



Government affiliation, real earnings management, and firm performance: The case of privately held firms



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ABSTRACT

Using a moderated mediation model, we investigate the effects of government affiliation on the performance and real earnings management of privately held firms in China between 1998 and 2012. We find that politically affiliated firms tend to have superior accounting performance. The findings also suggest that politically affiliated firms are more likely than non-affiliated firms to engage in real activities to manipulate earnings. Furthermore, regional economic development moderates the relationships between political affiliation and real earnings management as well as firm performance. Finally, real earnings management mediates the effect of political affiliation on firm performance among privately held firms.

1. Introduction

A large body of literature examines the effects of executives' political connections on firm performance (Faccio, 2006; Fan, Wong, & Zhang, 2007; Li, Meng, Wang, & Zhou, 2008; Su & Fung, 2013), but the results are inconclusive. For example, Faccio (2006) utilizes event study methodology and shows a significant increase in firm value when top executives and large shareholders become politicians. In contrast, Fan et al. (2007) find that recently privatized firms with politically connected chairmen or CEOs have inferior performance in the three-year post-IPO period. It is not surprising to find mixed or even contradictory evidence, as the research settings in these studies differ, and such connections have been examined in both mature and emerging economies. It is worth noting that most of the extant studies are based on publicly listed companies even though privately held firms (i.e., those that are not traded on public stock exchanges) serve as an important engine for economic growth and job creation in both developed and developing countries (Allen, Qian, & Qian, 2005; Morck, Stangeland, & Yeung, 1998).¹ While there is an emerging stream of literature exploring the role of political connection in private firms (e.g., Ball & Shivakumar, 2005; Burgstahler, Hail, & Leuz, 2006; Chaney, Faccio, & Parsley, 2011), evidence concerning the role political connection/affiliation plays in privately held firms remains far from

conclusive. More recently, the effect of political connections on financial reporting quality has received much attention (Chaney et al., 2011; Leuz & Oberholzer-Gee, 2006). It is crucial to examine how political connections affect accounting quality, as stakeholders rely on corporate disclosure to improve their decision-making quality. The present study examines the relationships between political affiliation and firm performance and real earnings management, and it seeks to uncover the mechanism underlying such relationships in the setting of privately held firms in China.²

As indicated by Berkman, Cole, and Fu (2010), a firm's political influences may be rooted in the nature of its ownership structure and in the background of its executives; the former refers to government ownership, and the latter refers to the political connections arising from executives' prior or current working experience. Although scholars have recently started to investigate how publicly listed companies are affected by the political influences stemming from government ownership (e.g. Ding, Jia, Wilson, & Wu, 2014), most studies focus on the effects of executives' political connections (Bunkanwanicha & Wiwattanakantang, 2009; Faccio, 2006; Fan et al., 2007; Li et al., 2008; Su & Fung, 2013). In an agency theory framework, the focus on political connections may overlook the potential overriding significance of influences stemming from ownership structure, leading to misleading inferences. Put differently, owners' political influences may have different effects from

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¹ For example, Forbes reported in 2008 that the 441 largest privately held enterprises in the U.S. generated \$1.8 trillion in revenue and employed 6.2 million individuals (Reifman & Murphy, 2008). In addition, China had > 50 million small and medium-sized private firms as of end-2011, accounting for 99.8% of the total number of enterprises and 60% of the country's GDP (China Statistics Yearbook 2012).

² We use private firms and privately held firms interchangeably throughout the paper.

those caused by agents' personal connections to government or government agencies, especially in privately held firms.

The objective of this study is to fill the aforementioned gaps in the literature by offering new and useful evidence on privately held firms' political affiliations. More specifically, this study seeks to shed light on the effects of private firms' government (or, interchangeably, "political") affiliations, for which we use affiliation with different levels of government as a proxy, on their financial performance and use of real earnings management. Furthermore, we explore whether real earnings management mediates the effect of government affiliation on firm performance.³ Unbalanced regional economic development exists in most economies, and such sub-national differences may moderate the relationships between political affiliations and real earnings management and firm performance. Such a supposition seems plausible given local governments' varying roles in privately held firms' ownership structures (Faccio, 2006). Therefore, our study further explores whether and how regional differences moderate the role of political influences.

Privately held firms' accounting issues are under-studied, partly because detailed accounting information is usually unavailable for such firms, especially in an international setting. Privately held firms are not obligated to disclose such information, and even if they do, the disclosures may be of unsatisfactory quality (Ball & Shivakumar, 2005; Burgstahler et al., 2006). As Chen, Chen, Lobo, and Wang (2011b) rightfully point out, China serves as a natural test bed for a quasi-experimental exploration of regional differences in economic development, due in part to the country's well-documented regional imbalances and also to the ability to control for the influences of other factors (e.g. culture, policy, history, etc.). Therefore, we used China as the setting to test the hypotheses proposed in this study. Furthermore, we have access to an official data set containing detailed financial information on privately held firms in China. We are confident in the reliability of the information given the official nature of the data set.

Our findings indicate that politically affiliated firms tend to have superior accounting performance, but the relationship between their affiliations with different levels of government and firm performance is non-monotonic. We further show that politically affiliated firms manipulate earnings to a greater extent than non-affiliated firms. Furthermore, regional economic development moderates such relationships. Finally, real earnings management does serve as a mediator between the political affiliation of privately held firms and their performance.

This study contributes to the broad literature on accounting, corporate governance, and entrepreneurial finance in multiple ways. By providing evidence of the value of government affiliation in enhancing firm performance, it advances our understanding of how privately held firms, as a vital yet informationally opaque part of the economy, can benefit from government affiliation. Second, it adds to the literature by presenting evidence of the moderating role that regional development plays in the association between political affiliation and firm performance. Third, it contributes to the accounting literature by showing that political affiliation is an important determinant of real earnings management among privately held firms and by demonstrating that the effect may vary due to unbalanced economic development. The current study is among the first to present evidence that politically affiliated firms use real earnings management to a more significant extent, thus contributing to superior performance. Hence, we identify a new channel through which political affiliation influences firm performance. The findings of this study have important implications for private enterprise owners, potential capital suppliers (including both creditors and equity holders), and policy makers, and it can be generalized to

³ Following Roychowdhury (2006), we define real earnings management as managers undertaking actions that change the timing or structuring of operations and deviate from normal business practices. Given our focus on real earnings management in this paper (see details in Section 2.1), we are likely to capture the lower bound of total earnings management among politically affiliated private firms.

other jurisdictions including both developing and developed countries.

The remainder of the paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. The sample and research design are described in Section 3, and empirical results are reported in Section 4. Section 5 presents conclusions.

2. Literature review and hypothesis development

2.1. Effects of political connection on earnings management

According to Healy and Wahlen (1999), earnings management occurs when managers use discretion in financial reporting to mislead stakeholders about underlying performance or to influence contractual outcomes that depend on accounting performance. The motivations for engaging in earnings management may arise from 1) capital market expectations and 2) contracts written in terms of accounting performance. For privately held firms, the latter is clearly the key motivation. The literature shows that firms can use both accrual-based and real earnings management to enhance accounting performance (Badertscher, 2011; Cohen & Zarowin, 2010; Zang, 2012). Unlike accrual-based earnings management, which aims to obscure economic performance by altering accounting methods, real earnings management changes the execution of real business transactions to meet short-term performance targets (Roychowdhury, 2006). Analyzing a large sample of public firms from 30 countries, Braam, Nandy, Weitzel, and Lodh (2015) find that politically connected firms are more likely than non-connected firms to substitute real earnings management for accrual-based earnings management, as the former has higher secrecy and is more difficult for investors and regulators to detect. Because our study concentrates on politically affiliated private firms, we narrow our attention to real earnings management.

Research has also examined whether firms are more likely to engage in earnings management when they are close to violating debt covenants such as dividend payment constraints and new debt issuance restrictions (DeAngelo, DeAngelo, & Skinner, 1994; Holthausen, 1981). Earnings management may also come into play when non-listed firms have plans to go public (Teoh, Welch, & Wong, 1998). Chinese privately held firms may have economic incentives to manage earnings prior to an IPO, as steady profitability is a key criterion that is evaluated when new equity is issued in the capital market. As for managerial compensation contracting, masking poor performance could increase managerial compensation among Chinese state-owned enterprises (Kato & Long, 2006).

An equally important issue is the potential consequence when earnings management is identified. Efficient monitoring can, to some extent, increase the chance of earnings manipulation being detected. Thus, managers must weigh the benefits and costs of such activities.⁴ Political connections might facilitate earnings management by reducing the associated costs. Chaney et al. (2011) show that politically connected firms have low accounting quality, and they conjecture that political connections may serve to shield firms from penalization for low-quality reported earnings. The potential to receive political protection when engaged in earnings management could be even stronger when the managers are politicians themselves, as they have political power and prestige.

2.2. Effects of political connection on firm performance

Political connection enables firms to secure favorable regulatory treatment (Agrawal & Knoeber, 2001) and access to valuable resources,

⁴ For example, Dechow, Sloan, and Sweeney (1996) point out that once earnings management is detected, investors are likely to revise down their valuations of a firm and to have less confidence in the credibility of the firm's financial reporting and in the reputation of its management; this leads to higher monitoring costs for the firm and a higher cost of raising capital.

which contribute to improved performance (Faccio, Masulis, & McConnell, 2006; Johnson & Mitton, 2003; Khwaja & Mian, 2005). Empirical evidence suggests that political connection can benefit firms in both developing and developed countries. Bunkanwanicha and Wiwattanakantang (2009) examine the performance of politically connected firms in Thailand. They find that after becoming politically connected, a firm's market-to-book ratio increases from 0.918 to 3.141 on average. They further find that connected firms outperform their non-connected counterparts by 160%. Furthermore, they show that politically connected firms benefit from government policies, including favorable tax rates and new government contracts. Khwaja and Mian (2005) report that politically connected firms in Pakistan receive 45% larger loans than their non-connected counterparts, although their default rates are 50% higher. Likewise, Charumilind, Kali, and Wiwattanakantang (2006) demonstrate that politically connected firms have greater access to bank credit. Goldman, Rocholl, and So (2009) show that in the U.S. stock market, there is a positive abnormal stock return following the announcement of a board nomination of a politically connected individual. Faccio et al. (2006) investigate 450 politically connected firms in 35 countries and find that publicly traded firms with political connections are more likely to obtain a bailout than their non-connected peers, *ceteris paribus*.

China is characterized by relatively weak investor protection and severe government intervention into business activities. For example, North (2005) notes that the ruling Chinese Communist Party still dominates every aspect of life in China, and Wei, Xie, and Zhang (2005) remark that “politics trumps economics” in the country. Since the late 1970s, China has carried out economic reforms to open up its centrally planned economy and foster a market-oriented one, but the government still retains the power to allocate key resources. To access these resources, it is critical for firms to maintain good relationships with the government. Therefore, how political connections influence the performance of Chinese firms is a question with practical implications. Fan et al. (2007) find that long-term post-IPO stock returns and accounting performance are significantly worse among Chinese listed firms with politically connected CEOs. Furthermore, they report that politically connected listed firms have as board members more current or former government officials, who have fewer business skills and less experience. This suggests that politically connected firms in China suffer rather than benefit from their close ties with the government. However, later studies report a positive effect of political connection on firm performance in China. For example, Li et al. (2008) find that entrepreneurs' affiliation with the Chinese Communist Party has a positive effect on firm performance. Su and Fung (2013), working with a large sample of Chinese listed firms, report a positive relationship between management team members' political connections and accounting performance and firm value. Thus, the empirical results so far are mixed regarding the effect of political connection on firm performance in China.

2.3. Political affiliation versus political connection

Government-affiliated firms usually refer to the subsidiaries of state-owned enterprises (SOE), which have equivalent administrative rankings to the corresponding layers of government, or to firms engaged in a tertiary industry of the government itself. This intrinsic relation is determined when the affiliated firms are established. The literature identifies political connections based on whether managers have ever worked in the government (Fan et al., 2007), whether the owners are members of the party (Li et al., 2008), or even whether top executives (CEO, COO, president, etc.) and board members have ever taken positions in the government (Su & Fung, 2013). However, in an agency framework, political affiliation is fundamentally different from political connection, as the former concerns the political power of firm owners (principals), while the latter concerns that of executives (agents). This is similar to the relationship between land and tools in traditional

economics: owners have land, while executives have tools (Ding et al., 2014). Moreover, the potential divergence of the two parties' interests could generate agency costs, especially for politically connected firms that have managerial executives with great political power. In that sense, politically affiliated firms may benefit more than politically unconnected firms.

Furthermore, a self-selection issue could arise when examining the effect of political connection on firm performance, as CEOs, top executives, or board members may only consider serving in firms with good historical performance. However, this concern can be avoided in the case of politically affiliated firms, as the intrinsic relation is already fixed when an affiliated firm is created. In addition, when measuring a firm's political power in the traditional way, it is possible to determine whether any such political relationship exists through its executives and directors but not the level of this relationship. In contrast, the level of political power can be quantified by tracing the layers of government with which firms are affiliated; this allows us to examine the effect of government affiliation on firm performance at various levels of political power.

2.4. Government affiliation, firm performance, and real earnings management

Studies suggest that the benefits of political connections include easy access to credit from state-owned banks, favorable tax treatment, relaxed market entry, and a higher probability of government bailout in case of financial distress (Claessens, Feijen, & Laeven, 2008; Faccio, 2006, 2010; Infante & Piazza, 2014). A recent study by Houston, Jiang, Lin, and Ma (2014) suggests that in the U.S., political connections are associated with a lower cost of bank loans. As private firms have limited access to equity finance, they are more dependent on debt financing for investment and growth. Political connections enable private firms to have access to loans from state-controlled banks at lower costs, which enhances their ability to finance investments in projects with positive net present value. Additionally, the evidence supports a positive relation between political connections and the allocation of government contracts. For example, Goldman, Rocholl, and So (2011) find that U.S. companies connected with the winning party after the 1992 and 2000 presidential elections were more likely to experience an increase in the value of government procurement contracts. If this holds true for private firms, it suggests that those affiliated with the government are more likely to receive government contracts that can generate sustainable revenues. Similarly, politically affiliated firms are more likely than their non-affiliated counterparts to receive subsidies from the government to boost their performance.⁵ Finally, political connection may help firms reduce the costs associated with contract enforcement, helping to strengthen their competitive advantage. Consequently, we expect to find support for the following hypothesis⁶:

Hypothesis 1. There is a positive relation between political affiliation and the performance of privately held firms.

China is characterized by unequal development across its regions (Brandt & Li, 2003). For example, the average GDP per capita of the more developed eastern region in 2006 was 24,910 RMB (3153 USD), whereas that of the less developed western region was 9859 RMB (1248

⁵ Government subsidies, which include tax rebates, direct cash payments, land guarantees, and debt forgiveness, can be granted by either the central or local government to pursue socio-political objectives such as job creation and sustainable economic growth (Hung, Wong, & Zhang, 2008; O'Connor, Deng, & Luo, 2006).

⁶ We use accounting-based measures to capture the performance of private firms. However, it is likely that accounting measures are vulnerable to manager manipulation. To mitigate this concern, we include measures of real earnings management as a control variable in the regression when testing the effect of political affiliation on the performance of private firms. Furthermore, we develop a mediation model to disentangle the effect of political affiliation on performance and the effect of political affiliation on real earnings management.

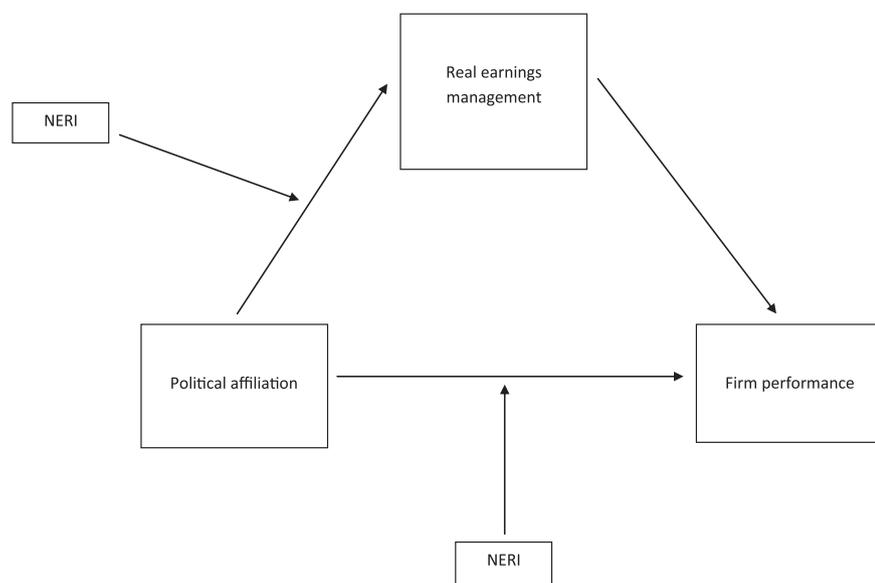


Fig. 1. Model: government affiliation, real earnings management, and firm performance.

USD).⁷ It is likely that political affiliation can generate more economic benefits in less developed regions, where the government plays a more instrumental role in resource allocation. Furthermore, in less developed regions, the protection of property rights and legal enforcement are likely to be weaker, suggesting that firms with political affiliation may obtain more benefits in terms of reduced costs associated with contract enforcement (Hellman, Jones, & Kaufmann, 2003). Therefore, we expect that imbalanced regional development moderates the association between political affiliation and firm performance. Based on this discussion, we develop the following hypothesis:

Hypothesis 2. The positive association between political affiliation and firm performance is less (more) pronounced among private firms located in more (less) developed regions.

Studies show that the earnings quality of private firms is generally lower than that of publicly listed firms, primarily because there is less demand for high-quality accounting information from non-listed firms (Ball & Shivakumar, 2005; Burgstahler et al., 2006). According to a recent study by Braam et al. (2015), politically connected firms are more likely to use real earnings management because real activity manipulation is not under the scrutiny of auditing rules or regulatory enforcement. Therefore, real earnings management enables politically connected firms to preserve the reputations of the firm and the connected politician while at the same time achieving the desired performance outcomes. We suggest that politically affiliated private firms are likely to undertake real earnings management to increase earnings for the following reasons. First, if managers of such firms are successful in improving performance through the use of real earnings management, they have a higher chance of being promoted (e.g., to a managerial position in a larger company or even to positions in the government), suggesting that earnings management carries significant benefits. Second, managers of firms with political affiliations are less likely to be penalized for engaging in earnings manipulation even if they are detected, as punishment would be a face-losing event for the firm and the associated government. This indicates a lower cost of engaging in earnings management (Chaney et al., 2011; You & Du, 2012).⁸ In summary, we expect to find support for the following hypothesis:

⁷ Research concludes that fiscal decentralization and the re-orientation of China's regional development policy in favor of the coastal provinces have contributed to the widening gap between coastal and inland provinces (Tsui, 1996).

⁸ You and Du (2012) find that politically connected CEOs are less likely to be fired compared to their non-connected counterparts.

Hypothesis 3. Privately held firms with political affiliations tend to engage in real earnings management to a more significant extent than non-affiliated firms.

We suggest that imbalanced regional development also moderates the association between political affiliation and real earnings management. First, investor protection is likely to be weaker in less developed regions, where the law and auditing professions are also less developed. As a result, politically affiliated firms in less developed regions are under fewer constraints to engage in real earnings management. Second, in less developed regions, local governments play a dominant role in resource allocation and intervene in managing the economy to a more significant extent. The government may implicitly encourage affiliated firms to use real earnings management to achieve desired growth targets, thus supporting local economic expansion. Therefore, we put forward the following hypothesis:

Hypothesis 4. The positive association between political affiliation and real earnings management is less (more) pronounced for privately held firms located in more (less) developed regions.

Poor firm performance can negatively influence managers' compensation and job security (Grove, Hond, McMillan, & Naughton, 1995; Kato & Long, 2006) and the outcomes of debt contracts. A manager may be motivated to mask the firm's true performance through earnings management to avoid such risks. When a firm is performing extremely well, a forward-looking manager might engage in real activities to create reserves for future potential losses and smooth reported earnings, leading to a smaller perceived risk of violating debt covenants. However, this may have little bearing on private firms, as the market reaction has little effect on firm value. Instead, creditors are more concerned about poor firm performance. The constrained access to outside financing influences private firms' survival and growth. Thus, private firms are largely dependent on bank debt financing. To ensure access to bank financing at a lower borrowing cost, private firms need to display high profitability. Therefore, private firms are motivated to undertake real earnings management to increase their operating performance.

If political affiliation turns out to have a positive effect on firm performance, it is likely that politically affiliated firms engage in earnings management to a greater extent, leading to inflated accounting-based performance. Thus, we propose the last hypothesis:

Hypothesis 5. Real earnings management mediates the effect of political affiliation on the performance of privately held firms.

Fig. 1 illustrates the theoretical framework depicted by the above five hypotheses.

3. Research methodology

3.1. Sample

Our sample consists of privately held firms operating in Mainland China between 1998 and 2012 included in the China Non-listed Company Database, which is compiled by GTA Information Technology Co. Ltd. with information from the National Bureau of Statistics of China (2012). The database contains detailed financial information on over one million non-listed firms from 41 industries across 31 provinces in Mainland China. As mentioned earlier, this sample enables us to conduct a natural test of the hypotheses proposed in this study (Chen et al., 2011b). Data after 2012 are not used because the updated information is not available from GTA.

GTA inclusively collects information on the Chinese stock market, bond market, and other securities market and financial and governance data of both listed and non-listed firms. The credibility of GTA has been confirmed in previous studies, most of which focused on listed firms. Kato and Long (2006) examine the impact of managerial turnover on firm performance in China; Wu (2011), using information from the stock market database, argues that pure momentum strategies do not work in the Chinese stock market. Our study utilizes the Chinese non-listed firm database, a special entity that warrants greater attention.

3.2. Government affiliation

To construct the main variable of interest, political affiliation, we identify the administrative layer of the government or equivalent administrative rank of SOEs with which each firm is affiliated. Privately held firms can be affiliated with various levels of government: central, provincial, municipal, county, town, and village. Such an affiliation is likely to be exogenously determined when a firm is initially incorporated. In addition, some of these politically affiliated firms are subsidiaries of SOEs, which have administrative rankings equivalent to the corresponding layer of government. We create a dummy variable PA that takes a value of 1 if a private firm is politically affiliated with any layer of government and 0 otherwise.

We further introduce six dummy variables to capture the layer of government with which a private firm is affiliated: PANO_C indicates that the firm is affiliated with the central government; PANO_P indicates that the firm is affiliated with a provincial government; PANO_M indicates that the firm is affiliated with a municipal government; PANO_CY indicates that the firm is affiliated with a county government; PANO_T indicates that the firm is affiliated with a sub-district, town, or township; and PANO_V indicates that the firm is affiliated with a residents' committee or villagers' committee, the lowest layer in the government. We use these dummy variables to test the potential non-linear relationship between different levels of political affiliation and firm performance (real earnings management) in Section 4.2.3.

3.3. Moderator

To describe regional development across the country, China's National Economic Research Institute (NERI) has developed a comprehensive index for each province and major municipality. It consists of sub-indexes capturing 1) the government-market relationship (i.e., the role of the market in resource allocation); 2) the development of non-state-owned sectors (i.e., the percentage of total industrial output that is contributed by the private sector); 3) the development of commodity markets; 4) the development of factor markets; and 5) market intermediaries (i.e., auditing firms) and the legal environment (i.e., protection of property rights). The reliability of the NERI index has been established by research such as Chen et al. (2011b) and Firth, Rui, and Wu (2011).

3.4. Research design for testing Hypotheses 1 and 2

We use return on equity (ROE) in the main analysis and return on assets (ROA) in the robustness check to measure the performance of privately held firms, and we use the following model to test the relation between political affiliation and performance specified in Hypotheses 1 and 2:

$$\text{Performance} = b_0 + b_1\text{PA} + b_2\text{NERI} + b_3\text{PA}*\text{NERI} + b_4\text{Controls} + \text{error term} \quad (1)$$

Consistent with previous studies (e.g., Chen, Firth, Gao, & Rui, 2006; Li et al., 2008; Su & Fung, 2013), we control the following firm-specific variables when investigating the effect of political affiliation on firm performance: natural log of assets (*size*), long-term debt scaled by total assets (*leverage*), firm age (*Age*), cash scaled by total assets (*Slack*), property, plant, and equipment scaled by total assets (*PPE*), an indicator variable for firms reporting losses (*Loss*), and standard deviation of investment in the last three years (*Stdivest*). In addition, we include the year fixed-effect and industry fixed-effect.

3.5. Research design for testing Hypotheses 3–5

To test Hypotheses 3 and 4, we first construct variables to measure the extent to which privately held firms undertake real activities to manage their reported earnings. In the literature (i.e., Cohen & Zarowin, 2010; Roychowdhury, 2006), there are three main tools to examine the magnitude of earnings management through real activities: abnormal operating cash flow, abnormal production costs, and abnormal discretionary expense. Due to data availability, we use only abnormal production costs as the proxy for real earnings management in this study.

First, we compute the normal level of production costs using a linear model (Cohen & Zarowin, 2010; Roychowdhury, 2006) in which normal production costs are a function of sales, change in current sales, and change in lagged sales. To estimate the model, we run the following regression for each year and industry:

$$\text{PROD}_{ij,t}/A_{ij,t-1} = a_{1jt} \frac{1}{A_{ij,t-1}} + a_{2jt} \frac{\text{SALES}_{ij,t}}{A_{ij,t-1}} + a_{3jt} \frac{\Delta\text{SALES}_{ij,t}}{A_{ij,t-1}} + a_{4jt} \frac{\Delta\text{SALES}_{ij,t-1}}{A_{ij,t-1}} + \varepsilon_{ij,t}, \quad (2)$$

where $\text{PROD}_{ij,t}$ represents the total production costs for company i in industry j for year t , defined as the sum of cost of goods and change in inventories; $\text{SALES}_{ij,t}$ represents the sales from company i in industry j for year t ; $\Delta\text{SALES}_{ij,t}$ represents the change in revenues from the prior year for company i in industry j ; and $\Delta\text{SALES}_{ij,t-1}$ represents the change in revenues for the past two years. The residual (error term) for company i in industry j for year t is the abnormal level of production costs. We use the absolute value of abnormal production costs to emphasize the magnitude of the manipulation rather than its direction. Larger absolute values of abnormal production costs indicate more real earnings management. With higher production levels, fixed overhead costs are spread over a larger number of units, reducing fixed costs per unit. As long as the reduction in fixed costs per unit is not offset by an increase in the marginal cost per unit, total cost per unit declines. This indicates that the reported cost of goods sold (CoGS) is lower, and the firm has better operating margins and higher earnings. Then, we use the following model to test Hypotheses 3 and 4:

$$\text{RealEM} = c_0 + c_1\text{PA} + c_2\text{NERI} + c_3\text{PA}*\text{NERI} + c_4\text{Controls} + \text{error term} \quad (3)$$

We use abnormal production cost as the measure for privately held firms' real earnings management. Consistent with prior research (Chen, Hope, Li, & Wang, 2011a; Leuz & Oberholzer-Gee, 2006; Wang, 2005) specifying several firm-specific factors that may affect the magnitude of earnings management, we include size, leverage, standard deviation of investment in

the last three years (*Stdivest*), PPE, age, and an indicator variable taking a value of 1 for firms reporting losses (*Loss*) as control variables. Similarly, we include the year fixed-effect and industry fixed-effect.

A mediation effect can be statistically confirmed when (1) the independent variable significantly affects the mediator, (2) the independent variable significantly affects the dependent variable in the absence of the mediator, (3) the mediator has a significant effect on the dependent variable, and (4) the effect of the independent variable on the dependent variable shrinks upon the addition of the mediator to the model (Baron & Kenny, 1986; MacKinnon & Dwyer, 1993). In our setting, the dependent variable is firm performance (the observed ROE), the mediator is real earnings management reflected by abnormal production cost, and the independent variable is political affiliation. Accordingly, we need to run four sets of regression: a) earnings management on political affiliation (PA) and other control variables; b) firm performance (ROE) on earnings management and other control variables without PA; c) firm performance on PA and other control variables without earnings management; and d) firm performance on PA and other control variables with earnings management as the explanatory variable. The results enable us to identify whether real earnings management mediates the effect of political affiliation on firm performance. Statistically, we use the Sobel mediation test to confirm the mediation effect. The definitions of the variables are provided in Appendix 1. Note that standard errors are clustered at the firm-year level to adjust for heteroskedasticity.

4. Results

4.1. Descriptive statistics

Table 1, Panel A presents the descriptive statistics of all variables after winsorizing at the 1 and 99 percentiles to mitigate the undesired influence of outliers. ROE (ROA) has a mean of 0.159 (0.051). The mean of real EM is 0.182. PA has a mean of 0.960, suggesting that the majority of our sample firms are politically affiliated. The mean of NERI, an index developed to capture regional development across China, is 6.192, while the 25 and 75 percentiles are 4.45 and 7.63, respectively, indicating it is left-skewed. The mean of size is 10.067. Leverage locates between 0.000 (25 percentile) and 0.114 (75 percentile) with a mean of 0.090. Age (PPE) has a mean of 17.30 (0.386). Finally, 30.8% of our sample firms report losses. All of the variables show substantial variation.

Table 1, Panel B shows the number and percentage of firms affiliated with different levels of government. The largest subgroup consists of firms affiliated with county government, with 130,351 firm-year observations, representing 28.53% of the entire sample. There are 114,882 (25.15%) and 82,524 (18.06%) observations for firms affiliated with town and municipal governments, respectively, and 49,967 (10.94%) and 44,226 (9.68%) observations for firms affiliated with village and provincial governments, respectively. There are 16,670 firm-year observations (3.65%) for firms affiliated with the central government. Lastly, firms with no political affiliation contribute 18,229 firm-year observations, representing 3.99% of the sample.

Table 2 presents the correlations between variables. Both ROE and ROA are positively correlated with PA, which provides initial evidence that political affiliation is positively associated with firm performance. However, this result should be interpreted with caution, as we do not control for other variables that might affect performance. However, ROE (ROA) is positively correlated with PANO_V and PANO_T but negatively correlated with affiliation with other levels of government. This suggests that the relation between political affiliation and performance is non-monotonic. ROE and ROA are positively correlated with NERI, suggesting that private firms operating in more developed regions are likely to achieve better performance. ROE and ROA are negatively related to size, leverage, age, PPE, loss, and *stdivest*. In the subsequent sections, we use regression analysis to test the effect of political affiliation on firm performance and real earnings management after controlling for other factors that have been identified by previous studies to affect performance and earnings management. Finally, the correlation does not raise concerns about multi-collinearity.

Table 1
Descriptive statistics.

Panel A: Descriptive statistics						
Variable	Obs.	Mean	S.D.	P 25	Median	P 75
ROE	456,849	0.159	0.635	− 0.004	0.048	0.206
ROA	456,849	0.051	0.159	− 0.008	0.012	0.067
EM	456,849	0.182	0.263	0.042	0.097	0.207
PA	456,849	0.960	0.196	1.000	1.000	1.000
PANO_V	68,196	0.733	0.443	0.000	1.000	1.000
PANO_T	133,111	0.863	0.344	1.000	1.000	1.000
PANO_CY	148,580	0.877	0.328	1.000	1.000	1.000
PANO_M	100,753	0.819	0.385	1.000	1.000	1.000
PANO_P	62,455	0.708	0.455	0.000	1.000	1.000
PANO_C	34,899	0.478	0.500	0.000	0.000	1.000
NERI	456,849	6.192	1.951	4.450	5.890	7.630
Size	456,849	10.067	1.592	9.003	9.934	11.048
Lev	456,849	0.090	0.160	0.000	0.001	0.114
Age	456,849	17.302	14.204	7.000	12.000	25.000
PPE	456,849	0.386	0.229	0.204	0.358	0.545
Loss	456,849	0.308	0.462	0.000	0.000	1.000
Stdivst	456,849	0.010	0.028	0.000	0.000	0.002

Panel B: Different types of political affiliation			
	Observations	Percentage	Cumulative percentage
No Affiliation	18,229	3.99%	3.99%
Village	49,967	10.94%	14.93%
Town	114,882	25.15%	40.07%
County	130,351	28.53%	68.61%
Municipal	82,524	18.06%	86.67%
Province	44,226	9.68%	96.35%
Centre	16,670	3.65%	100.00%

4.2. Empirical results

4.2.1. Results of tests related to Hypotheses 1–4

Table 3 reports the results related to the effect of political affiliation on firm performance as reflected by ROE. Results in Panel A correspond to H1 and H2. In Panel A, the coefficient of PA is significantly positive (0.043, $t = 2.89$), while the coefficient of interaction between PA and NERI is significantly negative ($- 0.007$, $t = - 3.08$). This implies that private firms with political affiliations have better performance as reflected by ROE, but this relation is less pronounced in more developed regions (i.e., those scoring higher on the NERI index). The coefficient of NERI is positive and marginally significant (0.004, $t = 1.76$).⁹ Regarding the control variables, the coefficients of size, age, PPE, loss, and *stdivest* are significant and negative, whereas that of leverage is significantly positive. Overall, we find partial support for H1 (that political affiliation has a positive effect on the performance of privately held firms) and for H2 (that this relation is less evident in more developed regions). It is likely that the government plays a less important role in

⁹ We also run the regression after excluding the interaction between PA and NERI to test the main effect of political affiliation on firm performance. The coefficient of PA is positive but insignificant in the full sample, which is inconsistent with H1. Then, we run the regression for two subsamples: a low level of PA subsample, which includes firms with no affiliation and firms affiliated with the village, town, and city levels of government, and a high level of PA subsample, which includes firms with no affiliation and firms affiliated with municipal, provincial, and central governments. The coefficient of PA is significantly positive in the low level of PA subsample but significantly negative in the high level of PA subsample. The empirical evidence partially supports H1 (among firms affiliated with village, town, and city levels of government) and suggests that different levels of political affiliation could have differential effects on firm performance. This motivates us to conduct additional analysis in Section 4.2.3 to further explore the effect of affiliation with different levels of government on firm performance and earnings management. We thank the reviewer for raising this issue. The results are available upon request.

Table 2
Correlation table.

	ROE	ROA	EM	PA	PANO_V	PANO_T	PANO_CY	PANO_M
ROE	1							
ROA	0.531***	1						
EM	0.229***	0.386***	1					
PA	0.004*	0.010***	-0.009***	1				
PANO_V	0.101***	0.171***	0.082***	1.000***	1			
PANO_T	0.062***	0.104***	0.043***	1.000***	-	1		
PANO_CY	-0.025***	-0.046***	-0.045***	1.000***	-	.	1	
PANO_M	-0.051***	-0.103***	-0.103***	1.000***	-	-	-	1
PANO_P	-0.051***	-0.125***	-0.133***	1.000***	-	-	-	-
PANO_C	-0.062***	-0.096***	-0.121***	1.000***	-	-	-	-
NERI	0.026***	0.073***	0.032***	0.067***	0.179***	0.143***	0.057***	0.126***
Size	-0.080***	-0.107***	-0.192***	0.070***	0.008**	0.038***	0.076***	0.263***
Lev	-0.010***	-0.102***	-0.094***	-0.007***	-0.170***	-0.081***	0.040***	0.009***
Age	-0.083***	-0.174***	-0.140***	0.003**	-0.290***	-0.177***	0.054***	0.085***
PPE	-0.031***	-0.029***	-0.089***	-0.008***	-0.112***	-0.060***	0.064***	-0.040***
Loss	-0.227***	-0.439***	-0.131***	-0.017***	-0.217***	-0.160***	0.004	0.071***
Stdivst	-0.017***	-0.015***	-0.027***	0.003*	-0.038**	-0.009***	-0.007**	0.031***

	PANO_P	PANO_C	NERI	Size	Lev	Age	PPE	Loss
PANO_P	1							
PANO_C	.	1						
NERI	0.263***	0.183***	1					
Size	0.338***	0.463***	0.101***	1				
Lev	0.024***	0.019***	-0.136***	0.138***	1			
Age	0.161***	0.241***	-0.120***	0.120***	0.157***	1		
PPE	-0.056***	0.004	-0.149***	0.050***	0.265***	0.106***	1	
Loss	0.093***	0.042***	-0.086***	0.024***	0.128***	0.203***	0.097***	1
Stdivst	0.053***	0.079***	0.016***	0.143***	0.023***	0.046***	-0.080***	0.013***

* $p < 0.10$.
 ** $p < 0.05$.
 *** $p < 0.01$.

resource allocation in more developed regions because the commodities and factor markets function well in these regions. Consequently, the government intervenes in business activities in these regions to a lesser extent and thus has less influence on the performance of affiliated firms. Hence, our results support H2 (that the level of regional development moderates the effect of political affiliation on firm performance).

Table 3, Panel B presents results related to the effect of political affiliation on real earnings management among privately held firms (H3 and H4). The coefficient of PA is significantly positive (0.022, $t = 3.24$), whereas the coefficient of interaction between PA and NERI is significantly negative (-0.006, $t = -5.08$), which suggests that private firms with political affiliation engage in real earnings management to a greater extent, but this relation is less evident among firms in more developed regions, possibly due to better investor protection and law enforcement in these regions. The coefficient of NERI is positive but insignificant.¹⁰ Regarding the control variables, the coefficients of size, leverage, age, PPE, loss and *stdivst* are significantly negative. Overall, we find partial support for the hypotheses that political affiliation has a positive effect on

¹⁰ We also run the regression after excluding the interaction between PA and NERI to test the main effect of political affiliation on earnings management. The coefficient of PA is negative and significant in the full sample, which does not support H2. Then, we run the regression for two subsamples: a low level of PA subsample, which includes firms with no affiliation and firms affiliated with the village, town, and city levels of government, and a high level of PA subsample, which includes firms with no affiliation and firms affiliated with municipal, provincial, and central governments. The coefficient of PA is significantly positive in the low level of PA subsample but significantly negative in the high level of PA subsample. The empirical evidence partially supports H2 (among firms affiliated with village, town, and city levels of government) and suggests that different levels of political affiliation could have distinct effects on earnings management. This motivates us to conduct additional analysis in Section 4.2.3 to further explore the effect of affiliation with different levels of government on firm performance as well as earnings management. We thank the reviewer for this suggestion. The results are available upon request.

engagement in real earnings management among private firms and that the effect is moderated by regional development.

4.2.2. Results of tests related to H5

Table 3, Panel A provides the result of regressing firm performance on the measure of political affiliation and other firm-level controls; this can be compared with the results in Table 3, Panel C to identify the mediating effect of real earnings management. The coefficient of EM is positive and highly significant in Panel C (0.453, $t = 58.66$). The coefficients of PA are positive and significant in both Panel A and Panel C, but the magnitude and level of significance of the coefficient of PA in Panel C are lower than those in Panel A. This indicates that real earnings management mediates the effect of political affiliation on firm performance as reflected by ROE. Plausibly, political affiliation allows affiliated firms easier access to credit, government contracts, and government subsidies (direct effect) while at the same time making it easier for firms to boost performance using real earnings management (indirect effect). The Sobel mediation test confirms the mediation effect (z -statistics = 3.23, $p < 0.01$).¹¹ Overall, our results partially support H5 (that real earnings management mediates the effect of political affiliation on firm performance among private firms).

¹¹ We also run the regression after excluding the interaction between PA and NERI to test whether earnings management mediates the effect of political affiliation on firm performance. The results do not support the mediating effect in the full sample. Then, we run the regression for two subsamples: a low level of PA subsample, which includes firms with no affiliation and firms affiliated with the village, town, and city levels of government, and a high level of PA subsample, which includes firms with no affiliation and firms affiliated with municipal, provincial, and central governments. The results in both subsamples lend support to the existence of a mediating effect, as the magnitude of PA declines upon the inclusion of earnings management when performance is the dependent variable. The Sobel test confirms that earnings management mediates the effect of political affiliation on firm performance. We thank the reviewer for this suggestion. The results are available upon request.

Table 3
Main results from testing Hypotheses 1–5.

	Panel A	Panel B	Panel C
	ROE	EM	ROE
PA	0.043***	0.022***	0.033**
PA * NERI	2.89	3.24	2.23
	– 0.007***	– 0.006***	– 0.005**
	– 3.08	– 5.08	– 2.01
EM			0.453***
			58.66
NERI	0.004*	0.002	0.004
	1.76	1.39	1.47
Size	– 0.033***	– 0.031***	– 0.019***
	– 41.41	– 84.51	– 26.35
Lev	0.169***	– 0.037***	0.186***
	19.27	– 14.41	21.5
Age	– 0.001***	– 0.001***	– 0.001***
	– 15.93	– 47.76	– 7.80
PPE	– 0.011*	– 0.058**	0.015***
	– 1.91	– 23.28	2.79
Loss	– 0.294***	– 0.050***	– 0.271***
	– 116.8	– 60.04	– 110.03
Stdinvst	– 0.127***	– 0.045***	– 0.106***
	– 3.55	– 2.89	– 3.08
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
N	456,849	456,849	456,849
Adj. R ²	0.071	0.095	0.102
F	342.4	486.4	366.5

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

4.2.3. Additional analysis

Our findings suggest that political affiliation has a positive effect on the performance of private firms but that this relation could be non-monotonic. There may be less provision of economic rents to private firms affiliated with higher-level governments (i.e., the central government) than to those affiliated with lower-level governments (i.e., residents'/villagers' committees), as lower-level governments are able to tailor economic policy to directly benefit government-affiliated firms. For example, village enterprises (VEs) are economic units either collectively owned by local residents of rural areas or mainly owned and controlled by farmers (Yueh, 2011). The collectively owned VEs are the property of local residents or peasants, but rights of ownership on their behalf are exercised by the villagers'/residents' committees, the lowest level of government in the political hierarchy. Because the profits of VEs are shared with low-level governments, such governments have an incentive to boost the performance of affiliated firms for their own benefit. In addition, town and village governments may have greater discretion in resource/subsidy allocation, suggesting that firms affiliated with low-level governments are more likely to benefit.¹² In contrast, higher-level governments assume more responsibility for managing the regional or national economy at the macro level and therefore have less flexibility to favor certain affiliated firms. In the following, we perform tests to shed further light on this important issue.

We create six dummies to capture the layer of government with which a private firm is affiliated. For example, PANO_C equals 1 if the firm is affiliated with the central government and 0 if the firm is non-affiliated. Then, we use the non-affiliated firms as the benchmark and

¹² Infante and Piazza (2014) find evidence that politically connected firms benefit from lower interest rates offered by banks when the connection is at the local level (town council), and this effect is more pronounced when connected firms borrow from banks with politicians on their boards.

test whether affiliation with the central government has a significant effect on firm performance by pooling firms affiliated with the central government and non-affiliated firms together. Similarly, we introduce five dummies to capture other levels of government with which a private firm is affiliated and test the effect of affiliation on performance. The advantage of this approach is that by comparing the magnitude of coefficients of different affiliation dummies, we are able to detect potential differentiation in relations between political affiliation and firm performance. We use the same approach to investigate the relation between political affiliation and real earnings management. We also interact NERI with various affiliation dummies. We include the control variables in the analysis but do not tabulate results related to controls to save space. The results are provided in Table 4, Panels A and B.

The results in Panel A show that only affiliation with residents' committees and villagers' committees (PANO_V) and affiliation with sub-districts/townships (PANO_T) are positively associated with performance as reflected by ROE, while affiliations with county (PANO_CY) and municipal (PANO_M) governments are negatively associated with performance. Finally, the coefficients of affiliation with the provincial (PANO_P) and central (PANO_C) governments are insignificant. Our results support a non-monotonic relation between political affiliation and firm performance: affiliation with the central and provincial governments has no impact on performance, whereas affiliation with county and municipal governments has a negative effect on performance. Only affiliation with sub-districts/townships and residents'/villagers' committees has a positive impact on performance. This is consistent with our conjecture that lower-level governments (i.e., townships and villages) may have more incentive and discretion to allocate resources and tailor policy to directly benefit affiliated firms. The central government, in contrast, is unlikely to pay special attention to an individual firm and is equally unlikely to direct resources to specific affiliated firms. Our results suggest that the moderating effect of regional development holds only for firms affiliated with sub-districts/townships and residents'/villagers' committees, as the coefficients of interaction between NERI and the relevant affiliation dummies are significantly negative. The coefficients of NERI interacting with other affiliation dummies are insignificant.

The results in Panel B depict a similar picture: affiliation with residents' committees and villagers' committees (PANO_V) and affiliation with sub-districts/townships (PANO_T) are positively associated with real earnings management, whereas affiliation with other levels of government has either a negative or an insignificant effect on real earnings management. Furthermore, the results in Panel B imply that the moderating effect of regional development holds only for firms affiliated with sub-districts/townships and residents'/villagers' committees, as evidenced by the negative coefficients of interaction between NERI and the relevant affiliation dummies. Finally, the results in Panel C indicate that the mediating effect of real earnings management holds only for firms affiliated with sub-districts/townships and residents'/villagers' committees, as confirmed by the Sobel mediation test (z -statistics = 10.97, $p < 0.001$; z -statistics = 8.33, $p < 0.001$, respectively).

4.2.4. Robustness check

As a robustness check, we use ROA to replace ROE as the measure of firm performance and repeat the analyses. The results, which are presented in Table 5, are broadly consistent with those reported in Table 3. This implies that our findings are insensitive to alternative performance measures. We also use ROA to perform a test to unravel the non-linear relation between political affiliation and firm performance (real earnings management). Our inferences remain qualitatively unchanged. For brevity, we do not tabulate these results.

Table 5
Results from robustness tests.^a, ^b, ^c

	Panel A	Panel B	Panel C
	ROA	EM	ROA
PA	0.018 ^{***}	0.022 ^{***}	0.013 ^{***}
PA * NERI	5.55	3.24	4.43
	– 0.003 ^{***}	– 0.006 ^{***}	– 0.002 ^{***}
	– 5.39	– 5.08	– 3.51
EM			0.453 ^{***}
			58.66
NERI	0.004 ^{***}	0.002	0.003 ^{***}
	6.86	1.39	6.58
Size	– 0.010 ^{***}	– 0.031 ^{***}	– 0.004 ^{***}
	– 42.80	– 84.51	– 20.60
Lev	– 0.026 ^{***}	– 0.037 ^{***}	– 0.019 ^{***}
	– 16.12	– 14.41	– 12.67
Age	– 0.001 ^{***}	– 0.001 ^{***}	– 0.001 ^{***}
	– 44.50	– 47.76	– 31.49
PPE	0.029 ^{***}	– 0.058 ^{***}	0.040 ^{***}
	18.92	– 23.28	27.83
Loss	– 0.140 ^{***}	– 0.050 ^{***}	– 0.130 ^{***}
	– 284.39	– 60.04	– 290.43
Stdinvst	0.034 ^{***}	– 0.045 ^{***}	0.043 ^{***}
	3.50	– 2.89	4.75
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
N	456,849	456,849	456,849
Adj.R ²	0.238	0.095	0.326
F	1802.5	486.4	1886.6

^a $p < 0.10$.

^b $p < 0.05$.

^c $p < 0.01$.

5. Conclusions and future research directions

Much attention has been paid to the association between politically connected agents and firm performance, but little work has been done to examine the nexus of politically connected principals and firm performance. In addition, empirical evidence is lacking with regard to how different levels of political connection or affiliation may affect performance differently. In addition, previous studies underexplore the link between real earnings management and firm performance among politically connected firms, thus concealing the potential mechanism through which political connection can affect performance.

This study helps fill these gaps in the literature by investigating the effect of government affiliation on firm performance and real earnings management with a large sample of privately held firms in China between 1998 and 2012. We find that political affiliation has a positive effect on firm performance. Furthermore, this relation is moderated by regional development. Second, we show that politically affiliated firms are more likely to undertake real earnings management. The positive effect of political affiliation on real earnings management is less pronounced in firms located in more developed regions. Finally, we present evidence that real earnings management mediates the effect of political affiliation on firm performance. We extend the literature by addressing the role of politically connected owners, distinguishing the effects of principals (owners) with political power from those of politically connected agents (executives). This study also advances our understanding of how privately held firms, as a significant yet informationally opaque part of the economy, can benefit from affiliation with the government and how regional development can moderate the effect. Adding to the stream of literature on political connection and accounting quality, we present evidence that political affiliation plays a significant role in influencing real earnings management, which in turn mediates the effect of government affiliation on firm performance.

Our study is subject to the following limitations. First, our results

could be driven by a correlated omitted variable (an unobservable or uncontrolled variable that is correlated with political affiliation and firm performance).¹³ Due to the difficulty in identifying an exogenous shock to firms' political affiliation status, we are unable to rule out this possibility. Second, this study only considers real earnings management and ignores accrual-based earnings management. Therefore, our results might underestimate the effect of political affiliation on earnings management in private firms.

This paper opens broad avenues for future research in three directions. First, the study could easily be extended to an international setting when data are available. Our understanding of the implications of political affiliation would be advanced by examining the issue in other countries with various cultures and levels of economic development. Second, as we only consider real earnings management in this study, we are likely to capture the lower bound of total earnings management among Chinese private firms. Future research may include other types of earnings management to enrich our knowledge. Finally, we control for the influence of firm-level characteristics but do not consider the characteristics of top management due to a lack of relevant data. As politically affiliated owners can mitigate agency-cost concerns and exert diverse influences on firm performance, the characteristics of top executives are clearly important determinants of competitive advantage. The quality of accounting information is also associated with managerial ability in earnings management. Thus, future work could take into account information about firms' top management teams in the analysis.

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¹³ We thank an anonymous reviewer for bringing this issue to our attention.

Appendix 1

Variable definition.

Variable	Definition
ROE	Return on equity (net income/total equity)
ROA	Return on assets (net income/total assets)
EM	Real earnings management proxied by the absolute value of abnormal production costs
PA	An indicator variable that takes the value of 1 for firms with political affiliation, and 0 otherwise.
PANO_V	An indicator variable that takes the value of 1 for firms politically affiliated with residents'/villagers' committee level government, and 0 for firms with no political affiliation.
PANO_T	An indicator variable that takes the value of 1 for firms politically affiliated with sub-district/township level government, and 0 for firms with no political affiliation.
PANO_CY	An indicator variable that takes the value of 1 for firms politically affiliated with county level government, and 0 for firms with no political affiliation.
PANO_M	An indicator variable that takes the value of 1 for firms politically affiliated with municipality level government, and 0 for firms with no political affiliation.
PANO_P	An indicator variable that takes the value of 1 for firms politically affiliated with provincial government, and 0 for firms with no political affiliation.
PANO_C	An indicator variable that takes the value of 1 for firms politically affiliated with central government, and 0 for firms with no political affiliation.
NERI	Chinese Regional economic development index for each province. Higher value indicates higher level of development.
Size	Size of the firm (natural log of total assets).
Lev	Leverage (long-term debt scaled by total assets).
Age	Firm age measured by the number of years a firm has been in business.
PPE	Property, plant and equipment scaled by total assets.
Loss	An indicator variable that takes the value of 1 for firms with negative net income, and 0 otherwise.
Stdinvst	Standard deviation of firm investment in the last three years

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