less than 20 years, we do not have a long enough time-series sample of large-scale real estate companies. Second, real estate companies often have huge amounts of accrued profits and it is easier for them to manipulate profits through deposits received. Therefore, it is insufficient to only examine *DA*.

We therefore also investigate the deposits received by listed real estate companies. Real estate companies can manipulate earnings by reorganizing sales (e.g., confirming sales as deposits received). We build Model (3) using (*REP*) as the dependent variable based on deposits received. *REP* is the natural logarithm of deposits received:

$$REP = \beta_0 + \beta_1 POLI + \beta_2 SIZE + \beta_3 ROA + \beta_4 LEV + \beta_5 L\_TA + \beta_6 CHANGE + \beta_7 TOP + \varepsilon \tag{3}$$

We divide the sample based on company type (state and non-state). The results are shown in Table 10. Panel A shows that the coefficient on *GROUP* in the case of state-owned companies is significantly negative at the 5% level, after controlling for *ROA*. The coefficient on *GROUP* is significantly negative (−1.4918) at the 1% significance level, for non-state-owned companies. This means that in policy tightening years, non-state-owned real estate companies are more willing to recognize sales as deposits received to defer revenue recognition. However, the results are in contrast to those for state-owned real estate companies.

Table 11
Deposits test using interaction variable method.

Variable	Symbol	GROUP	GROWTH	RATIO
Intercept	CONS	−16.1524***	−15.8844***	−16.0880***
Political costs	POLI	1.3660***	8.3729**	1.4158***
Companies' nature	SOE	1.3150***	1.0345**	1.0767**
Companies' nature * political costs	SOE*POLI	−1.8851***	−10.2081**	−1.6443***
Company size	SIZE	1.4636***	1.4592***	1.4656***
Return on total assets	ROA	5.6684**	6.3966**	6.6431**
Asset liability ratio	LEV	3.5721***	3.4159***	3.3401***
Accruals of previous period	L_TA	−0.7652	−1.0566	−1.0395
Change of board chairman	CHANGE	0.2642	0.2504	0.2755
Largest proportion of shareholding	TOP	−0.2889	−0.2439	−0.2170
Adj R^2		0.53	0.51	0.52
F value		29.98	27.78	27.93
N		229	229	229

Note: ***·** indicate statistical significance at the 1% and 5% levels.
This table shows the regression results of model 4 using interaction variable SOE*POLI to test the difference between SOEs and Non-SOEs.

Table 10 Panel B and Panel C show that the coefficients on GROWTH and RATIO are not significant for state-owned companies, but are for non-state-owned companies. For non-state-owned enterprises, the coefficients on GROWTH and RATIO are positive and significant (8.8298 and 1.5482) at the 5% level. This suggests that, when house prices are used as a reference for national macroeconomic control policies, non-state-owned enterprises have a stronger motivation to hide profits by recognizing sales as deposits received compared to state-owned enterprises. This result confirms that state-owned enterprises face less pressure from political costs.

To reveal the connections more clearly, we use model (4) with interaction terms on the full sample. According to Hypothesis 2, the coefficient on SOE*POLI should be significantly negative. Model (4) is as follows:

$$REP = \beta_0 + \beta_1 POLI + \beta_2 SOE + \beta_3 SOE * POLI + \beta_4 SIZE + \beta_5 ROA + \beta_6 LEV + \beta_7 L\_TA + \beta_8 CHANGE + \beta_9 TOP + \varepsilon \quad (4)$$

The regression results are shown in Table 11. The coefficients on POLI*SOE are all negative. The coefficients on SOE*GROUP and SOE*RATIO are significant at the 1% level. The coefficient on SOE*GROWTH is significant at the 5% level.[7] Consistent with Table 10, these results show that non-state-owned enterprises are more sensitive to political costs than state-owned enterprises.

4. Conclusions, limitations and future research directions

Using a sample of listed real estate companies between 2002 and 2007, we conduct an empirical study of the political costs hypothesis for earnings management in the context of China. The results show that, to avoid the negative impact of tightening government policies, listed real estate companies have an incentive to decrease current earnings. The motivation to conduct earnings management is greater for non-state-owned real estate companies than state-owned companies. However, we do not find evidence that ordinary state-owned enterprises are more sensitive to political costs compared to central government enterprises. The results of our study demonstrate that close attention needs to be paid to economic indicators that act as references for macroeconomic controls when conducting earnings management research in the context of China.

Our first contribution to the earnings management literature is that company size, commonly used as a proxy for political costs in traditional Western research, does not apply in the context of China. Economic indicators that act as references to macroeconomic controls may be more accurate. Second, we test for differences in political cost sensitivity in different types of corporations, thereby enriching the approach to political costs research in China. Our findings provide a reference for government industrial policy during transition periods.

There are a number of limitations to this study. First, we created new variables as proxies for political costs that have never been used in previous studies. We do not study the importance of real estate prices for government regulation or how political costs are applied to the real estate industry. Further research is needed in this field, for example, to examine whether the ease of re-financing and the level of tax incentives play important roles in earnings manipulation. Second, our political cost indicator is limited to the macroeconomic level and we fail to identify the political costs of individual companies. In addition, as there are a variety of real estate price indexes, it may be questionable whether our indicator is the most appropriate. These choices may all have an impact on the final results. Third, our sample is limited to the real estate industry, which weakens the generalizability of our conclusions. Nonetheless, these limitations all provide directions for future research.

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[7] We also conducted a test using the following variables: (1) REP1 = deposit received/total revenue during the previous year; (2) REP2 = deposit received/total assets during the previous year; (3) REP3 = deposit received/total revenue; and (4) REP4 = deposit received/total assets. The interceptions are always negative, but not always significant.

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