

Top Management Team Power in China: Measurement and Validation

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Abstract

We propose and validate a comprehensive measure of power for the top management teams (TMTs) of publicly listed Chinese firms. We show that our measure is positively associated with the four power dimensions developed by prior research for U.S. firms as well as three Asia-relevant power dimensions, including political capital, seniority and gender. We find that our TMT power measure is a valid proxy for TMT power for both state-controlled firms and non-state-controlled firms. We also compare our TMT power measure with one alternative TMT power proxy based on executive compensation and find no evidence that the alternative proxy is better than our measure in capturing TMT's true power. Further, we provide evidence that the divergence between our power proxy and the power proxy based on executive compensation reflects nonmarket institutional forces in China and has important implications for corporate outcomes.

Key words: power, top management team, executive compensation, nonmarket institutional force, China

JEL classification: G02, G30, G31

1. Introduction

The management literature has long recognized the importance of top management teams (hereafter referred to as TMTs) in corporate decision making (e.g., Hambrick and Mason 1984; Finkelstein, Hambrick and Cannella 2009). Existing empirical evidence from the management literature suggests that it is the entire TMT rather than the Chief Executive Officer (CEO) alone that determines organizational outcomes (Hage and Dewar 1973; Tushman, Virany and Romanelli 1985; Ancona 1990; O'Reilly, Snyder and Boothe 1993; Tushman and Rosenkopf 1996). The recent accounting and finance literatures have also started to recognize the importance of top executives other than the CEO to major corporate decisions (Bertrand and Schoar 2003; Graham et al. 2005; Bamber et al. 2010; Dyreng et al. 2010; Ge et al. 2011; Dichev et al. 2013; Schoar et al. 2020). Central to the research on TMTs is the distribution of power among the TMT members because individual top managers are able to influence organizational outcomes only to the extent that they have power.¹ Finkelstein (1992, p. 532) notes that research on TMTs requires a “recognition of the role of power in strategic choice and a means of incorporating power” if stronger predictions of executive effects are to be found.

Unfortunately, it is difficult to incorporate managerial power into large-scale empirical research because managerial power, a multi-dimensional construct, is unobservable to researchers. One could attempt to use the observable individual power sources to construct a managerial power proxy, but such an approach faces several major obstacles. First, many sources of managerial power are unobservable. Second, even if all the sources of power can be directly measured, it is costly to collect such data for large samples of publicly listed firms (e.g., Finkelstein 1992). Third and more importantly, we do not know how to weigh the individual power sources to derive an overall power score for an executive.

¹ Following Finkelstein (1992), we define power as the capacity of individual actors to exert their will.

The objective of this study is to propose and validate a comprehensive measure of TMT power. Specifically, we hypothesize that the ordered TMT name list disclosed in the annual reports of publicly listed Chinese firms can be a proxy for the power of individual TMT members. Even though publicly listed firms in many countries are required to disclose the entire list of the TMT in their annual reports, the names of the individual TMT members are usually listed in alphabetical order.² However, the names of the TMT members in most publicly listed Chinese firms' annual reports are not listed alphabetically, raising the possibility that Chinese firms' ordered TMT name list is a proxy for managerial power.

Why could the ordered TMT name list be a valid proxy for managerial power in China? The Differential Mode of Association (*chaxugeju* in Chinese) theory proposed by a renowned Chinese Sociologist Fei Xiaotong provides a potential explanation (see Fei et al. 1992). Dr. Fei argues that the Chinese society is a relational society founded on social relationships and interlocking social networks within which people are classified according to distinct categories of social relationships. In such a relational society, people's behaviors are governed by rituals (*li* in Chinese) rather than rules of law. Rituals are publicly recognized behavioral norms maintained by tradition. Order in such a society depends primarily on people's obedience to their principal social obligations. Following Dr. Fei's theory, we argue that listing the TMT names in the order of power in the annual report can serve as a ritual in a relational society. Such a ritual could be optimal because it helps signal a person's hierarchical position in an organization and enables the relevant parties both inside and outside the organization to know how to relate to each other and facilitate relational contracting. Listing the TMT names alphabetically would be inconsistent with the rituals of a relational society and cause confusions among relevant stakeholders.

² For example, in the United States, Item 10 of the 10-K provides information about the background and experience of the company's directors and executive officers who are often listed alphabetically.

To validate our managerial power proxy, we follow Finkelstein (1992) by examining the associations between the individual sources of power and the order of the TMT members in the annual report. To the extent that the ordered TMT name list is a valid proxy for managerial power, we should expect the proxies for the individual power sources to load as predicted and explain a significant portion of the variation in the ordered TMT name list.

Finkelstein (1992) identifies four key dimensions of an individual executive's power, referred to as structural power, ownership power, expert power, and prestige power, and then use objective indicators as proxies for each power dimension. We follow Finkelstein (1992) to the extent possible by identifying objective proxies for the four power dimensions.

Considering Chinese firms' unique situations, we identify three additional sources of power relevant to the Chinese context but not considered in Finkelstein (1992): political power, seniority power, and gender power. Given the importance of political connection and *guanxi* in China (Fei et al. 1992; Wong 2016), we hypothesize that politically connected executives are more powerful. In Chinese culture, respecting elderly is a widely held social norm (Fei et al. 1992). Hence, we hypothesize that executives with higher seniority are more powerful. Finally, considering the dominance of males in the Chinese society, we also hypothesize that male executives are more powerful than female executives.

Our sample covers all publicly listed Chinese firms, including the two main boards, the small and medium enterprise (SME) board, and the growth enterprise board ChiNext, over the period 2005–2013. Following the definition of China Securities Regulatory Commission, TMT refers to a firm's top executives explicitly disclosed in the firm's annual report, including the Board Chairman, the CEO, Vice Presidents, the Chief Financial Officer (CFO), the Board Secretary, and other top managers designated by the firm.³ Because the Board Chairman and

³ Non-executive board members are excluded from the TMT definition because they are not involved in the day-to-day management of the firm.

the CEO are always ranked before other executives in the annual report, we exclude them from our main analyses. This exclusion ensures that our ordered TMT name list is a valid proxy for managerial power for the TMT members other than the top two executives. As expected, our validation results are stronger if the Board Chairman and the CEO are included.

We first validate our TMT power proxy using the full sample of publicly listed Chinese firms. We find strong evidence that the ordered TMT name list is a valid proxy for the relative power of TMT members. First, we find that when entered separately, all but one proxy for the seven dimensions of managerial power sources load as predicted. The R^2 for the seven dimensions of power sources varies from 0.8% for the gender power to 44.6% for the structural power. Second, when entered together in one combined regression, we find that all but two proxies for the seven power sources load as predicted. The R^2 for the combined model is 49.5%. Overall, these results suggest that the ordered TMT name list is a valid proxy for power.

We also validate our TMT power proxy for state-controlled firms (SOEs) and non-state-controlled firms (non-SOEs) separately using the same regression approach. The R^2 for the combined model is 45.7% for the SOE sample and 54.8% for the non-SOE sample, suggesting that the ordered TMT name list is a valid power proxy for both SOEs and non-SOEs.

The validation tests performed so far consider all the TMT members as a whole and focus on the relative power of all TMT members *within the same firm*. Next, we examine whether our ordered TMT name list is a valid power proxy for the same job function (e.g., CFO, Chief Technology Officer (CTO), Chief Operating Officer (COO), or Chief Marketing Officer (CMO)) *across different firms*. Unfortunately, many publicly listed Chinese firms only disclose the generic job title, Vice President, for the TMT members below the Board Chairman and the CEO and we do not know the specific job titles of these executives. In addition, many executives in some job functions (e.g., CMO or CTO) may not be part of the TMT in China. One exception is the job function of the CFO, which is required to be disclosed in the annual

report for all publicly listed Chinese firms. Hence, we examine whether the power ranking of the CFO in a firm can serve as a valid measure of power for a cross section of different firms. Specifically, we regress the power ranking of the CFO in a firm on the proxies for the seven power sources. We find that the power ranking of the CFO varies widely across firms in China. After excluding the CEO and Board Chairman from the TMT list, 20% of the CFOs are ranked at No.1 but more than 27% of the CFOs are ranked at or below No.5. More importantly, we find that the proxies for the seven power sources explain more than 47% of the variations in the CFO's power ranking. Thus, our ordered TMT name list appears to be a valid proxy for managerial power for this particular category of top executives (i.e., CFOs) across firms.

As discussed above, a TMT member's power can be derived from multiple sources. Hence, a natural question is whether any of the individual proxies for the different dimensions of power sources can be more effective than the ordered TMT name list in measuring TMT power. Most individual proxies are either coarse in measurement or limited in scope and therefore they can be easily dismissed as credible competing proxies for TMT power. However, an executive's annual compensation, a structural power proxy, could reflect multiple power sources and therefore it could be a potential competing proxy for the multi-dimensional TMT power construct. Compensation is also continuous and thus could better capture the actual distance of power between two individuals. On the other hand, managerial compensation may not be a reliable proxy for managerial power because managerial compensation could be significantly distorted due to China's culture of collectivism and communism history (see Section 6 for a detailed discussion). The distortion of managerial compensation is particularly strong in publicly listed SOEs because the top executives of many publicly listed Chinese SOEs are quasi-government bureaucrats subject to China's rigid and hierarchical government personnel system including compensation.

To test the validity of managerial compensation as a competing proxy for TMT power, we replicate the previous regression by examining the associations between the individual sources of power and reported managerial compensation. We find that managerial compensation is a useful proxy for TMT power, but we find no evidence that managerial compensation is a better proxy than the ordered TMT name list. The most significant divergence between our power proxy and the compensation-based power proxy is related to TMT member's political power. While we find a positive correlation between political power and our TMT power proxy as predicted by theory, we find that TMT members with higher political power are associated with *lower* annual compensation.

Why do the two power proxies diverge so significantly from each other? We hypothesize that such a divergence reflects the tension of two underlying nonmarket institutional forces in China (Fei et al. 1992; Wong 2016). On the one hand, the success of many Chinese firms depends on developing and maintaining good relationships with various government agencies because many important corporate decisions are heavily influenced by nonmarket institutional forces. Hence, these firms should find it optimal to place executives with political power to higher ranked positions within the firm so that they can help the firms more effectively deal with government officials. On the other hand, as discussed above, top executives with political power are often constrained from receiving high compensation due to China's collectivism culture and communism history. As a result of these two conflicting forces, the relative compensation of the TMT members diverges from their relative power in the firm. In addition, we predict that this divergence has implications for corporate outcomes.

We provide two sets of empirical analyses consistent with this hypothesis. First, we examine the determinants of the divergence between the two TMT power proxies. We predict and find that state-controlled firms and firms operating in the regulated industries are more likely to see a divergence between the two power proxies. Second, we consider a decision

context in which the divergence between the two TMT power proxies matters: corporate debt and equity financing, which is controlled and heavily regulated by Chinese government agencies. We predict and find that firms in which the two TMT power proxies diverge significantly obtain more subsequent debt and equity financing.

We make two important contributions to the TMT literature. First, we are the first study to develop and validate a comprehensive measure of TMT power for the entire population of publicly listed firms in a major financial market, China. A related study by Zhu, Ye, Tucker, and Chan (2016) uses the ordered name lists of publicly listed Chinese firms as a proxy for *independent directors'* power. Zhu et al. did not examine the power of TMT and hence the two studies are complementary.⁴ One key advantage of our measure of TMT power is that it is directly provided by the firms themselves and therefore should have captured both observable and unobservable sources of power from the eyes of corporate insiders. Further, we show that our TMT power proxy diverges from the power proxy based on executive compensation due to the presence of nonmarket institutional forces and such a divergence carries important implications for corporate outcomes.

Second, we are the first study to develop a comprehensive measure of TMT power for the publicly listed firms of an Asian country. Despite China's unique cultures and institutions, we show that Finkelstein's (1992) four dimensions of power sources are largely applicable to publicly listed Chinese firms. Moreover, we extend Finkelstein's four power dimensions by considering three additional power sources more relevant to Asia: political capital, seniority, and gender. While our study is limited to China, we believe that the three additional power sources are also highly relevant to many other Asian societies. Prior research shows that *guanxi* and political connection play an important role in many Asian businesses (e.g., Ball et al. 2003;

⁴ We extend Zhu et al. by providing a rigorous validation of the ordered name list as a proxy for TMT power. Zhu et al. did not provide such a validation other than interviewing two independent directors and conducting a survey with a response rate of 5.2%.

Leuz and Oberholzer 2006). Seniority is an important source of power in Japan (Mahler et al. 1981), Korea (Hundley and Kim 1997), among others. Males are dominant in the workplace of many Asian societies (Simeon et al. 2001; Loh 2020).

We expect our power proxy to be of value to a variety of stakeholders, including researchers and practitioners. Considering the fact that many important corporate decisions are made by the TMT rather than the CEO alone, future researchers can incorporate our TMT power measure in their research design to make stronger predictions of executive effects (Finkelstein 1992). Industry practitioners can use our proxy measure to gain a quick understanding of the power ranking of a TMT member in business dealings and design more effective negotiation strategies.

The rest of the paper is organized as follows. Section 2 introduces our measure of TMT power for publicly listed Chinese firms. Section 3 discusses the various dimensions of power in TMT and their respective proxies. Section 4 presents the validation tests of our power measure for all TMT members within the same firm. Section 5 shows the validation tests for CFO power across different firms. Section 6 compares our power proxy with an alternative TMT power proxy. Section 7 examines how our power proxy is related to nonmarket institutional forces in China. Section 8 concludes and discusses some directions for future research.

2. The proposed measure of TMT power

We propose to use the order of TMT members disclosed in a firm's annual report as a comprehensive measure of the relative power of TMT members. Power plays important roles in all societies and China is no exception. Power is often displayed in visible ways in China and many other countries. For example, one can often discern the power of Chinese politicians based on the order of their names listed in major political meetings. Similarly, the seating charts for important political or business dinners in China are usually arranged based on the relative

power of the dinner attendees. Our informal discussions with many publicly listed Chinese firms' directors and top executives suggest that the order of TMT members disclosed in the annual reports is based on the relative power of the TMT members. However, it is unknown whether this phenomenon applies to all publicly listed Chinese firms, including SOEs and non-SOEs. Hence, an important objective of this study is to determine whether the ordered list of TMT in the annual report is a valid measure of power for the TMT.⁵

We obtain the ordered list of TMT from the following sections of a firm's annual report: "basic information of directors, supervisors, and senior executives" (list 1) and "changes in shareholding and remuneration of directors, supervisors, and senior executives" (list 2). If a firm-year does not disclose such information or if the order of the directors, supervisors and senior executives in list 1 and list 2 are inconsistent, we obtain the ordered TMT name list based on the order of the directors, supervisors, and senior executives disclosed in the introduction part of the annual report. Our definition of TMT includes only the executives that are still active as of the fiscal year end. We exclude all supervisory board members and non-executive directors from the definition of TMT because they do not represent the core of the full-time TMT. Since the TMT size varies across firms and over time, we follow Ke and Yu (2006) by adopting the following normalized measure of power: $POWER = 1 - (RANK - MIN)/(MAX - MIN)$, where *RANK* is the rank of the TMT member disclosed in the annual report of a firm-year with 1 being the highest rank. *MIN* is the minimum of *RANK* (i.e., 1) and

⁵ To understand how the ordered TMT list in the annual report is determined, one of the authors for this study used his personal connections to interview a few top executives of publicly listed Chinese firms. We find that the order of the TMT list is determined differently for state-controlled firms and non-state-controlled firms. As most TMT members of state-controlled firms are communist party members, the order of the TMT list is largely decided by the Organization Department of the Communist Party of China and endorsed by the listed firm's board of directors (for an example, see <http://www.cankaoxiaoxi.com/finance/20160712/1227886.shtml>). The order of the TMT list for the non-state-controlled firms is typically decided by the ultimate controlling shareholder, who is typically the listed firm's Board Chairman or CEO or both. Once the ordered TMT list is determined, it would not change unless the listed firm experiences some disruptive events such as ownership changes. We also find from the interviews that the ordered TMT list is not only prominently displayed in the annual report but also used in many other circumstances (e.g., the order of the seating chart in company meetings and the order of speeches made by TMT members in corporate events) so that relevant stakeholders inside and outside the listed firm can understand the power distribution of the TMT.

MAX is the maximum of *RANK* (i.e., the number of TMT members in a firm-year). *POWER* ranges from zero (lowest power) to one (highest power). The TMT ranking is very sticky. In a model where a TMT member's *POWER* at firm *i* in year *t* is regressed on her *POWER* at firm *i* in year *t*-1, the coefficient on the lagged *POWER* is 0.835 (*p*-value<0.01) and the *R*² is 70.26%.

3. Sources of power and proposed proxies

Finkelstein (1992) argues that power accrues to top managers who can cope with internal and external uncertainty and are uniquely positioned to do so. Finkelstein (1992) identifies other managers and directors as the key internal sources of uncertainty and a firm's task and institutional environments as the major external sources of uncertainty.⁶ The corresponding types of power that accrue to executives who can manage these uncertainties are structural power, ownership power, expert power, and prestige power. Considering the unique culture and institutions in publicly listed Chinese firms, we augment Finkelstein's four power dimensions with the following three additional power types not considered by Finkelstein (1992): (a) political power, (b) seniority power, and (c) gender power. Below we discuss these power types and their respective proxies.

3.1. Finkelstein's (1992) four power dimensions

Finkelstein (1992) develops and validates his objective proxies for the four power dimensions for 1,763 top managers working in 102 U.S. firms over the 1978–1982 period. Below we discuss each of the four power dimensions and the proxies we use for each power dimension. Following Finkelstein (1992), we use multiple objective proxies for each of the four power dimensions. In addition, we define our proxies as closely to Finkelstein's as possible.

⁶ Finkelstein (1992) notes that managers could create uncertainty by holding conflicting preferences that confuse strategic direction. Accordingly, managers gain power by reducing this uncertainty through various means, including controlling an organization's decision agenda, the alternatives considered, or information flows.

3.1.1. Structural power

The first source of power is structural power, which is based on formal organizational structure and hierarchical authority (Brass 1984; Hambrick 1981; Perrow 1970). The greater a manager's structural power, the greater her control over colleagues' actions. Consistent with Finkelstein (1992), we use the following three variables to proxy for structural power. The first proxy is *EXEC_DIR*, a dummy variable indicating whether a TMT member is also part of the firm's board. The second proxy is *COMP*, which measures a TMT member's total cash compensation relative to the total cash compensation of the highest paid manager.⁷ The third proxy is *NUM_TITLES*, denoting the number of top executive job titles held by a TMT member.⁸ Please refer to the Appendix for the detailed definitions of all variables included in the paper.

3.1.2. Ownership power

The second source of power is ownership power. Power accrues to managers in their capacity as agents acting on behalf of shareholders. Hence, the strength of a manager's position in the principal-agent relationship determines her ownership power. Finkelstein (1992) argues that the strength of a manager's ownership power depends on her ownership position as well as on her link to the founder of the firm. We use three proxies for ownership power. The first proxy is *SHARE_OWN*, which represents the stock ownership of a TMT member and her related parties acting in concert. The second proxy is *FOUNDER* indicating whether a TMT member is disclosed in the IPO prospectus as a top ten shareholder or a top management team member in the IPO year. The third proxy is *CONTROLLER* indicating whether a TMT member

⁷ Non-cash compensation such as stock or option awards is generally immaterial in publicly listed Chinese firms and thus ignored. Our inferences are unaltered if we exclude the firm years with non-zero equity compensation (untabulated).

⁸ Finkelstein (1992) uses a different proxy based on the percentage of individuals in a firm's TMT with higher official titles than a focal executive. This definition is not meaningful in China because most publicly listed Chinese firms only disclose one homogeneous title for the TMT members below the Board Chairman and the CEO: Vice President.

is the ultimate controlling shareholder of the firm. *CONTROLLER* is only applicable to non-SOEs because the ultimate owner of an SOE is not an individual. Hence, the value of *CONTROLLER* is always zero for SOEs.

3.1.3. Expert power

The third source of power is expert power, defined as the ability of a TMT member to deal with environmental contingencies and contribute to organizational success (Finkelstein 1992). Several components of a firm's task environment, such as its customers, suppliers, competitors, and the government, can create uncertainty for the organization (Thompson 1967; Porter 1980). Hence, Finkelstein (1992) argues that the more the managers have developed contacts and relationships with elements of the task environment, the greater is their ability to cope with contingencies of the task environment, and the greater is their expert power. Following Finkelstein (1992), we assume that top managers with experience in a particular functional area can be said to be expert in that area. Hence, the top managers who can best deal with environmental requirements and who are well situated to cope with critical contingencies will be those with appropriate functional expertise. In addition, the breadth of managerial assignments over a career increases exposure to environmental factors and enhances an executive's ability to manage the relationships that grow out of such contact. Hence, following Finkelstein (1992), we use three proxies for expert power.

The first proxy is *SKILL_MATCH* measuring the match between a TMT member's functional areas (e.g., R&D) and her professional qualifications (e.g., senior engineer). To define this variable, we follow Song (1982) by dividing a firm's functional areas into the following major areas: production (narrowly defined as the daily management of a firm's manufacture), operation (narrowly defined as strategy setting, planning and supply chain management), R&D, human resources, administration, marketing, finance, law and compliance, and information. We also identify the professional qualifications from each executive's resume

disclosed in the annual report. *SKILL_MATCH* is one if there is a match between a TMT member's functional areas and her professional qualifications and zero otherwise. For example, *SKILL_MATCH* would be coded as one if a TMT member's functional area is production and her professional qualification is a senior engineer or similar titles. On the other hand, *SKILL_MATCH* would be coded as zero if a TMT member's functional area is production but her professional qualification is a lawyer or none. For executives with only generic job titles (i.e., Vice President) whose job functions are not disclosed, *SKILL_MATCH* is also coded as zero. The second proxy is *NUM_FUNCTIONS*, denoting the number of functional areas in which a TMT member holds a post. The final proxy is *NUM_POSITIONS*, denoting the number of senior executive positions a TMT member previously held based on her resume.

We caution that *SKILL_MATCH* and *NUM_FUNCTION* could contain measurement error because many Chinese firms only disclose the generic job title, Vice President, for the TMT members below the Board Chairman and the CEO. These executives with generic job titles account for 64% of the full sample, 67% of the SOE sample, and 60% of the non-SOE sample. We do not know the specific job titles of these executives within their firms.

3.1.4. Prestige power

The fourth source of power is prestige power, based on a manager's personal prestige or status. Finkelstein (1992) argues that managerial prestige promotes power by facilitating the absorption of uncertainty from the institutional environment both informationally and symbolically. For example, members of the managerial elite who serve on external boards may gain valuable information on business conditions from their connections. Their prestigious status may also suggest to others that they have gilt-edged qualifications and powerful friends.

Following Finkelstein (1992), we use three proxies for prestige power. The first is *NUM_DIR*, denoting the number of board seats a TMT member holds in other listed firms. The second proxy is *NUM_NONPROFIT*, denoting the number of board seats a TMT member holds

in non-for-profit organizations. The third proxy is *EDU* indicating the level of a TMT member's education level that ranges from one to five.⁹ Specifically, *EDU* is one if a TMT member's educational level is technical secondary level or below, two if the educational level is junior college level, three if the educational level is a bachelor degree, four if the educational level is a master degree, and five if the educational level is a doctor degree.¹⁰

3.2. Political power

When Finkelstein (1992) proposed the definition of expert power, the government was regarded as an important element of a firm's task environment. However, Finkelstein (1992) did not develop explicit proxies for a manager's political connection with the government. In addition, most publicly listed Chinese firms have a dominant controlling shareholder (i.e., parent company) and hence managing the political relationship between the listed firm and the parent company becomes an important element of a firm's task environment. Considering the importance of political connection and *guanxi* in China (Wong 2016), we introduce two new proxies for political power not considered by Finkelstein (1992). Our first proxy is the political connection with the government (*OFFICIAL*). Following Fan et al. (2007), we define a manager to be politically connected if she is a current or former government official at the central, provincial or county government level, or a representative of the People's Congress or the Chinese People's Political Consultative Conference (CPPCC) at the national, provincial or county level.

Our second proxy is *PARENT_POS* capturing a manager's relationship with the parent company of the listed firm. *PARENT_POS* is three if the manager holds the position of both the Chairman of the Board and the CEO at the parent company, two if the manager holds the

⁹ Rather than *EDU*, a better proxy could be the prestige of an executive's alma mater. Unfortunately, we do not have such information for many TMT members.

¹⁰ Since we obtain the education information from the annual report, *EDU* is missing for a significant number (37%) of TMT members. We fill those missing values by assuming that their education levels are the same as the median education level of other non-missing TMT members in the same firm-year. However, if *EDU* is missing for all TMT members in a year, we assume that their education level is the same as the sample median in the year.

position of either the Chairman of the Board or the CEO but not both at the parent company, one if the manager holds any position lower than the Board Chairman and the CEO at the parent company, and zero if the manager holds no position at the parent company. We argue that an executive is likely perceived to be more credible when dealing with external stakeholders (e.g., government officials) if the person holds a joint top executive position in the parent company. We predict that politically connected managers and managers with stronger ties to their listed firms' parent companies are more powerful.

3.3. Seniority power

In Asian cultures, respecting the elderly is a social norm (Fei et al. 1992). Hence, we hypothesize that seniority is an important source of managerial power. We measure seniority using both age (*AGE*) and tenure with the current firm (number of years since the manager joined the firm, *TENURE*). Finkelstein (1992) did not consider the seniority power.

3.4. Gender power

There has been increased discussion about the lack of female representation in corporate boards and TMTs around the world. This low female representation in the top echelon of publicly listed firms is more severe in Asia (Burkitt 2013), reflecting the dominance of males in Chinese/Asian societies. Hence, we conjecture that female TMT members are expected to be less powerful and therefore ranked lower in the ordered list of TMT in the annual report. We create an indicator variable *MALE* that equals one for male executives and zero for female executives.

4. Validation tests for all TMT members within the same firm

4.1. Sample and descriptive statistics

Table 1 shows the sample selection procedures. We start with all publicly listed Chinese firms over the 2005–2013 period. While publicly listed Chinese firms have been required to disclose the TMT name list since 1999, our sample starts in 2005 because certain data required

for the subsequent empirical analyses (e.g., compensation data and resume data) are not available prior to 2005. According to the Chinese Company Law, TMT refers to the CEO, Vice President, CFO, Board Secretary and other executives as specified in the listed firm's corporate charter. Unless stated otherwise, we obtain all the data used in this study from the China Stock Market and Accounting Research (CSMAR) database, a leading provider of corporate financial data. As indicated in Table 1, we eliminate a significant number of individuals from the initial sample because they are non-executive directors (including independent directors) and supervisors and therefore not part of our definition of TMT. Finally, we also exclude both the Board Chairman and the CEO from our main analyses because these two individuals are usually ranked before other executives. Hence, excluding these two top executives allows us to better demonstrate the validity of our TMT proxy. Our final sample contains 2,553 unique firms covering 16,692 firm-years over the 2005–2013 period. We further split the sample into SOEs and non-SOEs. A firm-year is defined as an SOE if the listed firm's ultimate controlling shareholder is a government entity, a non-SOE if the listed firm's ultimate controlling shareholder is a non-government entity or individual, and missing if the listed firm has no controlling shareholder. The final sample contains 1,206 unique SOEs covering 8,251 firm-years and 1,578 unique non-SOEs covering 7,656 firm-years.

Panel A of Table 2 shows the distribution of the sample firms by year. The number of unique firms increases over time due to addition of IPOs over time. The number of unique non-SOEs increases significantly over time due to the opening of the SME board in 2004 and the growth enterprise board ChiNext in 2009.

Panel B of Table 2 shows the distribution of the firm-years by TMT size. The TMT size (excluding the Board Chairman and the CEO) varies significantly from a minimum of 2 to a maximum of 45. The average size of TMT excluding the Board Chairman and the CEO is 5.40

for the full sample, 5.73 for the SOEs, and 5.04 for the non-SOEs. The median size is 5 for all three samples.

Table 3 reports the descriptive statistics for the 17 raw explanatory variables used in our regression, for the full sample in Panel A, and for the SOEs and non-SOEs in Panels B and C, respectively.

4.2. Regression results for all publicly listed Chinese firms

We first validate our managerial power proxy using the OLS regression of *POWER* on the proxies for the seven dimensions of power sources for the full sample of all publicly listed Chinese firms. For all the regressions reported in the paper, we use heteroskedasticity-consistent standard errors clustered at the firm level.¹¹ Because *POWER* is expressed in normalized ranking, we also perform the following normalization procedure for the 17 explanatory variables in the regression model: for all the TMT members in each firm-year, we first compute the maximum and minimum values of each explanatory variable; we then transform each variable by subtracting this minimum value from its raw value and then divide it by the difference between the maximum and minimum values of this variable.

Panel A of Table 4 shows the OLS regression results of *POWER* for the full sample. It is important to note that all the regression models in Table 4 control for firm×year fixed effects. Therefore, the coefficient on an explanatory variable captures only the effect of that variable on *POWER* for the TMT members *within the same firm-year*.

We show the regression results for each power dimension as well as the combined model in Panel A. When entered individually, all the seven power dimensions explain some variations of *POWER*. The model R^2 ranges from a minimum of 0.8% for the gender power to a maximum of 44.6% for the structural power.¹² When we combine all the seven power

¹¹ Our inferences are unchanged when we cluster standard errors at the individual level in regression models where the unit of observation is an individual TMT member (untabulated).

¹² The fixed effects (individual dummies) are excluded from the calculation of the R^2 reported in all tables.

dimensions into one single regression in the last column, the combined model's R^2 is 49.5%. In addition, most of the regression coefficients are as predicted and significant.¹³ Therefore, our regression results find support for all four dimensions of power sources proposed by Finkelstein (1992). Furthermore, we find support for the importance of the three newly added power dimensions in this study: political power, seniority power, and gender power for publicly listed Chinese firms. Overall, the results in Panel A of Table 4 provides strong evidence that *POWER* is a valid proxy for TMT power.¹⁴

4.3. Regression results for SOEs and non-SOEs separately

Our full sample contains both SOEs and non-SOEs. Hence, a natural question is whether *POWER* is an equally valid proxy for TMT power for both types of firms. Panels B and C of Table 4 show the regression results of *POWER* for SOEs and non-SOEs respectively. We find strong evidence that *POWER* is a valid proxy for managerial power for both SOEs and non-SOEs. The combined model's R^2 is 45.7% for the SOEs and 54.8% for the non-SOEs. In addition, 81% (65%) of the coefficients on the individual proxies are as predicted and significant for the SOEs (non-SOEs).

4.4. Robustness checks

We perform a series of supplemental regression analyses to assess the robustness of *POWER* as a proxy for TMT power. To save space, we relegate the tables for some of these robustness checks to an Online Appendix.

¹³ We note that the regression coefficients on *SKILL_MATCH* and *NUN_FUNCTIONS* should be interpreted with caution because of the potential measurement error for about 60% of the sample (i.e., executives with only generic job titles whose job functions are not disclosed).

¹⁴ We find little evidence that publicly listed Chinese firms list their TMT members in *pinyin* or stroke count order. Since executive directors are always listed before non-director executives, we checked and found that only 6% of the firm-years with at least five TMT members list their non-director TMT members in *pinyin* or stroke count order. Inferences are similar if such firm-years are excluded from Table 4's regression.

4.4.1. Results using raw values

Both *POWER* and the explanatory variables in Panels A–C of Table 4 are transformed from their raw values into standardized values that fall between zero and one. To make sure that our regression results are not mechanically caused by this transformation, Panel D of Table 4 also replicates the same regression model for the full sample, the SOEs, and non-SOEs, respectively, using the raw values of both the dependent variable and explanatory variables. The dependent variable, *INV_RANK*, is the raw rank value multiplied by -1 so that higher values of *INV_RANK* represents greater power, consistent with the definition of *POWER*. The inferences are qualitatively similar, suggesting that the transformation itself does not drive our inferences.

4.4.2. Board TMT members versus non-board TMT members

We examine whether *POWER* is a valid proxy for power for board TMT members and non-board TMT members separately. This test is informative because as noted in the Introduction, publicly listed Chinese firms are required to disclose the names of the directors first, followed by the names of supervisory board members and non-director executives, respectively. Table A1 in the Online Appendix shows the regression results of *POWER* for TMT members who are board members (Panel A) and for TMT members who are not (Panel B) separately. We find that the combined model's R^2 is comparable and still economically significant for both the director executives and the non-director executives (27.1% vs. 22.5%). Overall, the results suggest that *POWER* is a valid proxy for power for both director executives and non-director executives.

4.4.3. Deleting firms with smaller TMT size

We examine whether our regression results are robust to excluding firm-years with fewer than five TMT members. Because we focus on within-TMT variation by including firm \times year fixed effects, a concern is that the regression results could be less stable for firm-

years with fewer TMT members. As shown in Table A2 in the Online Appendix, the inferences remain similar to those based on the samples in Table 4. The regression model R^2 is 50.2% for the full sample, 46.6% for the SOE sample, and 56.2% for the non-SOE sample.

4.4.4. Including the CEO and Board Chairman

We also check whether our regression results hold if we include the CEO and Board Chairman in the list of TMT members. We include the Board Chairman in the definition of TMT because most Board Chairmen of publicly listed Chinese firms are full-time company employees of their respective listed firms (Chen et al. 2018). The results are shown in Table A3 in the Online Appendix. The regression model R^2 is 70.6% for the full sample, 69.3% for the SOE sample, and 72.7% for the non-SOE sample, much higher than those reported in Table 4. Hence, we conclude that our inferences are robust to the inclusion of the top two TMT members.

5. Validation tests for CFO power across different firms

5.1. Validation of CFO power

The validation tests shown in Section 4 consider all the TMT members as a whole and focus on the relative power of all TMT members *within the same firm*. In this section, we examine whether our ordered TMT name list is a valid proxy for managerial power for the same job title (e.g., CFO, CTO, COO, or CMO) *across different firms*. Unfortunately, many publicly listed Chinese firms only disclose the generic job title, Vice President, for the TMT members below the Board Chairman and the CEO. These executives with only generic job titles account for 64% of the full sample, 67% of the SOE sample, and 60% of the non-SOE sample. We do not know the specific job titles of these executives within their firms. The number of top executives for many interesting job functions (e.g., CMO or CTO) identified based on annual report information is very small, suggesting that annual report disclosure is incomplete or many of these executives are not part of the TMT in China. However, we note

that the job title of the CFO is required to be disclosed in the annual report for all publicly listed Chinese firms. Hence, we examine whether the power ranking of the CFO in a firm can serve as a valid measure of power for a cross section of different firms. Specifically, we regress the within-firm power ranking of the CFO on the proxies for the seven power sources.

Table 5 reports the results. Panel A shows the distribution of the CFO's within-firm power ranking for our full sample, the SOE sample, and the non-SOE sample, respectively. It is interesting to note that the power ranking of the CFO varies significantly across the firms. For example, approximately 20% of the CFOs are ranked at No. 1 in their respective firms for the full sample, the SOE sample, or the non-SOE sample.¹⁵

Panel B shows the validation regression results. The dependent variable *CFO_POWER* is the normalized measure of power (i.e., *POWER*) of a CFO. All explanatory variables are also normalized as in Table 4. Because the roles of the CFO position may not be readily comparable across different industries, we include industry×year fixed effects so that the coefficient on any explanatory variable represents the impact of the explanatory variable on *CFO_POWER* for all CFOs working in the same industry at the same point in time. The regression model R^2 is 48.1% for the full sample, 47.3% for the SOE sample, and 49.9% for the non-SOE sample. 47%, 44%, and 47% of the coefficients on the individual proxies are as predicted and significant for the full sample, the SOE sample, and the non-SOE sample, respectively.

Panel C replicates the same regression model using the raw values of both the dependent variable and explanatory variables. The dependent variable *CFO_INV_RANK* is the raw within-firm ranking of a CFO in Panel A multiplied by -1 so that *CFO_INV_RANK* is comparable with *POWER*. Our inferences remain similar. These results based on cross-firm comparisons are weaker than our previous results based on within-firm comparisons, partly

¹⁵ Since we have already excluded the CEO and Board Chairman from Table 5, a CFO's ranking of 1 in Table 5 means that the CFO is ranked No. 1 among the remaining TMT of the firm.

due to the reduced sample size (15,406 CFOs versus 90,182 TMT members). Nevertheless, our ordered TMT name list still appears to be a valid proxy for managerial power for this particular category of top executives (i.e., CFOs) across firms.

5.2. Predictive validity of CFO power

Finkelstein (1992, p. 532) points out that research on TMTs requires a “recognition of the role of power in strategic choice and a means of incorporating power” if stronger predictions of executive effects are to be found. Thus, we examine whether incorporating managerial power in research design allows us to find stronger executive effects as predicted by Finkelstein (1992). Such evidence would support the predictive validity of the power measure.

As the CFO is always included as part of the TMT, we focus on the power of the CFO in this analysis. Hoitash et al. (2016) argue and find that accountant CFOs are more risk-averse and hence invest less in risky projects. As less-risky projects contain less uncertainty on future payoffs and thus require less ex-post asset impairment, we predict that accountant CFOs face a smaller need to write off long-lived assets. Assuming that long-lived asset impairment is a team-based decision, we further predict that the effect of a CFO’s risk aversion should hinge on whether the CFO has enough power in a top management team. As shown in Table A4 of the Online Appendix, our empirical results support these predictions.

6. A competing TMT power proxy

As discussed in Section 3, TMT power is a multi-dimensional construct. Hence, a natural question is whether any of the individual TMT power proxies noted in Section 3 can be a better proxy for the unobservable TMT power construct than our ordered TMT name list.

To examine this possibility, we consider all the individual TMT power proxies discussed in Section 3. The measurement of most individual proxies is very coarse and therefore they can be ruled out as credible candidates for TMT power. For example, many

proxies are dichotomous variables (e.g., *EXEC_DIR*, *FOUNDER*, *OFFICIAL*, to name a few) and therefore they would not be useful to distinguish the relative power of TMT members who share the same value of a proxy. Likewise, many other proxies are limited in scope because they capture only one single dimension of TMT power, and therefore, they are unlikely to be as comprehensive as *POWER*. For example, *EDU* is a good proxy for prestige power, but it is unlikely to be a good proxy for structural power. However, *COMP*, one of the structural power proxies, could be a potential alternative because *COMP* could reflect multiple power sources, including not only structural power but also ownership power, expert power, prestige power, political power, seniority power and gender power. In addition, *COMP* is continuous and thus might better capture the actual distance of power between two individuals.

On the other hand, managerial compensation may not be a reliable proxy for managerial power because managerial compensation could be significantly distorted due to China's culture of collectivism and communism history. China's score of individualism per Hofstede Insights is only 20 out of 100,¹⁶ suggesting that China has a highly collectivist culture where people are expected to act in the interests of the group and not necessarily of themselves. In addition, prior to China's opening to the outside world in 1978, there was no private property, and everyone worked for the government or SOEs and was paid pretty much the same. Because of these cultural and historic reasons, the pay dispersion for the top executives of many publicly listed Chinese firms (both SOEs and non-SOEs) remains low or even zero today, making reported managerial compensation a less reliable proxy for managerial power.¹⁷

The distortion of managerial compensation is particularly strong in publicly listed SOEs. The reason is that the top executives of many publicly listed Chinese SOEs are quasi-

¹⁶ See <https://www.hofstede-insights.com/country-comparison/china>.

¹⁷ Consistent with the sensitivity of the managerial compensation topic, a few anonymous board members of publicly listed Chinese firms told us that some controlling shareholders of publicly listed *non-SOEs* pay all top executives similar annual compensation disclosed in annual reports but reward high-performing executives with hidden bonuses.

government bureaucrats subject to China's rigid and hierarchical government personnel system including compensation.¹⁸ Jiang et al. (2020) show that non-CEO top executives' horizontal pay dispersion is much lower in SOEs than in non-SOEs. Chen, Luo and Soderstrom (2018) also find that almost 40% of the CEOs in publicly listed Chinese SOEs receive zero pay from the companies they work for. Because of Chinese SOEs' rigid personnel and compensation system, many SOE executives care more about political promotion than monetary reward. As a result, the SOE executives who have a greater prospect for political promotion would be more willing to sacrifice their financial reward in order to minimize potential accusations from both their opponents and the general public that they are more interested in pursuing personal reward rather than serving the public interests (Chen et al. 2013; Chen et al. 2018; Jiang et al. 2020). Furthermore, in recent years some Chinese SOEs have started to experiment with recruiting some of their TMT members (typically Vice President positions) from the competitive external labor market. Typically, the annual compensation for these externally hired executives is much higher than that for the internally promoted executives, even though the latter could be more powerful than the former. For these reasons, reported managerial compensation may not be a reliable measure of managerial power for Chinese SOEs.

To test the validity of *COMP* as a competing proxy for TMT power, we replicate the regression in panel A of Table 4. Because *COMP* is a continuous variable while *POWER* is a transformed rank variable, we also convert *COMP* into a rank variable similar to *POWER* (denoted as *COMP_POWER*). Table 6 shows the replication of the model in panel A of Table 4 using *COMP* and *COMP_POWER* as dependent variables. To facilitate comparison, we reproduce the regression results in panel A of Table 4 (excluding *COMP* as an explanatory variable) in the first column of Table 6. Since the regression results for *COMP* and

¹⁸ See Chen et al. (2013) for a detailed discussion of Chinese SOEs' internal labor market.

COMP_POWER are very similar, we focus on the regression of *COMP_POWER*, which is directly comparable to the regression of *POWER* in column (1) of Table 6.

There are two key conclusions from Table 6. First, *COMP_POWER* is a useful proxy for TMT power. Specifically, we find that managerial compensation can be explained by 10 out of the 16 TMT power proxies as predicted. In addition, the Pearson correlation between *POWER* and *COMP_POWER* is a positive 36.6% (untabulated). Second and more importantly, we find no evidence that *COMP_POWER* is a better proxy for TMT power than *POWER*. Specifically, we find that the coefficients on five important TMT power proxies (*FOUNDER*, *CONTROLLER*, *NUM_NONPROFIT*, *OFFICIAL*, and *PARENT_POS*) that are significant and as predicted in the ordered TMT name list regression become either insignificant or inconsistent with the prediction in the managerial compensation regression. It is particularly striking that the signs of the coefficients on the two political capital proxies in column (3) are opposite to those in column (1). Untabulated regression results show that the negative coefficient on *PARENT_POS* is due to the SOE sample while the negative coefficient on *OFFICIAL* holds for both the SOE sample and non-SOE sample.¹⁹ In addition, we find that the overall model R^2 is 46.3% for our *POWER* model but only 25.3% for the *COMP_POWER* model. The overall model R^2 for the *COMP* model is higher (32.8%) but still much lower than overall model R^2 for our *POWER* model. As noted in standard econometrics textbooks (e.g., Wooldridge 2016), random measurement error in a dependent variable would result in a larger error variance (i.e., smaller R^2) and larger variances of the OLS estimators. Hence, these results suggest that managerial annual compensation is a noisier proxy for TMT power than *POWER*.²⁰

¹⁹ The results for *OFFICIAL* and *PARENT_POS* in column (3) are consistent with the research findings in Chen et al. (2013), Chen et al. (2018) and Jiang et al. (2020). These results suggest that executives with political aspirations and executives who belong to Chinese SOEs' rigid personnel system are paid below the market rate, willingly or unwillingly.

²⁰ We find no evidence that CFO's relative power measured by annual compensation can explain the CFO's long-lived asset impairment decision (see Table A4 in the Online Appendix).

7. Nonmarket institutional forces and TMT power in China

Why do the two TMT power proxies, *POWER* and *COMP_POWER*, diverge so much from each other, especially with respect to political power? In what decision contexts would the divergence between *POWER* and *COMP_POWER* matter? In this section we conduct several preliminary analyses to shed light on these questions.

We hypothesize that the divergence between the two TMT power proxies reflects a firm's rational equilibrium response resulting from the tension of two types of nonmarket institutional forces in China (Fei et al. 1992; Wong 2016). On the one hand, developing and maintaining good relationships with various government agencies is strategically important to the prosperity of certain Chinese firms (Ke, Li and Ye 2020). Hence, these Chinese firms should have an incentive to place executives with political power to higher ranked positions within the firm so that they can effectively deal with various government agencies and their officials. If an executive responsible for government relationships is ranked low within the firm, the person may not be perceived as credible by local government officials. Likewise, if a higher ranked executive has no political power, the executive may also find it more difficult to build relationships and rapport with government officials. On the other hand, as discussed in Section 6, top executives with political power are often constrained from receiving high compensation due to China's culture and communism history. Because of these two conflicting institutional forces, the relative compensation of the TMT members diverges from their relative power in the firm. In addition, this divergence should have implications for corporate outcomes, which are often heavily influenced by nonmarket institutional forces.

We provide two sets of empirical analyses consistent with this hypothesis. First, we examine the determinants of the divergence between the two TMT power proxies, measured by the inverse of the correlation between *POWER* and *COMP_POWER* for all TMT members including the Board Chairman and the CEO in a firm-year (denoted as *POWER-*

COMP_CORR).²¹ We predict that state-controlled firms (denoted as *SOE*) and firms operating in the regulated industries (denoted as *REG_INDUSTRY*) should value government relationships more highly and therefore these firms should be more likely to experience a divergence between the two power proxies.

Table 7 shows the regression results of this test. Panel A shows the descriptive statistics of the regression variables. The values of *POWER-COMP_CORR* vary significantly across firm years. The 25th percentile value of *POWER-COMP_CORR* is 0.04 but the 75th percentile value of *POWER-COMP_CORR* is 0.81. The values of *POWER-COMP_CORR* are even negative for approximately 22% of the firm years.

Panel B of Table 7 shows the OLS regression results of *POWER-COMP_CORR*. Consistent with our prediction, we find that the coefficients on *SOE* and *REG_INDUSTRY* are both negative and significant in column (1). We also repeat the regression by including three common control variables (i.e., size, leverage, and growth) in column (2) and obtain similar inferences. The regression in column (3) further includes industry×year fixed effects. Even though the coefficient on *REG_INDUSTRY* drops out due to perfect collinearity, the coefficient on *SOE* continues to be significantly negative.

Second, we consider a decision context in which the divergence between the two TMT power proxies matters: corporate financing. Both debt and equity financing are controlled and heavily regulated by the Chinese government agencies. Debt financing is largely controlled by the state-controlled banks and China Banking Regulatory Commission. Equity financing requires the explicit approval of China Securities Regulatory Commission. Therefore, we expect that firms that value government relationships more highly would not only assign

²¹ Unlike the previous analyses where the unit of observation is an individual TMT member, the analyses in this section are based on firm-level variables. Thus, we include a firm's Chairman and CEO in computing the firm-level variable *POWER-COMP_CORR*. To ensure that our results are not driven by firms that have CEOs who rank higher in pay than the Chairmen but are politically inferior to the Chairmen, we remove those firms (less than 10% of observations) in a robustness check. Our inferences remain unchanged (untabulated).

executives with political power to higher ranked positions (i.e., lower values of *POWER-COMP_CORR*), but also reap significant benefits such as more debt and equity financing.

Table 8 shows the regression results of this latter prediction. The dependent variables are *LOAN* and *EQUITY*. To account for the lumpiness of debt/equity financing, both dependent variables are defined over a rolling three-year window t , $t+1$ and $t+2$ relative to the explanatory variables measured in year $t-1$. Panel A shows the descriptive statistics of the regression variables. Panel B shows the regression results of *LOAN* and panel C the regression results of *EQUITY*. Consistent with our prediction, the coefficient on *POWER-COMP_CORR* is significantly negative in column (1) in both panels. Inferences are similar in columns (2) and (3) when we include the same control variables as in Table 7. Overall, these results are consistent with our hypothesis.

8. Conclusions

Existing research recognizes the importance of TMT power to corporate decision making of publicly listed firms. However, one impediment to this line of research is the lack of a readily available measure of TMT power for a large sample of publicly listed firms. In addition, there is little research about the impact of TMT power in countries outside the U.S. The objective of this study is to develop a comprehensive measure of power for the TMTs of all publicly listed Chinese firms. We demonstrate the validity of our measure by showing that our power measure is positively correlated with the common power sources identified in prior U.S. research, including structural power, ownership power, expert power, and prestige power. In addition, we show that our measure is also positively associated with three Asia-relevant power sources, including political power, seniority power, and gender power. We find evidence that our measure is a valid proxy for TMT power for both state-controlled firms and non-state-controlled firms. We also validate our TMT power proxy for one specific category of top executives that is required to be included in the TMT name list: the CFO.

In addition, we examine whether the individual proxies for the different dimensions of TMT power sources can serve as better proxies for TMT power. We reject most of these individual proxies as credible candidates because of the coarseness of these proxies or limitations in the scope of these proxies. However, we find that managerial compensation is a useful proxy for TMT power, but we find no evidence that managerial compensation is a better proxy for TMT power than our ordered TMT name list. The most significant divergence between our power proxy and the compensation-based power proxy is related to TMT member's political power. While we find a positive correlation between political power and our TMT power proxy as predicted by theory, political power is negatively associated with managerial compensation.

We provide evidence that the divergence between our power proxy and the compensation-based power proxy is a rational equilibrium response: firms that value government relationships more highly have a stronger incentive to place executives with political power to higher ranked positions within the firm so that they can help their firms more effectively deal with government officials. Consistent with this hypothesis, we find that state-controlled firms and firms in the regulated industries are more likely to report a greater divergence between the two power proxies. In addition, the firms with a higher divergence between the two power proxies obtain more subsequent debt and equity financing, both of which are heavily regulated by various government agencies.

As noted in the Introduction, power is central to all strategic corporate decisions because individual managers are able to influence organizational outcomes only to the extent that they have power. Due to lack of observable power proxies, most prior research simply assumes managers have enough power to make relevant corporate decisions. With the ready availability of a simple yet comprehensive measure of TMT power in China, there are many potential applications that can explicitly incorporate the role of power in managerial decisions.

We envision two types of possible applications. First, future researchers can use our power measure to better understand how TMT power is distributed across organizations and over time. This is an important question because of the increased uncertainty of a firm's external environment and therefore the power distribution within a TMT ought to adapt to such external environmental changes. Second, future researchers can also explicitly incorporate the role of TMT power in their hypothesis tests about managerial decision making (e.g., by using the power measure as the weight to aggregate the idiosyncratic effects, such as gender or financial expertise, of all members of a TMT). The list of potential applications here seems almost unlimited because there are so many important managerial decisions firms face on a daily basis and often such decisions are made by TMTs and therefore incorporating the distribution of TMT power in such analyses seems crucial to better understanding managerial decisions.

Two limitations of our study are worth mentioning. First, our power measure is ordinal in nature and thus does not capture either the extent of relative power between the CEO and other executives or the *magnitude* of the relative power of non-CEO executives. Cardinal measures of power are needed to capture these dynamics. In the U.S. setting, Bebchuk, Cremers, and Peyer (2011) develop the CEO pay slice measure (i.e., the fraction of the aggregate compensation of the top-five executive team captured by the CEO) and provide evidence that their measure reflects the relative importance of the CEO and the extent to which the CEO is able to extract rents. Developing similar measures in the China setting is an interesting avenue for future research.

Second, the power dynamics of TMTs in China may be quite different from those in other countries. The economic and political forces underlying China's publicly listed firms may be unique and the validity of our power measure may hinge critically on these forces. However, the ordered TMT name list is not unique to China but also disclosed in some other markets (e.g., India, Thailand, Singapore, and South Korea). Our results suggest that it is particularly

important to understand the power dynamics of the TMT members (beyond executive compensation) in situations where nonmarket institutional forces are important. Assessing the generalizability of our findings to other countries is left for future research.

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Appendix. Variable definitions

Panel A. Variables in Tables 3–5

Variable	Definition
<i>POWER</i>	$POWER = 1 - (RANK - MIN)/(MAX - MIN)$, where <i>RANK</i> is the rank of the TMT member disclosed in the annual report of a firm-year with 1 being the highest rank. <i>MIN</i> is the minimum of <i>RANK</i> (i.e., 1) and <i>MAX</i> is the maximum of <i>RANK</i> (i.e., the number of TMT members in a firm-year). <i>POWER</i> ranges from zero (lowest power) to one (highest power).
<i>INV_RANK</i>	The negative value of <i>RANK</i> .
<i>CFO_POWER</i>	The normalized measure of power (i.e., <i>POWER</i>) of a CFO.
<i>CFO_INV_RANK</i>	The negative value of CFO rank within each TMT.
<i>Structural power</i>	
<i>EXEC_DIR</i>	A dummy variable indicating whether a TMT member is part of the firm's board.
<i>COMP</i>	A TMT member's total annual cash compensation (including bonuses) divided by the total cash compensation of the highest paid manager.
<i>NUM_TITLES</i>	The number of top executive job titles held by a TMT member.
<i>Ownership power</i>	
<i>SHARE_OWN</i>	The stock ownership of a TMT member and her related parties acting in concert.
<i>FOUNDER</i>	A dummy variable indicating whether a TMT member is disclosed in the IPO prospectus as a top ten shareholder or a top management team member in the IPO year.
<i>CONTROLLER</i>	A dummy variable indicating whether a TMT member is the ultimate controlling shareholder of the firm.
<i>Expert power</i>	
<i>SKILL_MATCH</i>	A dummy variable indicating whether there is a match between a TMT member's functional areas and her professional qualifications. For executives with only generic job titles (i.e., Vice President) whose job functions are not disclosed, <i>SKILL_MATCH</i> is coded as zero.
<i>NUM_FUNCTIONS</i>	The number of functional areas in which a TMT member holds a post.
<i>NUM_POSITIONS</i>	The number of senior executive positions a TMT member previously held based on her resume.
<i>Prestige power</i>	
<i>NUM_DIR</i>	The number of board seats a TMT member holds in other listed firms.
<i>NUM_NONPROFIT</i>	The number of board seats a TMT member holds in non-for-profit organizations.
<i>EDU</i>	<i>EDU</i> is one if a TMT member's educational level is technical secondary level or below, two if the educational level is junior college level, three if the educational level is a bachelor degree, four if the educational level is a master degree, and five if the educational level is a doctor degree.
<i>Political power</i>	
<i>OFFICIAL</i>	A dummy variable that equals one if a manager is a current or former government official at the central, provincial or county government level, or a representative of the People's Congress or the Chinese People's Political Consultative Conference (CPPCC) at the national, provincial or county level.
<i>PARENT_POS</i>	<i>PARENT_POS</i> is three if a TMT member holds the position of both the Chairman of the Board and the CEO at the parent company, two if the TMT member holds the position of either the Chairman of the Board or the CEO but not both at the parent company, one if the TMT member holds any managerial

	position lower than the Board Chairman and the CEO at the parent company, and zero if the TMT member holds no managerial position at the parent company.
<i>Seniority power</i>	
<i>AGE</i>	The age of a TMT member.
<i>TENURE</i>	The number of years since a TMT member joined the firm.
<i>Gender power</i>	
<i>MALE</i>	<i>MALE</i> equals one for male executives and zero for female executives.

Panel B. Additional variable in Table 6

Variable	Definition
<i>COMP_POWER</i>	$COMP_POWER = 1 - (COMP_RANK - MIN)/(MAX - MIN)$, where <i>COMP_RANK</i> is the rank of a TMT member based on total annual cash compensation (<i>COMP</i>) with 1 being the highest rank. <i>MIN</i> is the minimum of <i>COMP_RANK</i> (i.e., 1) and <i>MAX</i> is the maximum of <i>COMP_RANK</i> (i.e., the number of TMT members in a firm-year). <i>COMP_POWER</i> ranges from zero (lowest power) to one (highest power).

Panel C. Variables in Table 7

Variable	Definition
<i>POWER-COMP_CORR</i>	The correlation between <i>POWER</i> and <i>COMP_POWER</i> for all TMT members (including the Board Chairman and the CEO) of firm <i>i</i> in year <i>t</i> . We exclude firm-years with fewer than five TMT members.
<i>SOE</i>	A dummy variable that equals one if firm <i>i</i> is state-controlled, and zero otherwise.
<i>REG_INDUSTRY</i>	A dummy variable that equals one if firm <i>i</i> is in a regulated industry, and zero otherwise. The list of regulated industries is provided in Panel E below.
<i>SIZE</i>	The natural logarithm of the book value of firm <i>i</i> 's total assets at the end of year <i>t-1</i> .
<i>LEVERAGE</i>	Firm <i>i</i> 's book value of total liabilities divided by the book value of its total assets at the end of year <i>t-1</i> .
<i>GROWTH</i>	Firm <i>i</i> 's market-to-book ratio at the end of year <i>t-1</i> , where the market value of total assets is measured as the sum of the market value of equity and the book value of total liabilities.

Panel D. Variables in Table 8

Variable	Definition
<i>LOAN</i>	The annual-average amount of bank loans borrowed by firm <i>i</i> over the three-year period (year <i>t</i> to year <i>t+2</i>) divided by the book value of its total assets at the end of year <i>t-1</i> . It is expressed in percentage points.
<i>EQUITY</i>	The annual-average amount of equity issued by firm <i>i</i> over the three-year period (year <i>t</i> to year <i>t+2</i>) divided by the book value of its total assets at the end of year <i>t-1</i> . It is expressed in percentage points.
<i>POWER-COMP_CORR</i>	The correlation between <i>POWER</i> and <i>COMP_POWER</i> for all TMT members (including the Board Chairman and CEO) of firm <i>i</i> in year <i>t-1</i> . We exclude firm-years with fewer than five TMT members.
<i>SIZE</i>	The natural logarithm of the book value of firm <i>i</i> 's total assets at the end of year <i>t-1</i> .
<i>LEVERAGE</i>	Firm <i>i</i> 's book value of total liabilities divided by the book value of its total assets at the end of year <i>t-1</i> .

<i>GROWTH</i>	Firm <i>i</i> 's market-to-book ratio at the end of year <i>t-1</i> , where the market value of total assets is measured as the sum of the market value of equity and the book value of total liabilities.
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Panel E. The list of regulated industries

Industry	Code	References
Mining	B	Wei et al. (2005), Fan et al. (2007), Tian and Estrin (2008), Luo and Liu (2009), Yu et al. (2010)
Manufacturing:		
Petroleum processing, coking, and nuclear fuel processing	C25	Luo and Liu (2009), Yu et al. (2010)
Ferrous metal smelting and rolling processing	C31	Luo and Liu (2009)
Non-ferrous metal smelting and rolling processing	C32	Luo and Liu (2009)
Automobile manufacturing	C36	Luo and Liu (2009)
Manufacturing of railways, ships, aircrafts, spacecrafts and other transportation equipment	C37	Luo and Liu (2009)
Electric power, heat, gas and water production and supply	D	Fan et al. (2007), Luo and Liu (2009), Yu et al. (2010)
Construction:		
Civil engineering construction	E48	Yu et al. (2010)
Transport, storage and postal service:		
Railway transportation	G53	Luo and Liu (2009)
Road transport	G54	Luo and Liu (2009)
Waterway transport	G55	Luo and Liu (2009)
Air transport	G56	Luo and Liu (2009)
Information transmission, software and information technology services:		
Telecommunications, radio and television and satellite transmission services	I63	Luo and Liu (2009)
Internet and related services	I64	Luo and Liu (2009)
Real estate	K	Fan et al. (2007), Yu et al. (2010)
Culture, sports and entertainment	R	Luo and Liu (2009)

Table 1. Sample selection procedures

	Full sample	SOE sample	Non-SOE sample
All A-share firms over 2005 to 2013	317,542	168,568	133,222
Full sample: 17,122 firm-years, 2,554 unique firms			
SOE sample: 8,425 firm-years, 1,209 unique firms			
Non-SOE sample: 7,889 firm-years, 1,584 unique firms			
Eliminating individuals not belonging to top management teams	(189,929)	(102,283)	(77,969)
Eliminating Board Chairmen and CEOs	(30,963)	(16,056)	(13,424)
Eliminating top management team members that quit in the current year or take on the position after the fiscal-year end	(5,722)	(2,509)	(2,950)
Eliminating observations with missing compensation or age data	(492)	(344)	(139)
Eliminating top management teams with only one member	(254)	(84)	(157)
Final sample	90,182	47,292	38,583
Full sample: 16,692 firm-years, 2,553 unique firms			
SOE sample: 8,251 firm-years, 1,206 unique firms			
Non-SOE sample: 7,656 firm-years, 1,578 unique firms			

Notes: This table shows the sample selection procedures. The number of individuals included or dropped in each step is shown in the table. The number of individuals, firm-years or unique firms for the full sample does not equal the summation of the numbers for the two subsamples because there are some firm-years that are neither classified as state-controlled firms (SOEs) nor as non-state-controlled firms (non-SOEs), and there are some firms that are classified as SOEs in some years but as non-SOEs in other years.

Table 2. Sample distribution

Panel A. Distribution by year

	Number of firms			Number of individuals		
	Full sample	SOE sample	Non-SOE sample	Full sample	SOE sample	Non-SOE sample
2005	1,297	878	370	6,601	4,659	1,703
2006	1,342	849	446	6,788	4,529	2,031
2007	1,489	914	528	7,706	5,002	2,468
2008	1,564	919	600	8,319	5,173	2,901
2009	1,699	904	689	9,163	5,212	3,382
2010	2,073	914	1,003	11,536	5,506	5,158
2011	2,301	932	1,256	12,443	5,410	6,446
2012	2,441	979	1,362	13,740	5,972	7,152
2013	2,486	962	1,402	13,886	5,829	7,342
Total	16,692	8,251	7,656	90,182	47,292	38,583

Panel B. Distribution by the size of top management team

	Number of firms			Number of individuals		
	Full sample	SOE sample	Non-SOE sample	Full sample	SOE sample	Non-SOE sample
2	1,102	356	705	2,204	712	1,410
3	2,158	858	1,205	6,474	2,574	3,615
4	3,200	1,419	1,619	12,800	5,676	6,476
5	3,362	1,653	1,571	16,810	8,265	7,855
6	2,596	1,436	1,028	15,576	8,616	6,168
7	1,734	1,032	612	12,138	7,224	4,284
8	1,086	632	389	8,688	5,056	3,112
9	608	355	226	5,472	3,195	2,034
10	335	212	109	3,350	2,120	1,090
11	179	106	66	1,969	1,166	726
12	118	73	41	1,416	876	492
13	61	40	19	793	520	247
14	48	25	20	672	350	280
15	32	23	8	480	345	120
16	24	9	13	384	144	208
17	18	9	9	306	153	153
18	6	1	4	108	18	72
19	14	7	6	266	133	114
20	3	0	3	60	0	60
21	2	1	1	42	21	21
>=22	6	4	2	174	128	46
Total	16,692	8,251	7,656	90,182	47,292	38,583

Notes: Panel A shows the distribution of the sample firms by year for the full sample, state-controlled firms (SOEs), and non-state-controlled firms (non-SOEs), respectively. Panel B shows the distribution of the firm-years by the TMT size for the full sample, state-controlled firms (SOEs), and non-state-controlled firms (non-SOEs), respectively.

Table 3. Summary statistics

Panel A. Full sample

	N	Mean	SD	P25	Median	P75
Structural power						
<i>EXEC_DIR</i>	90,182	0.23	0.42	0	0	0
<i>COMP</i>	90,182	0.60	0.25	0.43	0.63	0.79
<i>NUM_TITLES</i>	90,182	1.38	0.59	1	1	2
Ownership power						
<i>SHARE_OWN</i>	90,182	0.23	1.53	0	0	0.0004
<i>FOUNDER</i>	90,182	0.36	0.48	0	0	1
<i>CONTROLLER</i>	90,182	0.01	0.11	0	0	0
Expert power						
<i>SKILL_MATCH</i>	90,182	0.15	0.36	0	0	0
<i>NUM_FUNCTIONS</i>	90,182	1.22	0.51	1	1	1
<i>NUM_POSITIONS</i>	90,182	2.87	1.86	2	2	4
Prestige power						
<i>NUM_DIR</i>	90,182	0.37	1.04	0	0	0
<i>NUM_NONPROFIT</i>	90,182	0.02	0.17	0	0	0
<i>EDU</i>	90,182	3.19	0.77	3	3	4
Political power						
<i>OFFICIAL</i>	90,182	0.07	0.25	0	0	0
<i>PARENT_POS</i>	90,182	0.06	0.28	0	0	0
Seniority power						
<i>AGE</i>	90,182	45.26	6.90	40	45	50
<i>TENURE</i>	90,182	4.51	3.14	2	4	6
Gender power						
<i>MALE</i>	90,182	0.86	0.35	1	1	1

Panel B. SOE sample

	N	Mean	SD	P25	Median	P75
Structural power						
<i>EXEC_DIR</i>	47,292	0.18	0.38	0	0	0
<i>COMP</i>	47,292	0.63	0.25	0.5	0.69	0.8
<i>NUM_TITLES</i>	47,292	1.31	0.56	1	1	2
Ownership power						
<i>SHARE_OWN</i>	47,292	0.02	0.19	0	0	0
<i>FOUNDER</i>	47,292	0.25	0.44	0	0	1
<i>CONTROLLER</i>	47,292	0	0	0	0	0
Expert power						
<i>SKILL_MATCH</i>	47,292	0.18	0.38	0	0	0
<i>NUM_FUNCTIONS</i>	47,292	1.23	0.52	1	1	1
<i>NUM_POSITIONS</i>	47,292	2.95	1.94	2	2	4
Prestige power						
<i>NUM_DIR</i>	47,292	0.38	1.06	0	0	0
<i>NUM_NONPROFIT</i>	47,292	0.02	0.17	0	0	0
<i>EDU</i>	47,292	3.23	0.73	3	3	4
Political power						
<i>OFFICIAL</i>	47,292	0.08	0.27	0	0	0
<i>PARENT_POS</i>	47,292	0.05	0.26	0	0	0
Seniority power						
<i>AGE</i>	47,292	46.22	6.46	42	46	51
<i>TENURE</i>	47,292	4.99	3.27	2	4	7
Gender power						
<i>MALE</i>	47,292	0.88	0.33	1	1	1

Panel C. Non-SOE sample

	N	Mean	SD	P25	Median	P75
Structural power						
<i>EXEC_DIR</i>	38,583	0.30	0.46	0	0	1
<i>COMP</i>	38,583	0.55	0.24	0.38	0.56	0.73
<i>NUM_TITLES</i>	38,583	1.46	0.62	1	1	2
Ownership power						
<i>SHARE_OWN</i>	38,583	0.51	2.29	0	0	0.05
<i>FOUNDER</i>	38,583	0.49	0.50	0	0	1
<i>CONTROLLER</i>	38,583	0.03	0.16	0	0	0
Expert power						
<i>SKILL_MATCH</i>	38,583	0.11	0.32	0	0	0
<i>NUM_FUNCTIONS</i>	38,583	1.22	0.49	1	1	1
<i>NUM_POSITIONS</i>	38,583	2.73	1.71	2	2	4
Prestige power						
<i>NUM_DIR</i>	38,583	0.36	1.01	0	0	0
<i>NUM_NONPROFIT</i>	38,583	0.02	0.17	0	0	0
<i>EDU</i>	38,583	3.12	0.80	3	3	4
Political power						
<i>OFFICIAL</i>	38,583	0.05	0.23	0	0	0
<i>PARENT_POS</i>	38,583	0.08	0.30	0	0	0
Seniority power						
<i>AGE</i>	38,583	44.00	7.24	39	43	48
<i>TENURE</i>	38,583	3.86	2.80	2	3	5
Gender power						
<i>MALE</i>	38,583	0.83	0.38	1	1	1

Notes: This table reports the descriptive statistics for the 17 raw explanatory variables used in our regression, for the full sample in Panel A, and for state-controlled firms (SOEs) and non-state-controlled firms (non-SOEs) in Panels B and C, respectively. All variables are defined in the Appendix.

Table 4. Regression results on the construct validity of *POWER*

Panel A. Full sample

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>POWER</i>	Structural	Ownership	Expert	Prestige	Political	Seniority	Gender	
<i>EXEC_DIR</i>	0.518*** (0.007)							0.458*** (0.007)
<i>COMP</i>	0.241*** (0.006)							0.185*** (0.006)
<i>NUM_TITLES</i>	0.040*** (0.008)							0.039*** (0.008)
<i>SHARE_OWN</i>		0.237*** (0.011)						0.056*** (0.007)
<i>FOUNDER</i>		0.195*** (0.009)						0.017** (0.008)
<i>CONTROLLER</i>		0.301*** (0.020)						0.058*** (0.015)
<i>SKILL_MATCH</i>			0.036*** (0.010)					-0.012* (0.006)
<i>NUM_FUNCTIONS</i>			-0.053*** (0.009)					-0.024*** (0.006)
<i>NUM_POSITIONS</i>			0.151*** (0.007)					0.061*** (0.005)
<i>NUM_DIR</i>				0.298*** (0.009)				0.049*** (0.007)
<i>NUM_NONPROFIT</i>				0.166*** (0.022)				0.058*** (0.016)
<i>EDU</i>				0.021** (0.008)				0.018*** (0.006)
<i>OFFICIAL</i>					0.097*** (0.012)			0.022** (0.009)
<i>PARENT_POS</i>					0.380*** (0.012)			0.077*** (0.009)
<i>AGE</i>						0.185*** (0.008)		0.116*** (0.006)
<i>TENURE</i>						0.258*** (0.008)		0.095*** (0.007)
<i>MALE</i>							0.101*** (0.010)	0.052*** (0.006)
Firm×year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	90,182	90,182	90,182	90,182	90,182	90,182	90,182	90,182
R-squared	0.446	0.098	0.029	0.054	0.043	0.131	0.008	0.495

Panel B. SOE sample

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>POWER</i>	Structural	Ownership	Expert	Prestige	Political	Seniority	Gender	
<i>EXEC_DIR</i>	0.510*** (0.010)							0.449*** (0.010)
<i>COMP</i>	0.262*** (0.008)							0.206*** (0.008)
<i>NUM_TITLES</i>	0.042*** (0.011)							0.045*** (0.011)
<i>SHARE_OWN</i>		0.142*** (0.016)						0.018 (0.011)
<i>FOUNDER</i>		0.201*** (0.013)						0.019* (0.011)
<i>CONTROLLER</i>								
<i>SKILL_MATCH</i>			0.038*** (0.013)					0.001 (0.009)
<i>NUM_FUNCTIONS</i>			-0.067*** (0.012)					-0.041*** (0.009)
<i>NUM_POSITIONS</i>			0.167*** (0.010)					0.068*** (0.008)
<i>NUM_DIR</i>				0.253*** (0.012)				0.050*** (0.010)
<i>NUM_NONPROFIT</i>				0.195*** (0.030)				0.099*** (0.024)
<i>EDU</i>				0.030*** (0.012)				0.030*** (0.008)
<i>OFFICIAL</i>					0.083*** (0.015)			0.027** (0.012)
<i>PARENT_POS</i>					0.370*** (0.017)			0.115*** (0.014)
<i>AGE</i>						0.189*** (0.012)		0.127*** (0.009)
<i>TENURE</i>						0.226*** (0.011)		0.091*** (0.010)
<i>MALE</i>							0.130*** (0.014)	0.077*** (0.009)
Firm×year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	47,292	47,292	47,292	47,292	47,292	47,292	47,292	47,292
R-squared	0.401	0.055	0.036	0.038	0.035	0.120	0.012	0.457

Panel C. Non-SOE sample

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>POWER</i>	Structural	Ownership	Expert	Prestige	Political	Seniority	Gender	
<i>EXEC_DIR</i>	0.528*** (0.009)							0.458*** (0.009)
<i>COMP</i>	0.213*** (0.008)							0.159*** (0.008)
<i>NUM_TITLES</i>	0.039*** (0.011)							0.037*** (0.010)
<i>SHARE_OWN</i>		0.333*** (0.013)						0.099*** (0.009)
<i>FOUNDER</i>		0.190*** (0.012)						0.014 (0.010)
<i>CONTROLLER</i>		0.244*** (0.022)						0.046*** (0.015)
<i>SKILL_MATCH</i>			0.031** (0.015)					-0.029*** (0.008)
<i>NUM_FUNCTIONS</i>			-0.033*** (0.012)					-0.000 (0.008)
<i>NUM_POSITIONS</i>			0.128*** (0.011)					0.051*** (0.007)
<i>NUM_DIR</i>				0.343*** (0.012)				0.047*** (0.009)
<i>NUM_NONPROFIT</i>				0.138*** (0.032)				0.021 (0.019)
<i>EDU</i>				0.015 (0.012)				0.011 (0.008)
<i>OFFICIAL</i>					0.121*** (0.019)			0.020 (0.013)
<i>PARENT_POS</i>					0.383*** (0.017)			0.046*** (0.012)
<i>AGE</i>						0.183*** (0.012)		0.106*** (0.008)
<i>TENURE</i>						0.299*** (0.011)		0.098*** (0.010)
<i>MALE</i>							0.071*** (0.013)	0.029*** (0.008)
Firm×year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,583	38,583	38,583	38,583	38,583	38,583	38,583	38,583
R-squared	0.501	0.160	0.020	0.075	0.052	0.147	0.004	0.548

Panel D. Raw variables

Dependent variable: <i>INV_RANK</i>	(1) Full sample	(2) SOE sample	(3) Non-SOE sample
Structural power			
<i>EXEC_DIR</i>	2.467*** (0.052)	2.625*** (0.088)	2.276*** (0.051)
<i>COMP</i>	1.417*** (0.081)	1.483*** (0.111)	1.406*** (0.115)
<i>NUM_TITLES</i>	0.095*** (0.033)	0.122** (0.052)	0.102*** (0.037)
Ownership power			
<i>SHARE_OWN</i>	0.029*** (0.009)	0.207*** (0.052)	0.034*** (0.009)
<i>FOUNDER</i>	0.338*** (0.054)	0.263*** (0.079)	0.424*** (0.071)
<i>CONTROLLER</i>	0.127 (0.182)		0.256 (0.181)
Expert power			
<i>SKILL_MATCH</i>	0.019 (0.051)	0.098 (0.071)	-0.092 (0.057)
<i>NUM_FUNCTIONS</i>	-0.110*** (0.028)	-0.157*** (0.038)	-0.014 (0.033)
<i>NUM_POSITIONS</i>	0.103*** (0.010)	0.121*** (0.013)	0.067*** (0.015)
Prestige power			
<i>NUM_DIR</i>	0.098*** (0.017)	0.094*** (0.023)	0.100*** (0.019)
<i>NUM_NONPROFIT</i>	0.291*** (0.076)	0.431*** (0.115)	0.163* (0.090)
<i>EDU</i>	0.061** (0.029)	0.136** (0.053)	0.020 (0.030)
Political power			
<i>OFFICIAL</i>	0.152** (0.061)	0.167** (0.082)	0.119 (0.093)
<i>PARENT_POS</i>	0.509*** (0.063)	0.708*** (0.092)	0.317*** (0.086)
Seniority power			
<i>AGE</i>	0.033*** (0.003)	0.044*** (0.004)	0.026*** (0.003)
<i>TENURE</i>	0.108*** (0.012)	0.102*** (0.015)	0.112*** (0.017)
Gender power			
<i>MALE</i>	0.210*** (0.039)	0.347*** (0.060)	0.079 (0.049)
Firm×year FE	Yes	Yes	Yes
Observations	90,182	47,292	38,583
R-squared	0.601	0.583	0.634

Notes: Panel A shows the OLS regression results of *POWER* for the full sample. Panels B and C show the regression results of *POWER* for state-controlled firms (SOEs) and non-state-controlled firms (non-SOEs), respectively. Panel D shows the OLS regression results of *INV_RANK* for the full sample and the two subsamples. Because *POWER* is expressed in normalized ranking, we also normalize the 17 explanatory variables in the regression model in Panels A, B and C. We show the regression results using raw values for the dependent variable and explanatory variables in Panel D. *CONTROLLER* is dropped from the regressions for the SOE sample because it is always zero for SOEs. All variables are defined in the Appendix. All regressions include firm×year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table 5. CFO power

Panel A. Distribution of CFOs by their rank

CFO rank	Number of CFOs					
	Full sample		SOE sample		Non-SOE sample	
	N	%	N	%	N	%
1	3,103	20	1,491	20	1,471	20
2	2,972	19	1,320	18	1,537	21
3	2,754	18	1,231	17	1,376	19
4	2,389	16	1,127	15	1,164	16
5	1,821	12	955	13	784	11
6	1,138	7	591	8	478	7
7	608	4	356	5	227	3
>= 8	621	4	337	5	250	3
Total	15,406	100	7,408	100	7,287	100

Panel B. Validation of CFO power using *CFO_POWER*

Dependent variable: <i>CFO_POWER</i>	(1) Full sample	(2) SOE sample	(3) Non-SOE sample
Structural power			
<i>EXEC_DIR</i>	0.385*** (0.012)	0.390*** (0.017)	0.378*** (0.017)
<i>COMP</i>	0.126*** (0.009)	0.113*** (0.012)	0.134*** (0.012)
<i>NUM_TITLES</i>	0.128*** (0.012)	0.141*** (0.017)	0.113*** (0.016)
Ownership power			
<i>SHARE_OWN</i>	0.007 (0.012)	-0.034* (0.019)	0.050*** (0.016)
<i>FOUNDER</i>	-0.023** (0.011)	0.004 (0.017)	-0.034** (0.014)
<i>CONTROLLER</i>	-0.038 (0.039)		-0.039 (0.039)
Expert power			
<i>SKILL_MATCH</i>	-0.025** (0.010)	-0.015 (0.014)	-0.052*** (0.015)
<i>NUM_FUNCTIONS</i>	-0.001 (0.014)	-0.001 (0.019)	-0.008 (0.018)
<i>NUM_POSITIONS</i>	0.081*** (0.010)	0.096*** (0.014)	0.063*** (0.013)
Prestige power			
<i>NUM_DIR</i>	0.015 (0.011)	0.012 (0.016)	0.017 (0.015)
<i>NUM_NONPROFIT</i>	0.042 (0.038)	0.045 (0.056)	0.048 (0.047)
<i>EDU</i>	0.008 (0.009)	0.019 (0.013)	0.007 (0.012)
Political power			
<i>OFFICIAL</i>	-0.006 (0.016)	-0.018 (0.021)	-0.001 (0.026)
<i>PARENT_POS</i>	0.032** (0.016)	0.018 (0.026)	0.035* (0.021)
Seniority power			
<i>AGE</i>	0.109*** (0.011)	0.110*** (0.017)	0.127*** (0.014)
<i>TENURE</i>	0.091*** (0.010)	0.066*** (0.015)	0.101*** (0.015)
Gender power			
<i>MALE</i>	0.015* (0.008)	0.032*** (0.012)	0.005 (0.011)
Industry×year FE	Yes	Yes	Yes
Observations	15,406	7,408	7,287
R-squared	0.481	0.473	0.499

Panel C. Validation of CFO rank using raw variables

Dependent variable: <i>CFO_INV_RANK</i>	(1) Full sample	(2) SOE sample	(3) Non-SOE sample
Structural power			
<i>EXEC_DIR</i>	1.841*** (0.071)	1.864*** (0.110)	1.738*** (0.095)
<i>COMP</i>	0.330*** (0.109)	0.237 (0.153)	0.596*** (0.149)
<i>NUM_TITLES</i>	0.370*** (0.047)	0.459*** (0.073)	0.306*** (0.062)
Ownership power			
<i>SHARE_OWN</i>	0.059*** (0.012)	0.203 (0.217)	0.054*** (0.010)
<i>FOUNDER</i>	-0.139** (0.061)	-0.153 (0.107)	-0.266*** (0.080)
<i>CONTROLLER</i>	-0.320 (0.206)		-0.353* (0.212)
Expert power			
<i>SKILL_MATCH</i>	-0.298*** (0.075)	-0.181* (0.108)	-0.379*** (0.107)
<i>NUM_FUNCTIONS</i>	0.061 (0.062)	0.148 (0.092)	-0.010 (0.082)
<i>NUM_POSITIONS</i>	0.044*** (0.015)	0.074*** (0.021)	0.018 (0.021)
Prestige power			
<i>NUM_DIR</i>	-0.055** (0.025)	-0.094*** (0.036)	0.011 (0.023)
<i>NUM_NONPROFIT</i>	0.188 (0.147)	0.182 (0.221)	0.173 (0.192)
<i>EDU</i>	-0.044 (0.035)	-0.068 (0.057)	0.025 (0.042)
Political power			
<i>OFFICIAL</i>	-0.136 (0.109)	-0.181 (0.149)	-0.109 (0.163)
<i>PARENT_POS</i>	0.212*** (0.080)	0.160 (0.138)	0.144 (0.093)
Seniority power			
<i>AGE</i>	0.016*** (0.004)	0.025*** (0.007)	0.021*** (0.005)
<i>TENURE</i>	0.049*** (0.009)	0.047*** (0.013)	0.060*** (0.015)
Gender power			
<i>MALE</i>	-0.026 (0.060)	0.051 (0.095)	-0.106 (0.074)
Industry×year FE	Yes	Yes	Yes
Observations	15,406	7,408	7,287
R-squared	0.302	0.310	0.330

Notes: Panel A shows the distribution of CFOs by their rank within each TMT (after excluding the Board Chairman and CEO) for the full sample, state-controlled firms (SOEs), and non-state-controlled firms (non-SOEs), respectively. Panel B shows the OLS regression results of *CFO_POWER* for the full sample

and the two subsamples. Because *CFO_POWER* is expressed in normalized ranking, we also normalize the 17 explanatory variables in the regression model. Panel C shows the OLS regression results of *CFO_INV_RANK* for the full sample and the two subsamples, using raw values for the dependent variable and explanatory variables. *CONTROLLER* is dropped from the regressions for the SOE sample because it is always zero for SOEs. All variables are defined in the Appendix. All regressions include industry-year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table 6. Replication using alternative power proxies based on annual cash compensation

Dependent variable:	(1) <i>POWER</i>	(2) <i>COMP</i>	(3) <i>COMP_POWER</i>
Structural power			
<i>EXEC_DIR</i>	0.480*** (0.007)	0.123*** (0.010)	0.142*** (0.009)
<i>NUM_TITLES</i>	0.044*** (0.008)	0.026*** (0.008)	0.017** (0.008)
Ownership power			
<i>SHARE_OWN</i>	0.072*** (0.008)	0.084*** (0.010)	0.083*** (0.010)
<i>FOUNDER</i>	0.015* (0.008)	-0.013 (0.010)	-0.012 (0.009)
<i>CONTROLLER</i>	0.060*** (0.015)	0.012 (0.033)	-0.006 (0.031)
Expert power			
<i>SKILL_MATCH</i>	-0.005 (0.007)	0.039*** (0.008)	0.040*** (0.008)
<i>NUM_FUNCTIONS</i>	-0.030*** (0.006)	-0.029*** (0.007)	-0.033*** (0.007)
<i>NUM_POSITIONS</i>	0.077*** (0.005)	0.088*** (0.007)	0.087*** (0.006)
Prestige power			
<i>NUM_DIR</i>	0.060*** (0.007)	0.059*** (0.009)	0.064*** (0.009)
<i>NUM_NONPROFIT</i>	0.055*** (0.016)	-0.017 (0.021)	-0.012 (0.020)
<i>EDU</i>	0.024*** (0.006)	0.029*** (0.007)	0.030*** (0.007)
Political power			
<i>OFFICIAL</i>	0.016* (0.009)	-0.035*** (0.011)	-0.034*** (0.011)
<i>PARENT_POS</i>	0.060*** (0.010)	-0.095*** (0.016)	-0.076*** (0.015)
Seniority power			
<i>AGE</i>	0.136*** (0.007)	0.113*** (0.008)	0.117*** (0.007)
<i>TENURE</i>	0.124*** (0.007)	0.157*** (0.008)	0.157*** (0.008)
Gender power			
<i>MALE</i>	0.066*** (0.007)	0.076*** (0.008)	0.071*** (0.008)
Firm×year FE	Yes	Yes	Yes
Observations	90,182	90,182	90,182
R-squared	0.463	0.328	0.253

Notes: This table shows the replication of the model in panel A of Table 4 using *COMP* and *COMP_POWER* as dependent variables. To facilitate comparison, we reproduce the regression results in panel A of Table 4 (excluding *COMP* as an explanatory variable) in the first column. All variables are defined in the Appendix. All regressions include firm×year fixed effects. Heteroskedasticity-consistent

standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table 7. Determinants of the power-compensation correlation

Panel A. Descriptive statistics

	N	Mean	SD	P25	Median	P75
<i>POWER-COMP_CORR</i>	14,334	0.39	0.45	0.04	0.44	0.81
<i>SOE</i>	14,334	0.54	0.50	0	1	1
<i>REG_INDUSTRY</i>	14,334	0.32	0.46	0	0	1
<i>SIZE</i>	12,878	21.65	1.28	20.78	21.47	22.28
<i>LEVERAGE</i>	12,878	0.48	0.22	0.31	0.49	0.63
<i>GROWTH</i>	12,878	1.72	1.08	1.12	1.37	1.88

Panel B. OLS regression results

Dependent variable: <i>POWER-COMP_CORR</i>	(1)	(2)	(3)
<i>SOE</i>	-0.182*** (0.014)	-0.179*** (0.016)	-0.181*** (0.017)
<i>REG_INDUSTRY</i>	-0.073*** (0.016)	-0.080*** (0.017)	
<i>SIZE</i>		0.005 (0.006)	0.001 (0.008)
<i>LEVERAGE</i>		-0.070** (0.034)	-0.075** (0.036)
<i>GROWTH</i>		-0.024*** (0.006)	-0.021*** (0.007)
Constant	0.515*** (0.010)	0.472*** (0.136)	0.529*** (0.163)
Industry×year FE	No	No	Yes
Observations	14,334	12,878	12,878
R-squared	0.053	0.054	0.071

Notes: Panel A shows the descriptive statistics for the regression variables. Panel B shows the regression results of the determinant model without and with industry×year fixed effects. All variables are defined in the Appendix. *SIZE*, *LEVERAGE*, and *GROWTH* are winsorized at the top and bottom one percent. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table 8. The relation between the power-compensation correlation and corporate financing

Panel A. Descriptive statistics

	N	Mean	SD	P25	Median	P75
<i>LOAN</i>	14,944	27.06	29.74	6.58	20.84	37.25
<i>EQUITY</i>	14,944	9.28	29.10	0.00	0.00	6.45
<i>POWER-COMP_CORR</i>	14,944	0.39	0.45	0.04	0.44	0.81
<i>SIZE</i>	14,459	21.77	1.33	20.84	21.57	22.42
<i>LEVERAGE</i>	14,459	0.48	0.22	0.30	0.48	0.64
<i>GROWTH</i>	14,459	1.78	1.12	1.14	1.42	1.97

Panel B. OLS regression results for debt financing

Dependent variable:	(1)	(2)	(3)
<i>LOAN</i>			
<i>POWER-COMP_CORR</i>	-5.260*** (0.942)	-2.983*** (0.827)	-1.991** (0.782)
<i>SIZE</i>		-2.728*** (0.386)	-2.110*** (0.391)
<i>LEVERAGE</i>		48.814*** (2.125)	46.304*** (2.208)
<i>GROWTH</i>		0.246 (0.527)	1.020* (0.604)
Constant	29.129*** (0.687)	63.623*** (8.313)	49.590*** (8.461)
Industry×year FE	No	No	Yes
Observations	14,944	14,459	14,459
R-squared	0.006	0.131	0.203

Panel C. OLS regression results for equity financing

Dependent variable:	(1)	(2)	(3)
<i>EQUITY</i>			
<i>POWER-COMP_CORR</i>	-2.672*** (0.780)	-2.007*** (0.694)	-1.876*** (0.683)
<i>SIZE</i>		-3.208*** (0.281)	-4.168*** (0.365)
<i>LEVERAGE</i>		7.659*** (2.074)	10.306*** (2.211)
<i>GROWTH</i>		4.862*** (0.657)	5.202*** (0.745)
Constant	10.330*** (0.513)	66.967*** (5.909)	85.933*** (7.876)
Industry×year FE	No	No	Yes
Observations	14,944	14,459	14,459
R-squared	0.002	0.082	0.146

Notes: Panel A shows the descriptive statistics for the regression variables. Panel B shows the regression results of the debt financing model without and with industry×year fixed effects. Panel C shows the regression results of the equity financing model without and with industry×year fixed effects. All variables are defined in the Appendix. *LOAN*, *EQUITY*, *SIZE*, *LEVERAGE*, and *GROWTH* are winsorized at the top and bottom one percent. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Online Appendix
for
“Top Management Team Power in China: Measurement and Validation”

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Table A1. Board TMT members versus non-board TMT members

Panel A. Board TMT members

Dependent variable:	(1)	(2)	(3)
<i>POWER</i>	Full sample	SOE sample	Non-SOE sample
Structural power			
<i>COMP</i>	0.226*** (0.019)	0.230*** (0.030)	0.221*** (0.024)
<i>NUM_TITLES</i>	-0.138*** (0.029)	-0.151*** (0.048)	-0.114*** (0.035)
Ownership power			
<i>SHARE_OWN</i>	0.256*** (0.029)	0.107** (0.050)	0.338*** (0.033)
<i>FOUNDER</i>	-0.029 (0.040)	0.017 (0.056)	-0.065 (0.054)
<i>CONTROLLER</i>	0.335*** (0.052)		0.314*** (0.055)
Expert power			
<i>SKILL_MATCH</i>	-0.067* (0.035)	-0.055 (0.062)	-0.085** (0.042)
<i>NUM_FUNCTIONS</i>	-0.056* (0.031)	-0.070 (0.053)	-0.054 (0.037)
<i>NUM_POSITIONS</i>	0.118*** (0.021)	0.139*** (0.036)	0.097*** (0.025)
Prestige power			
<i>NUM_DIR</i>	0.141*** (0.027)	0.149*** (0.047)	0.122*** (0.033)
<i>NUM_NONPROFIT</i>	0.018 (0.063)	0.142 (0.126)	-0.019 (0.067)
<i>EDU</i>	0.032 (0.023)	0.060 (0.042)	0.024 (0.028)
Political power			
<i>OFFICIAL</i>	0.054 (0.043)	0.017 (0.068)	0.075 (0.052)
<i>PARENT_POS</i>	0.283*** (0.038)	0.382*** (0.059)	0.206*** (0.049)
Seniority power			
<i>AGE</i>	0.152*** (0.021)	0.171*** (0.037)	0.146*** (0.026)
<i>TENURE</i>	0.124*** (0.032)	0.100** (0.048)	0.172*** (0.041)
Gender power			
<i>MALE</i>	0.036 (0.032)	-0.035 (0.064)	0.075** (0.035)
Firm×year FE	Yes	Yes	Yes
Observations	15,435	5,699	9,086
R-squared	0.271	0.227	0.321

Panel B. Non-board TMT members

Dependent variable:	(1)	(2)	(3)
<i>POWER</i>	Full sample	SOE sample	Non-SOE sample
Structural power			
<i>COMP</i>	0.266*** (0.008)	0.281*** (0.011)	0.245*** (0.013)
<i>NUM_TITLES</i>	0.078*** (0.011)	0.070*** (0.015)	0.098*** (0.017)
Ownership power			
<i>SHARE_OWN</i>	0.086*** (0.012)	0.041** (0.017)	0.143*** (0.018)
<i>FOUNDER</i>	0.043*** (0.012)	0.037** (0.016)	0.042** (0.018)
<i>CONTROLLER</i>	0.086 (0.061)		0.058 (0.062)
Expert power			
<i>SKILL_MATCH</i>	-0.015 (0.011)	0.002 (0.014)	-0.046*** (0.017)
<i>NUM_FUNCTIONS</i>	-0.032*** (0.009)	-0.051*** (0.012)	0.003 (0.014)
<i>NUM_POSITIONS</i>	0.075*** (0.008)	0.078*** (0.011)	0.066*** (0.012)
Prestige power			
<i>NUM_DIR</i>	0.085*** (0.012)	0.081*** (0.015)	0.090*** (0.019)
<i>NUM_NONPROFIT</i>	0.089*** (0.029)	0.134*** (0.037)	0.024 (0.044)
<i>EDU</i>	0.029*** (0.009)	0.041*** (0.012)	0.018 (0.014)
Political power			
<i>OFFICIAL</i>	0.040*** (0.015)	0.040** (0.018)	0.047* (0.027)
<i>PARENT_POS</i>	0.118*** (0.022)	0.165*** (0.028)	0.064* (0.034)
Seniority power			
<i>AGE</i>	0.150*** (0.009)	0.155*** (0.012)	0.152*** (0.014)
<i>TENURE</i>	0.130*** (0.010)	0.122*** (0.013)	0.143*** (0.016)
Gender power			
<i>MALE</i>	0.084*** (0.010)	0.111*** (0.013)	0.052*** (0.016)
Firm×year FE	Yes	Yes	Yes
Observations	68,132	38,526	26,252
R-squared	0.225	0.239	0.216

Notes: This table shows the regression results of *POWER* for TMT members who are board members (Panel A) versus TMT members who are not (Panel B) separately. Because *POWER* is expressed in normalized ranking, we also normalize the 16 explanatory variables in the regression model. *EXEC_DIR* is dropped from the regressions because it is always one for director executives (Panel A) and zero for non-director executives (Panel B). *CONTROLLER* is dropped from the regressions for the SOE sample

because it is always zero for SOEs. All variables are defined in the Appendix. All regressions include firm×year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table A2. Deleting firms with smaller TMT size

Dependent variable: <i>POWER</i>	(1) Full sample	(2) SOE sample	(3) Non-SOE sample
Structural power			
<i>EXEC_DIR</i>	0.439*** (0.007)	0.434*** (0.010)	0.436*** (0.009)
<i>COMP</i>	0.180*** (0.006)	0.196*** (0.009)	0.156*** (0.008)
<i>NUM_TITLES</i>	0.035*** (0.008)	0.041*** (0.012)	0.033*** (0.010)
Ownership power			
<i>SHARE_OWN</i>	0.054*** (0.007)	0.024** (0.011)	0.094*** (0.009)
<i>FOUNDER</i>	0.015** (0.008)	0.014 (0.011)	0.017 (0.010)
<i>CONTROLLER</i>	0.032** (0.014)		0.026* (0.014)
Expert power			
<i>SKILL_MATCH</i>	-0.008 (0.006)	0.004 (0.009)	-0.025*** (0.008)
<i>NUM_FUNCTIONS</i>	-0.026*** (0.006)	-0.036*** (0.009)	-0.005 (0.007)
<i>NUM_POSITIONS</i>	0.060*** (0.005)	0.070*** (0.008)	0.045*** (0.007)
Prestige power			
<i>NUM_DIR</i>	0.053*** (0.007)	0.055*** (0.009)	0.048*** (0.009)
<i>NUM_NONPROFIT</i>	0.065*** (0.016)	0.101*** (0.023)	0.025 (0.020)
<i>EDU</i>	0.014** (0.006)	0.024*** (0.008)	0.007 (0.008)
Political power			
<i>OFFICIAL</i>	0.029*** (0.009)	0.030*** (0.012)	0.031** (0.013)
<i>PARENT_POS</i>	0.077*** (0.010)	0.112*** (0.015)	0.042*** (0.012)
Seniority power			
<i>AGE</i>	0.108*** (0.007)	0.127*** (0.009)	0.088*** (0.009)
<i>TENURE</i>	0.109*** (0.008)	0.104*** (0.011)	0.114*** (0.011)
Gender power			
<i>MALE</i>	0.048*** (0.007)	0.069*** (0.010)	0.026*** (0.008)
Firm×year FE	Yes	Yes	Yes
Observations	68,704	38,330	27,082
R-squared	0.502	0.466	0.562

Notes: We exclude firm-years with fewer than five TMT members. Because *POWER* is expressed in normalized ranking, we also normalize the 17 explanatory variables in the regression model. *CONTROLLER* is dropped from the regressions for the SOE sample because it is always zero for SOEs.

All variables are defined in the Appendix. All regressions include firm×year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table A3. TMT members including the Board Chairman and CEO

Dependent variable: <i>POWER</i>	(1) Full sample	(2) SOE sample	(3) Non-SOE sample
Structural power			
<i>EXEC_DIR</i>	0.472*** (0.004)	0.470*** (0.005)	0.452*** (0.005)
<i>COMP</i>	0.107*** (0.004)	0.101*** (0.005)	0.121*** (0.005)
<i>NUM_TITLES</i>	-0.072*** (0.004)	-0.061*** (0.006)	-0.069*** (0.005)
Ownership power			
<i>SHARE_OWN</i>	0.022*** (0.005)	0.002 (0.006)	0.046*** (0.006)
<i>FOUNDER</i>	0.013*** (0.005)	0.008 (0.006)	0.017*** (0.006)
<i>CONTROLLER</i>	0.078*** (0.005)		0.091*** (0.006)
Expert power			
<i>SKILL_MATCH</i>	-0.003 (0.004)	0.008 (0.006)	-0.016*** (0.005)
<i>NUM_FUNCTIONS</i>	-0.021*** (0.004)	-0.029*** (0.005)	-0.008 (0.005)
<i>NUM_POSITIONS</i>	0.086*** (0.003)	0.089*** (0.005)	0.073*** (0.005)
Prestige power			
<i>NUM_DIR</i>	0.040*** (0.004)	0.033*** (0.005)	0.052*** (0.006)
<i>NUM_NONPROFIT</i>	0.039*** (0.006)	0.045*** (0.009)	0.030*** (0.009)
<i>EDU</i>	0.023*** (0.003)	0.029*** (0.005)	0.017*** (0.005)
Political power			
<i>OFFICIAL</i>	0.025*** (0.004)	0.027*** (0.005)	0.020*** (0.006)
<i>PARENT_POS</i>	0.105*** (0.005)	0.130*** (0.006)	0.070*** (0.007)
Seniority power			
<i>AGE</i>	0.091*** (0.004)	0.100*** (0.006)	0.082*** (0.006)
<i>TENURE</i>	0.067*** (0.005)	0.065*** (0.006)	0.072*** (0.007)
Gender power			
<i>MALE</i>	0.042*** (0.004)	0.061*** (0.006)	0.025*** (0.005)
Firm×year FE	Yes	Yes	Yes
Observations	120,385	62,850	51,781
R-squared	0.706	0.693	0.727

Notes: We repeat the analysis after including the Board Chairman and CEO in the sample. Because *POWER* is expressed in normalized ranking, we also normalize the 17 explanatory variables in the regression model. *CONTROLLER* is dropped from the regressions for the SOE sample because it is

always zero for SOEs. All variables are defined in the Appendix. All regressions include firm×year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table A4. The relation between CFO power and long-lived asset impairment

Panel A. Descriptive statistics

	N	Mean	SD	P25	Median	P75
<i>WO</i>	13,550	0.12	0.66	0	0	0
<i>ACCOUNTING</i>	13,550	0.28	0.45	0	0	1
<i>POWER_ONLY</i>	13,550	0.28	0.45	0	0	1
<i>ACCOUNTING_ONLY_1</i>	13,550	0.19	0.39	0	0	0
<i>POWER_ACCOUNTING</i>	13,550	0.10	0.30	0	0	0
<i>COMP_ONLY</i>	13,550	0.17	0.38	0	0	0
<i>ACCOUNTING_ONLY_2</i>	13,550	0.21	0.41	0	0	0
<i>COMP_ACCOUNTING</i>	13,550	0.07	0.25	0	0	0
Economic factors						
<i>DSALES</i>	13,550	0.22	0.62	-0.01	0.13	0.30
<i>DE</i>	13,550	0.01	0.09	-0.01	0	0.02
<i>DOCF</i>	13,550	0.01	0.11	-0.04	0	0.05
Reporting incentives						
<i>DMGT</i>	13,550	0.27	0.45	0	0	1
<i>BATH</i>	13,550	0.20	0.40	0	0	0
<i>SMOOTH</i>	13,550	0.70	0.46	0	1	1
<i>DEBT</i>	13,550	0.73	0.45	0	1	1
<i>ST</i>	13,550	0.02	0.14	0	0	0
<i>BIGAC</i>	13,550	0.54	0.50	0	1	1
<i>BOARD_IND</i>	13,550	0.36	0.05	0.33	0.33	0.38
<i>CEO_CHAIR</i>	13,550	0.19	0.40	0	0	0
Board Chairman characteristics						
<i>CHAIR_AGE</i>	13,550	50.98	6.92	46	51	56
<i>CHAIR_TENURE</i>	13,550	5.83	3.43	3	5	8
<i>CHAIR_SHARE_OWN</i>	13,550	0.04	0.11	0	0	0
<i>CHAIR_EDU</i>	13,550	3.34	0.76	3	3	4
<i>CHAIR_OFFICIAL</i>	13,550	0.36	0.48	0	0	1
<i>CHAIR_PARENT_POS</i>	13,550	1.03	0.95	0	1	2
<i>CHAIR_MALE</i>	13,550	0.96	0.20	1	1	1
<i>CHAIR_ACCOUNTING</i>	13,550	0.06	0.24	0	0	0
<i>CHAIR_COMP</i>	13,550	8.83	5.91	0	12.3	13.12
CEO characteristics						
<i>CEO_AGE</i>	13,550	47.37	6.24	43	47	51
<i>CEO_TENURE</i>	13,550	5.62	3.34	3	5	8
<i>CEO_SHARE_OWN</i>	13,550	0.03	0.08	0	0	0
<i>CEO_EDU</i>	13,550	3.35	0.72	3	3	4

<i>CEO_OFFICIAL</i>	13,550	0.17	0.37	0	0	0
<i>CEO_PARENT_POS</i>	13,550	0.30	0.57	0	0	0
<i>CEO_MALE</i>	13,550	0.94	0.23	1	1	1
<i>CEO_ACCOUNTING</i>	13,550	0.10	0.30	0	0	0
<i>CEO_COMP</i>	13,550	12.4	2.26	12.19	12.79	13.31
CFO characteristics						
<i>CFO_AGE</i>	13,550	44	6.51	39	43	48
<i>CFO_TENURE</i>	13,550	4.72	3.10	2	4	7
<i>CFO_SHARE_OWN</i>	13,550	0	0	0	0	0
<i>CFO_EDU</i>	13,550	3.13	0.71	3	3	4
<i>CFO_OFFICIAL</i>	13,550	0.06	0.23	0	0	0
<i>CFO_PARENT_POS</i>	13,550	0.05	0.22	0	0	0
<i>CFO_MALE</i>	13,550	0.73	0.44	0	1	1
<i>CFO_COMP</i>	13,550	12.15	1.65	11.76	12.36	12.89

Panel B. OLS regression results

Dependent variable: <i>WO</i>	Partitioning variable		
	(1) Baseline	(2) <i>HIGH_POWER</i>	(3) <i>HIGH_COMP</i>
<i>ACCOUNTING</i>	-0.020* (0.012)		
<i>ACCOUNTING_ONLY_1</i>		-0.004 (0.016)	
<i>POWER_ACCOUNTING</i>		-0.037** (0.016)	
<i>POWER_ONLY</i>		0.012 (0.016)	
<i>ACCOUNTING_ONLY_2</i>			-0.009 (0.012)
<i>COMP_ACCOUNTING</i>			-0.005 (0.020)
<i>COMP_ONLY</i>			0.050** (0.020)
Economic factors			
<i>DSALES</i>	-0.030** (0.013)	-0.030** (0.013)	-0.031** (0.013)
<i>DE</i>	0.387** (0.177)	0.387** (0.178)	0.390** (0.177)
<i>DOCF</i>	0.015 (0.061)	0.015 (0.061)	0.014 (0.061)
Reporting incentives			
<i>DMGT</i>	0.019 (0.014)	0.019 (0.014)	0.017 (0.014)
<i>BATH</i>	0.148*** (0.021)	0.149*** (0.021)	0.148*** (0.021)
<i>SMOOTH</i>	0.048*** (0.009)	0.048*** (0.009)	0.048*** (0.009)
<i>DEBT</i>	0.021** (0.009)	0.021** (0.009)	0.020** (0.009)
<i>ST</i>	0.141 (0.086)	0.141 (0.086)	0.140 (0.086)
<i>BIGAC</i>	0.005 (0.012)	0.005 (0.012)	0.005 (0.012)
<i>BOARD_IND</i>	-0.162 (0.108)	-0.162 (0.108)	-0.163 (0.108)
<i>CEO_CHAIR</i>	-0.020 (0.019)	-0.020 (0.019)	-0.021 (0.018)
Board Chairman characteristics			
<i>CHAIR_AGE</i>	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
<i>CHAIR_TENURE</i>	-0.000 (0.002)	-0.000 (0.002)	-0.000 (0.002)
<i>CHAIR_SHARE_OWN</i>	-0.129*** (0.041)	-0.132*** (0.041)	-0.128*** (0.041)
<i>CHAIR_EDU</i>	0.008 (0.011)	0.008 (0.011)	0.008 (0.011)

<i>CHAIR_OFFICIAL</i>	-0.009 (0.014)	-0.010 (0.014)	-0.009 (0.014)
<i>CHAIR_PARENT_POS</i>	-0.024*** (0.009)	-0.024*** (0.009)	-0.025*** (0.009)
<i>CHAIR_MALE</i>	0.001 (0.030)	0.001 (0.029)	0.001 (0.029)
<i>CHAIR_ACCOUNTING</i>	0.025 (0.032)	0.025 (0.032)	0.025 (0.032)
<i>CHAIR_COMP</i>	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)
CEO characteristics			
<i>CEO_AGE</i>	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
<i>CEO_TENURE</i>	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
<i>CEO_SHARE_OWN</i>	0.050 (0.055)	0.052 (0.055)	0.049 (0.055)
<i>CEO_EDU</i>	-0.006 (0.013)	-0.006 (0.013)	-0.006 (0.013)
<i>CEO_OFFICIAL</i>	0.013 (0.019)	0.014 (0.019)	0.013 (0.019)
<i>CEO_PARENT_POS</i>	-0.010 (0.010)	-0.010 (0.010)	-0.010 (0.010)
<i>CEO_MALE</i>	0.003 (0.029)	0.003 (0.029)	0.004 (0.029)
<i>CEO_ACCOUNTING</i>	0.068** (0.027)	0.068** (0.027)	0.069** (0.027)
<i>CEO_COMP</i>	0.000 (0.003)	0.000 (0.003)	0.001 (0.003)
CFO characteristics			
<i>CFO_AGE</i>	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>CFO_TENURE</i>	0.001 (0.002)	0.001 (0.002)	-0.000 (0.002)
<i>CFO_SHARE_OWN</i>	-0.442 (0.605)	-0.504 (0.618)	-0.596 (0.610)
<i>CFO_EDU</i>	-0.006 (0.010)	-0.006 (0.010)	-0.008 (0.010)
<i>CFO_OFFICIAL</i>	0.004 (0.028)	0.005 (0.028)	0.003 (0.028)
<i>CFO_PARENT_POS</i>	0.025 (0.030)	0.026 (0.030)	0.023 (0.030)
<i>CFO_MALE</i>	-0.003 (0.014)	-0.004 (0.014)	-0.004 (0.014)
<i>CFO_COMP</i>	-0.014** (0.006)	-0.014** (0.006)	-0.016** (0.007)
Industry×year FE	Yes	Yes	Yes
Observations	13,550	13,550	13,550
R-squared	0.088	0.089	0.089

Panel C. Variable definitions

Variable	Definition
<i>WO</i>	Firm <i>i</i> 's reported long-lived asset write-off (coded as a positive number) for period <i>t</i> , divided by total assets at the end of <i>t</i> -1, multiplied by 100.
<i>ACCOUNTING</i>	A dummy variable that equals one if a CFO possesses at least one of the following professional titles: Senior Accountant title designated by the relevant government agencies, CPA, CFA, CMA, or has prior working experience in an accounting firm.
<i>HIGH_POWER</i>	A dummy variable that equals one if a CFO's <i>POWER</i> value in a firm-year is above the median of the entire TMT and zero otherwise.
<i>POWER_ONLY</i>	A dummy variable that equals one if <i>HIGH_POWER</i> is one and <i>ACCOUNTING</i> is zero.
<i>ACCOUNTING_ONLY_1</i>	A dummy variable that equals one if <i>HIGH_POWER</i> is zero and <i>ACCOUNTING</i> is one.
<i>POWER_ACCOUNTING</i>	A dummy variable that equals one if <i>HIGH_POWER</i> is one and <i>ACCOUNTING</i> is one.
<i>HIGH_COMP</i>	A dummy variable that equals one if a CFO's <i>COMP</i> value in a firm-year is above the median of the entire TMT and zero otherwise.
<i>COMP_ONLY</i>	A dummy variable that equals one if <i>HIGH_COMP</i> is one and <i>ACCOUNTING</i> is zero.
<i>ACCOUNTING_ONLY_2</i>	A dummy variable that equals one if <i>HIGH_COMP</i> is zero and <i>ACCOUNTING</i> is one.
<i>COMP_ACCOUNTING</i>	A dummy variable that equals one if <i>HIGH_COMP</i> is one and <i>ACCOUNTING</i> is one.
<i>Economic factors</i>	
<i>DSALES</i>	The percent change in sales for firm <i>i</i> from period <i>t</i> -1 to <i>t</i> .
<i>DE</i>	The change in firm <i>i</i> 's pre-write-off earnings from period <i>t</i> -1 to <i>t</i> , divided by total assets at the end of <i>t</i> -1.
<i>DOCF</i>	Firm <i>i</i> 's change in operating cash flows from period <i>t</i> -1 to <i>t</i> divided by total assets at the end of <i>t</i> -1.
<i>Reporting incentives</i>	
<i>DMGT</i>	An indicator variable that equals one if firm <i>i</i> 's Chairman of the Board or CEO changes in period <i>t</i> , and zero otherwise.
<i>BATH</i>	The proxy for "big bath" reporting, equal to the change in firm <i>i</i> 's pre-write-off earnings from period <i>t</i> -1 to <i>t</i> , divided by total assets at the end of <i>t</i> -1, when below the median of nonzero negative values of this variable, and zero otherwise.
<i>SMOOTH</i>	The proxy for "earnings smoothing" reporting, equal to the change in firm <i>i</i> 's pre-write-off earnings from period <i>t</i> -1 to <i>t</i> , divided by total assets at the end of <i>t</i> -1, when above the median of nonzero positive values of this variable, and zero otherwise.
<i>DEBT</i>	An indicator variable that equals one if firm <i>i</i> 's debt in period <i>t</i> is private, and zero otherwise.
<i>ST</i>	An indicator variable (of Special Treatment status) that equals one if firm <i>i</i> 's net income is below zero in periods <i>t</i> -1 and <i>t</i> -2.
<i>BIGAC</i>	An indicator variable that equals one if firm <i>i</i> is audited by an international Big 4 or Chinese domestic Big 10 audit firm in period <i>t</i> , and zero otherwise.
<i>BOARD_IND</i>	The ratio of the number of independent directors to board size.

<i>CEO_CHAIR</i>	A dummy variable that equals one if the CEO is also the Chairman of the Board.
<i>Board Chairman characteristics</i>	
<i>CHAIR_AGE</i>	The age of the Chairman.
<i>CHAIR_TENURE</i>	The number of years as Chairman in the current position.
<i>CHAIR_SHARE_OWN</i>	The stock ownership of the Chairman and her related parties acting in concert.
<i>CHAIR_EDU</i>	<i>CHAIR_EDU</i> is one if the Chairman's educational level is technical secondary level or below, two if the educational level is junior college level, three if the educational level is a bachelor degree, four if the educational level is a master degree, and five if the educational level is a doctor degree.
<i>CHAIR_OFFICIAL</i>	A dummy variable that equals one if the Chairman of the Board is a current or former government official at the county or higher level, or a representative of the People's Congress or the Chinese People's Political Consultative Conference (CPPCC) at the county or higher level.
<i>CHAIR_PARENT_POS</i>	<i>CHAIR_PARENT_POS</i> is three if the Board Chairman holds the position of both the Chairman of the Board and the CEO at the parent company, two if the Board Chairman holds the position of either the Chairman of the Board or the CEO but not both at the parent company, one if the Board Chairman holds any managerial position lower than the Board Chairman and the CEO at the parent company, and zero if the Board Chairman holds no managerial position at the parent company.
<i>CHAIR_MALE</i>	A dummy variable that equals one if the Chairman is male.
<i>CHAIR_ACCOUNTING</i>	A dummy variable that equals one if the Chairman possesses at least one of the following professional titles: Senior Accountant title designated by the relevant government agencies, CPA, CFA, CMA, or has prior working experience in an accounting firm, and zero otherwise.
<i>CHAIR_COMP</i>	The natural logarithm of the Chairman's total compensation.
<i>CEO characteristics</i>	
<i>CEO_AGE</i>	The age of the CEO.
<i>CEO_TENURE</i>	The number of years as CEO in the current position.
<i>CEO_SHARE_OWN</i>	The stock ownership of the CEO and her related parties acting in concert.
<i>CEO_EDU</i>	<i>CEO_EDU</i> is one if the CEO's educational level is technical secondary level or below, two if the educational level is junior college level, three if the educational level is a bachelor degree, four if the educational level is a master degree, and five if the educational level is a doctor degree.
<i>CEO_OFFICIAL</i>	A dummy variable that equals one if the CEO is a current or former government official at the county or higher level, or a representative of the People's Congress or the Chinese People's Political Consultative Conference (CPPCC) at the county or higher level.
<i>CEO_PARENT_POS</i>	<i>CEO_PARENT_POS</i> is three if the CEO holds the position of both the Chairman of the Board and the CEO at the parent company, two if the CEO holds the position of either the Chairman of the Board or the CEO but not both at the parent company, one if the CEO holds any managerial position lower than the Board Chairman and the CEO at

	the parent company, and zero if the CEO holds no managerial position at the parent company.
<i>CEO_MALE</i>	A dummy variable that equals one if the CEO is male.
<i>CEO_ACCOUNTING</i>	A dummy variable that equals one if the CEO possesses at least one of the following professional titles: Senior Accountant title designated by the relevant government agencies, CPA, CFA, CMA, or has prior working experience in an accounting firm, and zero otherwise.
<i>CEO_COMP</i>	The natural logarithm of the CEO's total compensation.
<i>CFO characteristics</i>	
<i>CFO_AGE</i>	The age of the CFO.
<i>CFO_TENURE</i>	The number of years as CFO in the current position.
<i>CFO_SHARE_OWN</i>	The stock ownership of the CFO and her related parties acting in concert.
<i>CFO_EDU</i>	<i>CFO_EDU</i> is one if the CFO's educational level is technical secondary level or below, two if the educational level is junior college level, three if the educational level is a bachelor degree, four if the educational level is a master degree, and five if the educational level is a doctor degree.
<i>CFO_OFFICIAL</i>	A dummy variable that equals one if the CFO is a current or former government official at the county or higher level, or a representative of the People's Congress or the Chinese People's Political Consultative Conference (CPPCC) at the county or higher level.
<i>CFO_PARENT_POS</i>	<i>CFO_PARENT_POS</i> is three if the CFO holds the position of both the Chairman of the Board and the CEO at the parent company, two if the CFO holds the position of either the Chairman of the Board or the CEO but not both at the parent company, one if the CFO holds any managerial position lower than the Board Chairman and the CEO at the parent company, and zero if the CFO holds no managerial position at the parent company.
<i>CFO_MALE</i>	A dummy variable that equals one if the CFO is male.
<i>CFO_COMP</i>	The natural logarithm of the CFO's total compensation.

Notes: Panel A shows the descriptive statistics for the regression variables. Panel B shows the regression results of the *WO* model. All variables are measured contemporaneously following Riedl (2004), and defined in Panel C. All continuous variables are winsorized at the top and bottom one percent. All regressions include industry×year fixed effects. Heteroskedasticity-consistent standard errors clustered at the firm level are shown in parentheses below the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

References

Riedl, E. J. 2004. An examination of long-lived asset impairments. *The Accounting Review* 79 (3), 823–852.