Board hierarchy, independent directors, and firm value: Evidence from China

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Abstract

While US companies mainly list their board of directors alphabetically, this is not the case for Chinese companies, most of which list their independent directors last. We interpret the listing order of Chinese directors as board hierarchy, reflecting power allocation within the board. Based on extant evidence that independent directors contribute to firm value and that empowered individuals have more influence in group decision making, we expect independent-director rankings to be positively associated with firm value and find evidence consistent with this prediction. In our supplementary analyses we explore the mechanisms through which empowered independent directors enhance firm value. We find that independent directors who are ranked higher are more likely to vote against the management, especially on financial reporting issues. Further, higher independent-director rankings are associated with less earnings management. Our study suggests that empowering independent directors increases firm value.

Keywords: corporate governance, independent directors, hierarchy, China.

JEL Classification: G11, G14, G24

1. Introduction

Capital market regulators typically require corporate boards to have a minimum percentage of independent directors, assuming that the input and presence of independent directors increase the monitoring role of the board.[1] Most prior research finds that independent directors improve board effectiveness, firm performance, and firm value. There is limited research, however, on the conditions under which independent directors can contribute more to firm value. Using unique Chinese data, we shed light on this aspect by examining the association of board hierarchy of independent directors with firm value.

Sociological theories indicate that in *any* group decision making the development of hierarchy is inevitable (Magee and Galinsky 2008; Blader and Chen 2012). A hierarchy is an explicit or implicit rank order of individuals within a group based on power, status, or both.[2] We do not distinguish power from status in this study and for expositional purposes assume that hierarchy reflects power. People higher in a hierarchy are more likely to set the tone for discussion and more freely express their opinions, whereas those lower in the hierarchy tend to conform even when their own contrary inclinations are right (Gould 2002; Jetten, Hornsey, and Adarves-Yorno 2006). As a result, people higher in the hierarchy have stronger influence over decision making than those lower in the hierarchy. The association of board hierarchy of independent directors with firm value would reflect how power allocation within a board affects the contribution of its independent directors.

[1] On November 4, 2003, the SEC approved proposals of the NYSE and NASDAQ that require a majority of a firm's board members to be independent directors.

[2] Power and status are two fundamental dimensions of a social hierarchy. "Power" is an individual's control over critical resources and his capacity to exert his will and "status" is the prestige, respect, and esteem that he has in the eyes of others (Huberman, Loch, and Onculer 2004). Much empirical research uses the two constructs interchangeably (Blader and Chen 2012). Some views status as a source of power (Finkelstein 1992).

Unlike their US counterparts, who are mainly listed alphabetically, directors of a board in China are listed in the company's annual reports in a meaningful order.[3] This is unsurprising because China is a culture of high power distance, where power is explicit and people accept the fact that power in an organization is distributed unequally (Hofstede, Hofstede, and Minkov 2010). Order matters in this culture. For example, the seating order of officials in the Chinese central government is the most important hierarchy in China and any change in that order would be groundbreaking political news. According to our interviews with reputable independent directors, the published listing order is meaningful and is the same for board signatures and seating at board meetings.

We conjecture that the listing order of directors reflects board hierarchy. To verify this interpretation, we conducted two surveys. We first surveyed company executives in charge of the communication between the board and management and between the company and investors. The responses reflect what the listing order means because it is these executives who list the directors. Second, we surveyed independent directors. The responses reflect how the listing order is perceived by those directly affected by the order. The survey responses confirm our interpretation of the listing order as board hierarchy.

Our primary focus is on the association between independent-director rankings and firm value, proxied by Tobin's Q. For each publicly listed Chinese firm from 2006 to 2009, we hand collect the listing order of directors in the company's annual report and gather their personal information. We use two measures to summarize the within-board rankings of independent directors *as a whole* for a firm-year. Our first measure is the mean abnormal ranking of

[3] We randomly select 50 US firms with the fiscal year ending date of 12/31/2012 from Compustat. We observe that 44% of the boards list their chairman first and 86% of the boards list their remaining directors alphabetically (including 10 firms listing the directors first by class of service expiration and then alphabetically within each class and three firms listing first by committee and then by the chairman of the committee followed by the members alphabetically).

independent directors, that is, their rankings relative to those with *similar* characteristics at other firms in the same year.[4] Our secondary measure is an indicator of whether *all* the firm's independent directors are placed at the bottom of the list. We find a positive association between independent-director rankings and firm value. The effect is economically large: all else being equal, going against the convention of placing all independent directors last is associated with a 3.2% increase in firm value (for example, Q increases from 2 to 2.064). Our findings are robust to alternative test specifications that address endogeneity concerns. We conclude that firm value is enhanced to a larger degree when independent directors are empowered.

In supplementary analyses we explore the *mechanisms* through which independent-director empowerment increases firm value. We examine the voting records of independent directors.[5] Chinese regulators require firms to disclose the voting records of their directors for each voting event. We focus on contentious events in which board votes were not unanimous in supporting the management's proposal and find that the likelihood of an independent director voting against the management significantly increases with that director's ranking within the board. This finding is most prominent for voting on financial reporting and auditing issues, consistent with our observations that independent directors in China are institutionalized mainly for monitoring and that about half of these independent directors have an accounting background. The evidence suggests that empowerment gives independent directors more freedom and a louder voice to express different opinions, enhancing their monitoring role. Furthermore, we examine the association of independent-director rankings with a key monitoring outcome—financial reporting quality. We find that earnings management is less severe in firms with higher independent-director

[4] Our test results are even stronger when we use mean rankings than when we use mean abnormal rankings.
[5] Board-of-director research often presents the association of board characteristics with firm value as the primary analysis and supplements it with analyses of executive compensation, mergers & acquisitions, or earnings management. We conduct voting analysis because it provides a more direct link than the alternatives.

rankings. Together with the finding of the voting analysis, this evidence suggests that empowered independent directors more effectively monitor firms' financial reporting.

Our study contributes to board-of-directors research by examining board hierarchy and differs from two contemporaneous studies. Fogel, Ma, and Morck (2014) examine the value of independent directors with *social* power. Lamoreaux, Litov, and Mauler (2014) examine the phenomenon of some US firms appointing a lead independent director. While the messages are consistent—powerful independent directors add more to firm value—our study distinguishes itself from these studies by examining power allocation of independent directors *within* a board. Our findings are robust to controlling for measures of independent-director social power, suggesting that several ways exist to increase independent directors' contributions to firm value. Moreover, our voting analysis provides a more direct link between independent directors and firm value.

Theories of corporate governance are universal, but governance practices are local. The effectiveness of corporate governance may depend on how people act in the general cultural environment as well as in the specific corporate culture. Our finding of the positive association of independent-director rankings with firm value suggests that companies may adjust their corporate culture to increase board effectiveness. This finding may generalize to other cultures of high power distance (e.g., Japan), but to a lesser extent to cultures of low power distance (e.g., US).[6]

[6] To see whether the phenomenon that we observe in China is unique, we have collected information about the listing order of directors in other economies. We first selected the top 20 countries or regions by the 2015 GDP according to the World Bank. Then for each economy other than China, we selected the firm with the largest revenue according to the Fortune 500 Global list. We also collected the Power Distance Index (PDI) for each economy, where a higher index indicates that hierarchy matters more in that economy. We observe that eight of the 19 firms (42%) do not list their board of directors alphabetically and that almost all of these firms are from countries of high power distance. The correlation between the indicator for no alphabetical listing of directors and the PDI is high at 0.617.

2. Background

2.1 Related Board-of-directors Research

Independent directors are a valuable feature of corporate governance (Nguyen and Nielsen 2010; Knyazeva, Knyazeva, and Masulis 2013).[7] In theory, directors can play a monitoring role as well as an advisory role (Kim, Mauldin, and Patro 2014).[8] Based on a unique database of board meeting minutes, Schwartz-Ziv and Weisbach (2013) conclude that directors' main role is monitoring. Weisbach (1988) finds that CEOs are more likely to be removed after poor earnings or stock performance if at least 60% of the company's directors are outsiders. Brickley, Coles, and Terry (1994) report positive returns to poison pill announcements when the majority of board directors are outsiders, suggesting that investors believe that outside directors watch out for investors' interests. Byrd and Hickman (1992) observe positive announcement returns for bidding firms of tender offer bids when at least half of the directors are independent, whereas Cotter, Shivdasani, and Zenner (1997) find similar results for *target firms*. Klein (2002) finds that having outside directors as the majority curbs earnings management. Anderson, Mansi, and Reeb (2004) document that a higher percentage of independent directors is associated with lower costs of debt. We control for the percentage of independent directors and examine the association of independent-director rankings with firm value.

In addition to the contemporaneous studies of Fogel et al. (2014) and Lamoreaux et al. (2014), some research has examined certain aspects of the board not tied to independent directors. He and Huang (2011) argue that the *clarity* of board hierarchy is instrumental in boardroom

[7] Cohen, Frazzini, and Malloy (2012) question this notion. They find that managers tend to appoint optimistically biased financial analysts to the board. Even though these directors appear "independent," their monitoring is weak, as evidenced by increased earnings management and CEO compensation after their appointments.

[8] Kim et al. (2014) find that outside director tenure is positively associated with firm acquisition and investment decisions—advisory activities—and with CEO compensation—monitoring activities. However, tenure marginally weakens outside directors' monitoring of financial reporting.

interactions and infer this *clarity* at US manufacturing firms from the variation of directors' external directorships. They find that this clarity is positively associated with the subsequent year's return on assets (ROA). Larcker, So, and Wang (2013) argue that a well-connected board due to the directors' formal or professional ties improves firm performance, and they find a positive association of board connectedness with the subsequent year's change in ROA from the current year. Erkens and Bonner (2013) find that the financial experts appointed to audit committees typically have lower status than other types of directors, where they measure "status" by the number of board seats, trusteeships, social club memberships, and elite education. Badolato, Donelson, and Ege (2014) find that audit committees with higher status relative to the management are associated with lower levels of earnings management, where they measure "status" by the number of board seats and elite education. Our study differs from these studies by using a more direct measure of status and by focusing on independent directors.

2.2 Group Decision Making and Hierarchy

Hierarchies are ubiquitous in social groups and organizations. People higher in a hierarchy have more power than those lower in the hierarchy. Theory and experimental evidence in sociology and psychology indicate that people higher in a hierarchy tend to act as a communication center, initiating discussions, providing more opinions, and receiving more credit for tasks performed by the group (Bales, Strodtbeck, Mills, and Roseborough 1951; Humphrey 1985; Jetten et al. 2006). In contrast, those lower in the hierarchy receive less attention from group members, are perceived to be less competent even when they possess equal abilities, are more likely to be quiet, and are less likely to voice different opinions (Ridgeway and Johnson 1990; Gould 2002). Therefore, it is reasonable to expect that independent directors are more influential in board decision making if they are ranked higher—explicitly or implicitly.

Based on economic reasoning, Malenko (2014) models the process of board communication. Her Proposition 6 shows that board deliberations and decisions could be improved when directors are allocated unequal power. Her Proposition 7 shows that it would benefit the firm if the director with the smallest conformity bias (e.g., an independent director) is given the power because such a director least distorts his/her action, assuming that all directors have similar other qualifications. Her study implies that even from the economic point of view allocating power to independent directors increases firm value.

2.3 Board Regulation and Practices in China

In China, independent directors serve with inside directors (directors who are company employees), directors representing the controlling shareholder, and directors representing other major shareholders. Since 1997, Chinese firms have been encouraged to appoint independent directors to monitor management and look after minority shareholders' interests. In 2001, the China Securities Regulatory Commission (CSRC) established rules about independent directors: (1) independent directors and their immediate family members are not allowed to work for or own a significant number of shares in the company, (2) independent directors cannot own a significant stake in any of the controlling shareholders' other companies, (3) independent directors cannot provide consulting services to the company, and (4) at least one of the independent directors must have accounting certifications.[9] Since June 30, 2003, Chinese firms have been required to have at least one third of their directors as independent. An independent director serves a term of three years, can serve a maximum of two consecutive terms, but cannot serve as an independent director at more than five firms.

[9] Accounting certifications include CPA certificates, Associate or Full Professorships of Accounting, and Senior Accountants under the pre-CPA certification system.

These regulations appear to have improved board effectiveness in China. Research finds that the likelihood of modified audit opinions decreases for firms with a large percentage of independent directors (Firth, Fung, and Rui 2007), firm profitability increases with the number and percentage of independent directors (Jiang, Yue, and Zhao 2009; Liu, Miletkov, Wei, and Yang 2015), and CEOs with poor performance are more likely to be replaced when firms have a larger percentage of independent directors (Conyon and He 2011). Moreover, Chen (2015) suggests that the performance effect of independent directors is more pronounced in a weak property rights environment such as China. Despite such evidence of the value of independent directors, Chinese independent directors do not consider themselves empowered according to a survey by Lin, Xiao, and Tang (2008). This sentiment is consistent with our observation that about eight out of 10 companies list *all* the independent directors at the bottom of the director list.

3. Sample, Rankings, and Director Characteristics

3.1 Sample

Our sample period begins with 2006 after the 2005 split-share reform, which converted non-tradable shares into tradable shares, so that we can estimate Tobin's Q—our dependent variable—using all shares. We end the sample period in 2009 due to the costs of hand collecting the ranking and personal information about directors. Our initial sample starts with the 6,339 firm-year observations that listed their A-shares on the Shanghai or Shenzhen Stock Exchange from 2006 to 2009 and are available in the China Stock Market and Accounting Research (CSMAR) database. We exclude Shenergy Company Ltd because it stated that it listed its directors in the order of the number of Chinese character strokes of the last name. We exclude 114 (1.8%) observations of financial firms because of their unique asset structure and regulatory oversight and exclude 236 (3.7%) observations with negative book value of equity to avoid outliers. Finally, we

exclude 997 (15.7%) observations with missing data to calculate the dependent variable and control variables in our basic model. Our final sample includes 4,988 firm-year observations from 1,512 unique firms. Table 1 summarizes the sample collection process.

3.2 Director Rankings and Interpretations

We hand collect director rankings in firms' annual reports, which are typically filed three to four months after the fiscal year end of December 31. Our sample yields 47,562 firm-year-director observations. Appendix 1 provides two examples of director listings. We count the number of directors on the board and refer to it as *Board Size*. In the example of Shanghai Automotive Industry Corporation, the board has 11 directors, including four independent directors. We create *Raw Rank* in the first column and assign the first listed director the highest value, equal to the board size. *Raw Rank* declines by one after each director and is 1 for the last director on the list. Like the vast majority of our sample firms, Shanghai Automotive places *all* the independent directors at the bottom of the list. We then create the standardized rank, *Rank*, in the second column, equaling to *Raw Rank* divided by *Board Size*. After the standardization, *Rank* is between 0 and 1 with 1 assigned to the first director. The second example, Wanxiang Qianchao Ltd—a company in the same industry as the company in the first example—has nine directors, including three independent directors. In contrast to the first example, Wanxiang Qianchao's independent directors occupy the second, fourth, and fifth places.

We use three procedures to understand the meaning of the listing order of directors: (1) identifying patterns of mechanical orders, (2) interviewing reputable independent directors, and (3) surveying publicly listed firms. We randomly selected 200 sample firms listed on the Shanghai Stock Exchange and 150 sample firms listed on the Shenzhen Stock Exchange and examined the order of their director names from 2006 to 2009. We did not observe any recognizable pattern,

such as the number of Chinese character strokes of the last name, the English spelling of the last name, age, gender, or tenure.[10] We interviewed two nationally recognized academics who had each served as an independent director at several Chinese companies. Both confirmed that the order of director names was meaningful and that the listing order was the same for board signatures. The first interviewee interpreted the order as "importance" of directors and the second interviewee interpreted the order as "the degree of respect." The first interviewee pointed out that the listing order was also the seating order at board meetings. We conducted two surveys sent to company executives designated, according to Chinese law, to be in charge of the communication between the board and management and between the company and investors and to independent directors themselves. Appendix 2 provides more details of the survey analysis. Our interpretation of the listing order as board hierarchy is consistent with the majority of the survey responses.

If the listing order is not meaningful, independent-director rankings should be unassociated with firm value. To the extent that some sample firms list their directors in an order other than board hierarchy, the noise would reduce the test power in our finding a positive association between independent-director rankings and firm value.

3.3 Director Characteristics

We hand collect some director characteristics in the annual reports and create indicators of director type (*Inside* for company employees, *Controlling* for directors representing the controlling shareholder, *Major* for directors representing other major shareholders, and *Independent* for independent directors) and of whether the director has any accounting background (*Acctg*), legal background (*Legal*), and political connections (*Political*). *Acctg* is 1 if the director has working

[10] We observe that the vast majority of firms list their independent directors consecutively but not so for other types of directors.

experience or educational background in accounting or finance and 0 otherwise.[11] *Political* is 1 if the director is a current or former government official, deputy of the People's Congress, or member of the People's Political Consultative Conference. We collect or compute other director characteristics based on data in CSMAR: age (*Age*), gender (*Female*), tenure (*Tenure*), the number of directorships concurrently held by the director including the current directorship (*Seats*), and compensation (*IDpay* in tens of thousands of RMB for independent directors only).[12] Appendix 3 provides variable definitions.

Panel A of Table 2 presents summary statistics of *Rank* and director characteristics based on firm-year-director observations. On average, our sample firms have 29.7% *Inside*, 19.5% *Controlling*, 14.9% *Major*, and 35.9% *Independent* directors. The directors are, on average, 49 years old and predominantly male. On average, they have served the board for 4.1 years and have 1.2 directorships. Many directors (40.4%) have an accounting background, 5.5% have a legal background, and 10.2% have political connections.

Panel B presents Pearson correlations of director characteristics with *Rank*. We observe that *Inside*, *Controlling*, and *Major* directors are ranked high (the correlation coefficients with *Rank* are 0.38, 0.34, and 0.12, respectively) and independent directors are ranked low (the correlation coefficient is -0.74). Chairman, vice chairman, CEO, and directors with long tenure are ranked high.[13] Most of the other characteristics are negatively correlated with *Rank*, perhaps because of their correlations with the independent-director indicator.

[11] This definition is similar to that used in the US but broader than the requirements of accounting certificates by the CSRC.

[12] Other directors are often paid by the parties they represent and do not receive compensation from the given company for serving on the board.

[13] In our sample 98.6% of the firms list the chairman first and 90.3% list the vice chairman before all directors other than the chairman.

Panel C presents the correlations of director characteristics with *Rank* using *only* independent directors. *Rank* is higher for older directors and those with a longer tenure, more directorships, higher compensation, and more political connections. *Rank* is lower for female directors and those with an accounting or legal background. These correlations are statistically significant at the 5% level, suggesting that the listing order of directors is not random. None of the correlations has a magnitude of 0.2 or above, confirming that the listing order is not mechanical by director age, gender, tenure, directorships, compensation, accounting background, legal background, or political connections.

3.4 Firm-year Independent-director Ranking Variables

To mitigate the concern that high-value firms attract high-quality independent directors and place them high in board hierarchy, we use the abnormal ranking of a director relative to the ranking of directors with similar characteristics and therefore quality at other firms. In Panel D of Table 2 we regress *Rank* on director characteristics each year and report the coefficients with t-statistics in parenthesis, using inside directors as the benchmark group. Firm characteristics do not provide any explanatory power and are thus not included in the regression. Within a given type of directors, older directors and directors with longer tenure, more directorships, and political connections receive higher ranks; female directors and those with an accounting or legal background receive lower ranks.[14] We treat the regression residual as the abnormal ranking of each firm-year-director. The mean residual of the firm's independent directors, *IDRank*, is our first measure of independent-director rankings for the firm-year.

Our second measure, *Block_not_bottom*, is an indicator of whether the firm places all the independent directors at the bottom of the director list. In our sample 4,824 firm-years (96.7%)

[14] These relations hold if we examine only independent directors.

place their independent directors consecutively and 4,350 firm-years (90.2% of the consecutively listed firms) place the block of independent directors last.[15] *Block_not_bottom* is 0 for these 4,350 firm-years (87.2% of the full sample) and 1 otherwise. In the high-power-distance culture of China, placing independent directors last may suggest a lack of importance or power of independent directors. It would be expedient for managers to simply follow this common practice. Managers who go against this practice may value their independent directors more than managers who follow the practice. We expect a high correlation between *IDRank* and *Block_not_bottom* and consider *IDRank* a more refined measure because it additionally considers whether the rankings are justified given the quality of directors.

4. The Association of Independent-director Rankings with Firm Value

4.1 The basic empirical model

Following prior research, we use Tobin's Q as a proxy for firm value (Yermack 1996; Vafeas 1999; Coles, Daniel, and Naveen 2008; Gompers, Ishii, and Metrick 2010; Bebchuk, Cohen, and Wang 2013).[16] By definition, Tobin's Q is the ratio of the market value of assets in place over the replacement cost of these assets. As in Coles et al. (2008, 336), we approximate Tobin's Q by the ratio of the sum of market value of equity and book value of liabilities over the book value of total assets measured at the end of the fiscal year.

Our control variables largely follow Yermack (1996) and Vafeas (1999). We include *Board Size* because it might be negatively associated with firm value (Yermack 1996). We control for the percentage of independent directors (*ID%*) because it contributes to board effectiveness (Anderson

[15] Take an average firm of nine directors with three independent directors, for example. After the chairman occupies the top spot, if the director list is random, the probability of at least one of three independent directors appears at the bottom of the list would be 3/8, that is, 37.5%.

[16] If we replace Tobin's Q with the subsequent-year operating performance (ROA_{t+1}), our results hold for *IDRank*, but not for *Block_not_bottom*.

et al. 2004). We control for directors' equity ownership (*Board Ownership*), assuming that boards with higher ownership are more motivated to monitor managers and therefore improve firm value (Morck, Shleifer, and Vishny 1988; Vafeas 1999). We include firm size (*Firm Size*), measured as the logarithm of total assets at the beginning of the year, to mitigate the concern that variation in Q is due to its denominator. We control for state ownership by including the indicator *SOE,* which is 1 if the government is the controlling shareholder and 0 otherwise (Firth, Rui, and Wu 2011; Firth, Gong, and Shan 2013). We control for profitability (*ROA*), measured as the ratio of net income over total assets at the end of the year, because a firm's profitability affects its market value (Yermack 1996). We include the ratio of capital expenditures over sales (*CAPEX*) to control for investment opportunities, which may affect firm value. We include industry and year fixed effects because a Chinese firm's value might be greatly influenced by the valuation in its industry and time period.[17] Equation (1) is our basic model.

$$\begin{aligned} \textit{Tobin's Q} = {} & a_0 + a_1\, \textit{Ranking Variable} + a_2\, \textit{Board Size} + a_3\, \textit{ID\%} + a_4\, \textit{Board Ownership} \\ & + a_5\, \textit{Firm Size} + a_6\, \textit{SOE} + a_7\, \textit{ROA} + a_8\, \textit{CAPEX} \\ & + \textit{Industry fixed effects} + \textit{Year fixed effects} + \varepsilon \end{aligned} \quad (1)$$

Panel A of Table 3 presents summary statistics of the variables in the model. We lose 16 observations because *IDRank* is unavailable due to missing director characteristics in the estimation of Panel D of Table 2. On average, our sample firms have nine directors, with 35.9% of them being independent. *Tobin's Q* is positively skewed, *Board Ownership* is highly skewed to the right, *ROA* varies greatly across firms, and 63.3% of the firms are controlled by the government. Panel B shows Pearson correlations. The two ranking variables are highly correlated with a correlation of 0.78. Consistent with our expectations, *Tobin's Q* is positively correlated with both independent-director ranking variables. As expected, *Tobin's Q* is negatively correlated with

[17] As in Coles et al. (2008, Footnote 14), we do not model firm fixed effects because we expect most of the variation to arise in the cross section instead of the time series.

board size and state ownership and positively correlated with the percentage of independent directors, board ownership, and firm profitability. None of the correlations between the covariates is high enough for multicollinearity concerns.

Table 4 reports the estimation results of the basic model. In the left two columns we use the OLS estimation with the standard errors clustered by firm and year. In the right two columns we use the robust-regression estimation method with the standard errors robust to heteroskedasticity. The method is robust to outliers in both the dependent and independent variables and to violations of the normality assumption in the error term (Anderson 2008). The estimation iteratively reweights observations until the estimated coefficients converge. If outliers and normality violations are not problems, the method achieves 95% of the efficiency of OLS. We present both sets of results, but focus on the robust-regression estimation results.

In Column 3 the coefficient on *IDRank* is 0.218, significantly positive, indicating that higher abnormal rankings of independent directors are associated with higher firm value. In Column 4 the coefficient on *Block_not_bottom* is 0.064, significantly positive, indicating that firms that go against the convention of placing all independent directors last have significantly higher firm value than firms that follow the convention. Let's take a median firm with Q of 2. The effect is an increase of 3.2% in firm value and is economically large. The control variables are as expected except for *Board Size* and *CAPEX: Board Size* has weak or no explanatory power and *CAPEX* has a weakly negative coefficient perhaps because the numerator of *CAPEX* is part of the denominator of *Tobin's Q*. *SOE* is negatively associated with firm value, whereas *ROA* is positively associated with firm value. Overall, the results indicate that the abnormal ranking of

independent directors as a whole within the board or not listing these directors all at the bottom of the director list is positively associated with firm value.[18]

4.2 The Changes Regression

The levels design answers the question of how variation in board practices explains variation in board effectiveness (proxied by *Tobin's Q*) among a cross section of firms. Like any levels design, the estimated coefficients might pick up the effects of omitted correlated variables, such as selection issues, resulting in an endogeneity bias. The changes design could mitigate this econometric problem, but may run the risk of "throwing out the baby with the bath water" if board practice within a firm seldom changes.

For the changes design, we lose the first year of our sample period and end up with 3,237 firm-years in 2007-2009. We calculate the change variables from the previous year (t-1) to the current year (t) for all the variables in Equation (1). The mean (median) of the change in *IDRank* is -0.001 (-0.008).[19] There are 179 (5.5%) firm-years changing the value of *Block_not_bottom* from 0 to 1, 141 (4.4%) firm-years changing from 1 to 0, and 2,917 (90.1%) firm-years experiencing no change.

Table 5 reports the robust-regression estimation results in Columns 1 and 2. In Column 1 $\triangle$*IDRank* has a positive coefficient of 0.667 with a t-statistic of 2.83. In Column 2 the coefficient on $\triangle$*Block_not_bottom* is 0.085 with a t-statistic of 1.70, weakly positive. The economic effect is large, though: when a firm moves away from ranking *all* the independent directors at the bottom, its *Tobin's Q* increases by 0.085, equivalent to a 4.3% increase for a median firm with Q of 2.

[18] When we estimate Equation (1) using only the 633 firm-years that have the value of 1 for *Block_not_bottom,* the coefficient on *IDRank* is 0.309 with a t statistic of 1.73, still weakly significantly positive.

[19] Given the term limit, independent-director turnover is common and performance is unlikely to be the reason for most turnover. On average, 17.1% of the board and 19.6% of the independent directors at a firm are new each year.

These results confirm the message from our basic model: firm value is enhanced by the empowerment of independent directors.

A change in independent-director rankings might occur with other corporate events, such as a shakeup in the management, board leadership, or board composition. These corporate events are expected to affect firm value. We create three indicator variables: $\triangle CEO$ is 1 for firm-years with CEO changes in year t and 0 otherwise; $\triangle Chairman$ is 1 for firm-years with chairman changes in year t and 0 otherwise; and $\triangle Director50\%$ is 1 for firm-years with at least 50% of the directors new in year t and 0 otherwise. The mean values of the three indicators are 0.192, 0.140, and 0.099, respectively. The last two columns of Table 5 report that CEO changes are associated with lower firm value but chairman changes are associated with higher firm value. More important, the positive association between changes in independent-director rankings and changes in firm value remains to hold.

4.3 Controlling for Director Fixed Effects

Some directors hold multiple seats and may have different rankings in different firms. This feature allows us to add director fixed effects to mitigate the concern that our documented association in Table 4 is driven by the quality of individual directors. In Table 6 we estimate an extension of Equation (1) using firm-year-director observations with director, firm, industry, and year fixed effects. We add seven director variables, *Age*, *Tenure*, *Seats*, *IDpay*, *Acctg*, *Legal*, and *Political,* to capture differences in director quality and characteristics. The explanatory variable is the rank of individual directors, *Rank*, and it has a significantly positive coefficient of 0.266 with a t-statistic of 2.45. Thus, we continue to find that independent-director rankings are significantly positively associated with firm value.

4.4 Instrumental Variable Regressions

We use the instrumental variable estimation approach to further alleviate the endogeneity concern. We select the average ranking of independent directors serving companies headquartered in the province in which the firm is headquartered as the instrumental variable. Gao, Ng, and Wang (2011) and Parsons, Sulaeman, and Titman (2014) find that firms in the same province exhibit similar corporate practices. This finding suggests that a firm's rankings of its independent directors may be correlated with other local firms' rankings of their independent directors. Other firms' director rankings should not affect the sample firm's market value, though. Thus, other local firms' independent-director rankings can serve as the instrumental variable.

Table 7 presents the estimation results. In the first stage, we estimate an OLS model for *IDRank* and a probit model for *Block_not_bottom*. Our instrumental variable, *Average Provincial IDRank,* is significantly positively associated with these two independent-director ranking variables. The Sargan test indicates that our instrumental variable is uncorrelated with *Tobin's Q*—the dependent variable in the second stage, suggesting that our instrumental variable is valid. In the second stage, we estimate an OLS model using the fitted values of *IDRank* calculated from Column 1; see Column 3. In the second stage, we alternatively add the Inverse Mills Ratio (*IMR*) calculated from Column 2 to the regression with *Block_not_bottom* as the explanatory variable; see column 4. We continue to find a positive association between independent-director rankings and firm value.

4.5 The Expanded Model

We expand the basic model by adding the aggregate independent-director characteristic variables in case these characteristics affect firm value. We aggregate a characteristic variable at the firm-year level by taking the mean value of all the firm's independent directors in that year.

The resulting variables are *AvgAge, Female%, AveTenure, AvgSeats, Acctg%, Legal%,* and *Political%*. For *IDPay*, we adjust for the living standard of independent directors in their domiciles by dividing the average *IDPay* of all the firm's independent directors by the average *IDPay* of all independent directors of publicly listed companies headquartered in the same province. We add summary statistics of these variables to Panel A of Table 3. On average, independent directors are 52 years old with the 1st and 3rd quartiles being 47 and 56. The percentage of female directors is low at 12.5%. A typical independent director has served on the board for 3.4 years, holds one to two directorships, and is paid about RMB 45,000 per year (about $7,500) for the directorship according to untabulated *IDPay*. Ono average, half of a firm's independent directors have an accounting background, 13.0% have a legal background, and 12.8% have political connections.

Table 8 shows similar test results for *IDRank* and *Block_not_bottom* in the expanded model as in the basic model. The only director characteristic with a significant coefficient is *AvgIDpay*. Its significantly positive coefficient indicates that higher pay to independent directors is associated with higher firm value, incremental to the effects of independent-directors' rankings and the percentage of directors who are independent. The effect of *AvgIDpay* is economically large: doubling independent directors' pay relative to those in the same province, *Tobin's Q* would increase by 3.65% for a median firm with Q of 2. Taken together, these results imply that independent directors contribute to board effectiveness when they are given more power, more compensation, or both.[20]

[20] Following Gompers et al. (2010), we use the industry-adjusted Tobin's Q as the dependent variable. *Industry-adjusted Q* is the natural logarithm of the ratio of a firm's *Tobin's Q* over the median value of Tobin's Q in the firm's industry-year. We replace *Tobin's Q* in Equation (1) with *Industry-adjusted Q*, estimate the model *without* the fixed industry effects, and find similar results as for the basic model.

4.6 Controlling for Social Power and Board Status Clarity

We follow Fogel et al. (2014) and calculate the social power of a firm's independent directors as a whole. *ID Social Power* is 1 if more than 50% of the firm's independent directors are powerful and 0 otherwise. A director is considered powerful if at least three out of four of his/her centrality measures (degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality) are in the top quintile of the respective sample distribution of all directors.[21] We also follow He and Huang (2011) and calculate a measure of director status clarity. He and Huang argue that if directors have larger variation in their social status, an implicit hierarchy within the board is more easily established, facilitating the functioning of the board. *Status Clarity* is the Gini coefficient that uses a director's number of external directorships as a proxy for his/her social status.

We add the distributions of *ID Social Power* and *Status Clarity* to Panel A of Table 3. In untabulated correlations tests we observe that *ID Social Power* is uncorrelated with *IDRank* and *Block_not_bottom*; *Status Clarity* is positively correlated with our ranking variables but the magnitudes are small (0.05 and 0.03, respectively); and *ID Social Power* and *Status Clarity* have a large positive correlation of 0.21. In the first two columns of Table 9 we estimate the basic model using these two variables, one at a time, to replace our independent-director ranking variables. We find positive associations of *ID Social Power* and *Status Clarity* with firm value, consistent with Fogel et al. (2014) and He and Huang (2011). After controlling for *ID Social Power* and *Status Clarity* in Columns 3 and 4, *IDRank* (*Block_not_bottom*) is still positively (weakly positively) associated with firm value. These results suggest that independent-directors' rankings within the board, their social power, and director status clarity reflect distinct aspects of board governance.

[21] We thank the authors of Chen, Wang, and Lin (2014) for providing us with the director centrality measures.

5. Supplementary Analyses

In this section we explore the mechanisms through which empowered independent directors add more to firm value. First, we examine whether independent directors are more likely to vote against the management when their rankings within the board are higher. Second, we examine whether empowered independent directors curb earnings management.

5.1 Voting Analysis

Since 2004, Chinese firms have been required to disclose the votes of their board of directors after each board meeting on the websites of Chinese stock exchanges and in the four newspapers designated by regulators for disseminating stock-market information. We hand collect voting information and focus on contentious voting events for which the board votes are not unanimous in supporting management's proposal.[22] This restriction leads to 11,904 director votes for 1,550 voting events of our sample firms. After excluding 3,557 votes for missing director characteristic variables and 5,522 votes by directors who are not independent directors, we have 2,825 observations of independent director votes for 894 voting events from 288 sample fiscal-years as our test sample.

Panel A of Table 10 presents the distribution of votes on contentious items of nine types of issues. Directors may express their dissent in five ways: (1) oppose, (2) abstain, (3) not vote and express reservations, (4) not vote due to insufficient information, and (5) vote "yes" but express concerns. On average, 9.1% of independent directors dissent from management. Financial reporting (including auditing), personnel changes, and investing issues are the three most voted types of issues, with the percentage of dissent votes being 7.2%, 9.9%, and 10.5%, respectively.

[22] Warther (1998) points out that one should expect unanimous votes most of the time because boards are not structured to be the proper forum for regular dissent. Similar to our design, Jiang, Wan, and Zhao (2015) examine only contentious votes.

In Panel B we estimate the likelihood of dissent in a logit model and control for observable director characteristics. The first column shows the estimation results using the full test sample. *Rank* is significantly associated with the likelihood of dissent.[23] This result indicates that independent directors are more likely to express different opinions from management when they are ranked higher within the board, consistent with the sociological theory of group hierarchy.

In the remaining columns we estimate the logit model using the subsamples of the three most voted issue types to gauge whether the effect of independent-director empowerment is uniform across issue types. The full-sample result holds for financial reporting votes, but does not hold for personnel changes and investing decisions.[24] About half of independent directors in China are accountants or accounting/finance academics. Directors with such a background have expertise in monitoring financial reporting and perhaps less expertise in personnel and investing decisions.

5.2 Earnings Management Analysis

Following Chen, Chen, Lobo, and Wang (2011), we estimate discretionary accruals to detect earnings management at Chinese firms. We infer earnings management from signed discretionary accruals because we are interested in the board's monitoring of earnings overstatements, which is far more common than earnings understatements (Dechow, Ge, and Schrand, 2010). We use the procedures of Kothari, Leone, and Wasley (2005). First, we estimate Equation (2) for each industry in each year, requiring a minimum of 10 firm observations.

$$Accruals = \beta_0 + \beta_1 \, 1/Assets + \beta_2 \, \Delta Sales + \beta_3 \, PPE + \varepsilon \qquad (2)$$

[23] Here we use *Rank* instead of an independent director's abnormal ranking because the voting analysis does not face the issue of selection between firm value and director quality as in Equation (1). Unnecessary data transformations would introduce measurement errors.

[24] In untabulated tests we find a significantly positive association between *Rank* and *Dissent* for compensation and financing issues, but not so for the remaining types.

where *Accruals* is total accruals (defined as net income minus cash flows from operations) for year t, scaled by total assets at the beginning of year t (*Assets*); Δ*Sales* is the change in sales from year t-1 to year t, scaled by *Assets*; and *PPE* is the property, plant and equipment at the end of year t, scaled by *Assets*. Discretionary accrual (*DA*) is calculated in Equation (3) using the estimated coefficients (b_0, b_1, b_2, b_3) in Equation (2), where Δ*REC* is the change in accounts receivables from the beginning to the end of year t, scaled by *Assets*.

$$DA = Accruals - [b_0 + b_1\ 1/\text{Assets} + b_2\ (\Delta Sales - \Delta REC) + b_3\ PPE] \quad (3)$$

For each sample firm we select a matching firm in the same industry and year that has the closest profitability (*ROA*) in year t. We subtract the discretionary accrual of the matching firm from that of the sample firm and use the difference as our proxy for earnings management, *EM*. We estimate the association of independent-director rankings with *EM* in Equation (4):

$$\begin{aligned} EM = {} & c_0 + c_1\ Ranking\ Variable + c_2\ ID\% + c_3\ Firm\ Size + c_4\ Beta + c_5\ MB \\ & + c_6\ Leverage + c_7\ CF + c_8\ ROA + c_9\ SOE + c_{10}\ Big10 + Industry\ fixed\ effects \\ & + year\ fixed\ effects + \varepsilon \end{aligned} \quad (4)$$

Following Chen et al. (2011) and Ali, Chen, and Radhakrishnan (2007), we control for *ID%, Firm Size, Beta, MB, Leverage, CF, ROA,* and *State.* We also control for auditing quality, *Big10*. Here, *Beta*, *MB*, *CF,* and *Big10* are new variables. *Beta* is the coefficient on market returns estimated by regressing the firm's daily returns on the market daily returns, both measured in the previous fiscal year. *MB* is the ratio of the market value of equity over the book value of equity, measured at the end of year t. *CF* is the cash flows from operations for year t scaled by total assets at the beginning of year t. Big 4 enjoys only 6% of the Chinese market share and the government has worked to grow top domestic auditing firms and promote Big 10 auditors (including the Big 4) in China, which cover one third of the market. *Big10* is 1 if the firm is audited by a Big 10 auditor and 0 otherwise.

Table 11 presents the robust-regression estimation results. *IDRank* has a significantly negative coefficient and the coefficient on *Block_not_bottom* is weakly significantly negative. These results indicate that empowered independent directors curb earnings management. This finding corroborates the voting analysis, implying that independent directors better exercise their monitoring role when they have higher power on the board.

6. Conclusion

Our study begins with an intriguing observation that while US firms largely list their board of directors alphabetically, Chinese firms list their directors in a meaningful way. After data analysis, interviews, and questionnaire surveys to independent directors and company executives in charge of the director list, we interpret the listing order as board hierarchy. Based on prior findings that independent directors generally add to firm value and the theory and evidence from sociology that individuals higher in a hierarchy are more influential in group decision making than those lower in the hierarchy, we predict that independent-director rankings are positively associated with firm value. Our results are consistent with this prediction.

In supplementary analyses we find that independent directors who are ranked higher are more likely to dissent from management at contentious voting events. This finding is prominent for financial reporting issues, consistent with our observation that about half of independent directors in China have an accounting background. Furthermore, we find that higher independent-director rankings are associated with less earnings management. These analyses suggest that one way in which empowered independent directors add more to firm value is through their stronger monitoring of financial reporting.

Our study extends prior research by identifying a condition under which independent directors can contribute more to firm value. We expect these results to generalize to other cultures

of high power distance. We view our study as a first step in examining hierarchy within a corporate board and expect the study to stimulate future research on the functioning of corporate boards in a given cultural context.

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Appendix 1
Examples of Independent-Director Rankings of Chinese Companies

Example 1: Translated excerpt from the 2008 Annual Report of Shanghai Automotive Industry Corporation (Stock code = 600104)

Raw Rank	*Rank* (standardized)	Name (last, first)	Position	Gender	Age
11	1	Hu, Maoyuan	Chairman	Male	57
10	10/11	Chen, Hong	Vice Chairman, President	Male	47
9	9/11	Chen, Jianhua	Director	Male	55
8	8/11	Chen, Zhixin	Director, Vice President	Male	49
7	7/11	Wu, Shizhong	Director	Male	57
6	6/11	Ji, Xiaohui	Director	Male	53
5	5/11	Xie, Rong	Director	Male	56
4	4/11	Duan, Qihua	Independent director	Male	52
3	3/11	Lin, Zhongqin	Independent director	Male	51
2	2/11	You, Jianxin	Independent director	Male	47
1	1/11	Shao, Ruiqing	Independent director	Male	51

Example 2: Translated excerpt from the 2008 Annual Report of Wanxiang Qianchao Ltd (Stock code = 000559)

Raw Rank	*Rank* (standardized)	Name (last, first)	Position	Gender	Age
9	1	Lu, Guanqiu	Chairman	Male	65
8	8/9	Liu, Jipeng	Independent director	Male	53
7	7/9	Yu, Jiancai	Director	Male	44
6	6/9	Guo, Konghui	Independent director	Male	74
5	5/9	Zheng, Xiaohu	Independent director	Male	58
4	4/9	Zhou, Jianqun	Director, CEO	Male	44
3	3/9	Shen, Renquan	Director	Male	53
2	2/9	Shen, Huachuang	Director	Male	53
1	1/9	Pan, Wenbiao	Director	Male	52

Appendix 2
Survey Analysis

The questionnaire asks, "In which order are your company's board directors listed in your annual reports?" The choices provided are (A) by power or status, (B) by the selection date to the board, (C) by the character stroke or English spelling of the last name, (D) in no particular order, and (E) other ("If so, please specify"). To avoid cognitive biases, we created four versions of the questionnaire with the choice sequence alternated and we randomly selected a version for each delivery. The questionnaire stated that the responses would be kept confidential.

The first survey was sent to all the 2,470 companies with their A-shares listed on the Shanghai or Shenzhen Stock Exchange as of December 31, 2012. We emailed the questionnaire to the company executives who make the director list. The responses would reveal what the listing order means. Our emails failed to reach the executives at 343 companies. After three email attempts to each recipient, we received 110 valid responses at a response rate of 5.2% =110/(2470-343) and observed no statistical differences in firm and independent-director characteristics between responding firms and non-responding firms (we compared the variables listed in Table 3, Panel A, untabulated).[25] Among the responses, 66 (60%) chose A, 6 chose B, 30 chose D, and 8 chose E.[26] The E responses specified that the company listed the chairman first, followed by directors other than independent directors and then by independent directors, but did not explain why independent directors were listed last. Thus, the minority responses are not all consistent with the companies' annual reports.

The second survey was targeted to the 9,216 firm-independent-directors (6,427 unique directors) of the 2,470 firms. The responses would reflect how the listing order is perceived by independent directors. We searched for the directors' email addresses on their personal websites and Baidu (the most popular search engine in China) and found addresses of 1,060 directors. We successfully delivered the questionnaires to 974 independent directors and received 197 responses from 181 of them at a response rate of 18.6%=181/974 (some directors served more than one company). Among the responses, 103 (52.3%) chose A, 30 chose B, 13 chose C, 47 chose D, and 4 chose E. We conclude that the majority of the survey responses are consistent with our interpretation of the listing order as board hierarchy.

[25] Survey response rates in accounting research are typically less than 10%. For example, the response rate in Dichev, Graham, Harvey, and Rajgopal (2013) is 5.4%.

[26] We used actual annual reports to evaluate the responses of B and D. Five out of the six firms that circled B listed their independent directors consecutively by the director appointment date, but the order of director groups was unclear. The 30 firms that circled D listed their independent directors consecutively in an unclear order.

Appendix 3
Variable Definitions

Variables defined at the firm-year-director level:	
Rank	= the place of the director's name on the firm's director list, where a higher value is assigned to an early place, divided by the number of directors on the board.
Inside	= 1 if the director is a company employee and 0 otherwise.
Controlling	= 1 if the director represents the controlling shareholder and 0 otherwise.
Major	= 1 if the director represents other major shareholders and 0 otherwise.
Independent	= 1 if the director is independent and 0 otherwise.
Chair	= 1 if the director is the chairman of the board and 0 otherwise.
Vice Chair	= 1 if the director is the vice chairman of the board and 0 otherwise.
CEO	= 1 if the director is the CEO of the company and 0 otherwise.
Age	= the director's age.
Female	= 1 the director is female and 0 otherwise.
Tenure	= the number of years that the director has been on the board.
Seats	= the director's number of board directorships, including the current one.
IDpay	= an independent director's compensation (in tens of thousands of RMB)
Acctg	= 1 if the director has an accounting background and 0 otherwise.
Law	= 1 if the director has a legal background and 0 otherwise.
Political	= 1 if the director has a political background and 0 otherwise.
Variables defined at the firm-year level:	
Tobin's Q	= the ratio of the sum of market value of equity and book value of liabilities over total assets at the end of the year.
IDRank	= the mean value of the residuals of the firm's independent directors' rankings calculated from the regression in Panel D of Table 2 for the given year. The variable represents the ranking of the firm's independent directors as a whole relative to that of other firm's independent directors with similar characteristics in the same year.
Block_not_bottom	= 0 if all the firm's independent directors are placed at the bottom rungs of the director list and 1 otherwise.
Board Size	= the number of directors on the board.
ID%	= the percentage of independent directors on the board.
Board ownership	= the percentage of shares held by the board of directors.
Firm Size	= log (total assets, in RMB), measured at the beginning of the year.
SOE	= 1 if the government is the controlling shareholder and 0 otherwise.
ROA	= the ratio of net income over total assets at the end of the year.
CAPEX	= capital expenditures for the year, scaled by sales.
AvgAge	= the average age of the firm's independent directors.
Female%	= the percentage of the firm's female independent directors.
AvgTenure	= the average *Tenure* of the firm's independent directors.
AvgSeats	= the average *Seats* of the firm's independent directors.

AvgIDpay	= the average *IDpay* of the firm's independent directors divided by the average *IDpay* of all the independent directors of listed companies headquartered in the same province in the same year.
Acctg%	= the percentage of the firm's independent directors with an accounting background.
Legal%	= the percentage of the firm's independent directors with a legal background.
Political%	= the percentage of the firm's independent directors with political connections.
ID Social Power	= 1 if more than 50% of the firm's independent directors are powerful and 0 otherwise. A director is considered powerful if at least three out of four of his centrality measures (degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality) are in the top quintile of the respective sample distribution of all directors. *Degree Centrality* is the number of direct connections that individual has with other people. *Betweenness Centrality* is a measure of the extent to which the director acts as a "bridge" in helping others to form connections. *Closeness Centrality* indicates how quickly and independently a director can relate to others. *Eigenvector Centrality* indicates the extent to which a director's network centrality is related to his neighbors'.
Status Clarity	= the Gini coefficient that uses a director's number of external directorships as a proxy for his/her social status in the calculation. The measure captures the variation in social status of directors on a board.
Marketization	The development level of product, labor, and capital markets for each province in China (Fan, Wang, and Zhu 2011).
Variables defined at the firm-year-voting item level for the voting analysis	
Dissent	= 0 if the independent director voted for the management proposal and 1 otherwise.
Variables defined at the firm-year level for the earnings management analysis	
EM	= our proxy for earnings management. We first estimate discretionary accruals as the residuals of regressing total accruals on PPE and changes in sales, adjusted for changes in accounts receivables, all scaled by the beginning of total assets and estimated separately for each industry-year. We then subtract from a sample firm's residual the residual of a control firm in the same industry-year with the closest profitability (*ROA*) and obtain EM as the difference.
Beta	= the coefficient on market returns estimated by regressing the firm's daily returns on the market daily returns, both measured in the previous fiscal year. A minimum number of 10 observations are required for this estimation.
MB	= the ratio of the market value of equity over the book value of equity at the end of the year.
Leverage	= the ratio of total liabilities over total assets at the end of the year.

CF	= the ratio of cash flows from operations over total assets at the beginning of the year.
Big10	= 1 if the firm is audited by a Big 10 auditor in China and 0 otherwise.

Table 1
Sample Selection and Composition

The table summarizes our sample selection. # means that the company stated that the director names were listed in the order of the number of Chinese character strokes in the last name.

	Observations (Firm-years)
Chinese A-share companies listed on the Shanghai or Shenzhen Exchanges during 2006-2009	6,339
Exclude Shenergy Company Ltd (stock code: 600642) #	(4)
Exclude financial-service companies	(114)
Exclude firms with negative book value of equity	(236)
Exclude firms with missing data for Tobin's Q and the control variables in the basic model	(997)
Final sample	4,988

Table 2
Understanding Director Rankings

In Panel A, standard deviations are not calculated for dummy variables. In Panels B and C, correlations statistically significant at the 5% level in a two-tailed test are in bold. Panel D presents the OLS regression of *Rank* on director characteristics separately for each sample year with t-statistics in parenthesis. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

Panel A: Characteristics of directors based on firm-year-director observations

	N	Mean	STD	Min	Q1	Median	Q3	Max
Rank	47,562	0.552	0.287	0.048	0.333	0.556	0.778	1
Inside	47,562	0.297		0	0	0	1	1
Controlling	47,562	0.195		0	0	0	0	1
Major	47,562	0.149		0	0	0	0	1
Independent	47,562	0.359		0	0	0	1	1
Chair	47,562	0.104		0	0	0	0	1
Vice Chair	47,562	0.073		0	0	0	0	1
CEO	47,562	0.092		0	0	0	0	1
Age	47,436	49.3	8.8	22	43	48	55	102
Female	47,562	0.102		0	0	0	0	1
Tenure	47,562	4.088	2.6	1	2	3	6	11
Seats	47,562	1.171	0.5	1	1	1	1	6
Acctg	47,562	0.404		0	0	0	1	1
Legal	47,562	0.055		0	0	0	0	1
Political	47,496	0.102		0	0	0	0	1

Panel B: Pearson correlations based on 47,562 firm-year-director observations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Rank														
2 Inside	**0.38**													
3 Controlling	**0.34**	**-0.32**												
4 Major	**0.12**	**-0.27**	**-0.21**											
5 Independent	**-0.74**	**-0.49**	**-0.37**	**-0.31**										
6 Chair	**0.52**	**0.14**	**0.18**	**-0.03**	**-0.26**									
7 Vice Chair	**0.30**	**0.12**	**0.06**	**0.06**	**-0.21**	**-0.10**								
8 CEO	**0.29**	**0.32**	**-0.04**	**-0.05**	**-0.24**	**0.06**	**0.16**							
9 Age	**-0.04**	**-0.14**	**-0.03**	**-0.08**	**0.22**	**0.04**	**0.02**	**-0.10**						
10 Female	**-0.09**	**-0.03**	**-0.02**	**-0.01**	**0.05**	**-0.07**	**-0.03**	**-0.06**	**-0.07**					
11 Tenure	**0.27**	**0.14**	**0.09**	**-0.01**	**-0.20**	**0.17**	**0.13**	**0.09**	**0.17**	**-0.03**				
12 Seats	**-0.18**	**-0.17**	**-0.08**	**-0.05**	**0.27**	**-0.06**	**-0.05**	**-0.09**	**0.06**	**-0.02**	**-0.03**			
13 Acctg	**-0.15**	**-0.09**	**-0.05**	**-0.03**	**0.15**	**-0.06**	**-0.05**	**-0.09**	**-0.03**	**0.09**	0.00	**0.12**		
14 Legal	**-0.21**	**-0.13**	**-0.09**	**-0.06**	**0.25**	**-0.07**	**-0.06**	**-0.07**	**-0.06**	**0.02**	**-0.07**	**0.03**	**-0.20**	
15 Political	**0.01**	**-0.06**	0.00	**-0.03**	**0.07**	**0.09**	0.00	**-0.01**	**0.19**	**-0.03**	**-0.01**	**0.02**	**0.02**	**0.02**

Panel C: Pearson correlations based on 17,080 firm-year-**independent** director observations

	1	2	3	4	5	6	7	8
1 Rank								
2 Age	**0.17**							
3 Female	**-0.07**	**-0.10**						
4 Tenure	**0.15**	**0.11**	**-0.02**					
5 Seats	**0.04**	-0.01	**-0.05**	**0.04**				
6 IDpay	**0.04**	**0.10**	**-0.04**	**0.08**	**0.04**			
7 Acctg	**-0.02**	**-0.13**	**0.09**	**0.04**	**0.13**	0.01		
8 Legal	**-0.05**	**-0.17**	0.01	**-0.02**	**-0.04**	-0.01	**-0.39**	
9 Political	**0.05**	**0.27**	**-0.04**	**-0.04**	-0.00	**0.05**	-0.01	0.01

Panel D: Multivariate analysis of the rankings of all directors by year

Dep. Var. = *Rank*	2006	2007	2008	2009
Intercept	0.480***	0.483***	0.503***	0.514***
	(48.70)	(42.44)	(50.24)	(52.33)
Controlling	0.033***	0.034***	0.024***	0.026***
	(7.35)	(6.45)	(5.21)	(5.66)
Major	-0.034***	-0.020***	-0.035***	-0.035***
	(-6.00)	(-3.13)	(-6.40)	(-6.78)
Independent	-0.353***	-0.345***	-0.345***	-0.338***
	(-58.14)	(-48.79)	(-59.02)	(-58.18)
Chair	0.353***	0.350***	0.345***	0.338***
	(117.60)	(100.32)	(107.06)	(97.70)
Vice Chair	0.215***	0.213***	0.201***	0.201***
	(55.27)	(45.55)	(40.04)	(44.99)
CEO	0.107***	0.102***	0.097***	0.096***
	(23.04)	(19.72)	(20.69)	(20.54)
Age	0.002***	0.002***	0.002***	0.002***
	(11.25)	(10.07)	(10.73)	(9.39)
Female	-0.015***	-0.007	-0.009**	-0.017***
	(-3.01)	(-1.38)	(-2.01)	(-3.93)
Tenure	0.007***	0.005***	0.004***	0.005***
	(9.23)	(7.55)	(5.98)	(8.08)
Seats	0.009***	0.010***	0.008**	0.005*
	(2.84)	(3.11)	(2.57)	(1.80)
Acctg	-0.009***	-0.011***	-0.014***	-0.018***
	(-3.08)	(-3.22)	(-4.71)	(-6.09)
Legal	-0.021***	-0.012*	-0.020***	-0.030***
	(-3.02)	(-1.66)	(-3.27)	(-4.85)
Political	0.015***	0.009*	0.007*	0.011**
	(2.96)	(1.69)	(1.65)	(2.51)
N	11,246	9,898	12,637	13,590
R^2	75.5%	72.9%	71.6%	71.5%
Model F	7261.6***	4337.1***	5453.7***	3798.0***

Table 3
Rankings of Independent Directors as a Whole

See Appendix 3 for variable definitions. Pearson correlations statistically significant at the 5% level in a two-tailed test are in bold.

Panel A: Summary statistics based on firm-year observations

	N	Mean	STD	Min	Q1	Median	Q3	Max
Ranking variables for independent directors as a whole:								
IDRank	4,972	-0.001	0.108	-0.206	-0.053	-0.033	0.004	0.632
Block_not_bottom	4,988	0.128		0	0	0	0	1
Firm value:								
Tobin's Q	4,988	2.507	1.665	0.859	1.417	2.000	3.019	13.159
Board and firm characteristics;								
Board Size	4,988	9.285	1.905	5	9	9	10	17
ID%	4,988	0.359	0.047	0.250	0.333	0.333	0.375	0.556
Board Ownership	4,988	0.024	0.092	0.000	0.000	0.000	0.000	0.771
Firm Size	4,988	21.434	1.100	18.938	20.668	21.328	22.062	25.247
SOE	4,988	0.633	0.482	0	0	1	1	1
ROA	4,988	0.030	0.064	-0.725	0.009	0.029	0.056	0.429
CAPEX	4,988	0.130	0.192	0.000	0.024	0.063	0.151	1.253
Characteristics of independent directors as a whole:								
AvgAge	4,980	51.7	6.460	34.333	47.000	51.250	55.667	74.333
Female%	4,988	0.125	0.184	0.000	0.000	0.000	0.250	1.000
AvgTenure	4,988	3.381	1.428	1.000	2.000	3.250	4.333	8.500
AvgSeats	4,988	1.351	0.412	1.000	1.000	1.250	1.600	3.667
AvgIDpay	4,942	0.981	0.536	0.000	0.651	0.887	1.237	3.739
Acctg%	4,988	0.507	0.268	0.000	0.333	0.500	0.667	1.000
Legal%	4,988	0.130	0.169	0.000	0.000	0.000	0.333	1.000
Political%	4,980	0.128	0.208	0.000	0.000	0.000	0.250	1.000
Measures used in robustness tests:								
ID Social Power	4,988	0.024		0	0	0	0	1
Status Clarity	4,988	0.184	0.119	0	0.100	0.188	0.286	0.426

Panel B: Pearson correlations of key variables

	1	2	3	4	5	6	7	8	9
1 Tobin's Q									
2 IDRank	**0.07**								
3 Block_not_bottom	**0.05**	**0.78**							
4 Board Size	**-0.10**	**-0.13**	0.02						
5 ID %	**0.05**	**0.21**	-0.02	**-0.25**					
6 Board Ownership	**0.11**	0.00	-0.00	**-0.10**	**0.05**				
7 Firm Size	**-0.33**	-0.06	**-0.03**	**0.29**	0.02	**-0.17**			
8 SOE	**-0.15**	**-0.05**	**-0.03**	**0.22**	**-0.07**	**-0.32**	**0.30**		
9 ROA	**0.28**	-0.00	-0.01	**0.04**	-0.01	**0.12**	**0.06**	**-0.05**	
10 CAPEX	-0.01	-0.03	-0.02	**0.07**	-0.02	0.01	**0.09**	**0.04**	**0.04**

Table 4
The Basic Model

The table presents OLS and robust-regression estimation results of our basic model. For the OLS estimation, standard errors are clustered by firm and year. The robust-regression estimation method (RREG in Stata) is robust to outliers and violation of normality; it iteratively reweights observations until the estimated coefficients converge. For the robust-regression estimation, standard errors are robust to heteroskedasticity and the R^2 is calculated using the program called RREGFIT downloadable on http://www.ats.ucla.edu/stat/stata/faq/rregr2.htm. The t-statistics are in parenthesis. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

$$\textit{Tobin's Q} = a_0 + a_1\,\textit{Ranking Variable} + a_2\,\textit{Board Size} + a_3\,\textit{ID\%} + a_4\,\textit{Board Ownership} + a_5\,\textit{Firm Size} + a_6\,\textit{SOE} + a_7\,\textit{ROA} + a_8\,\textit{CAPEX} + \textit{Industry fixed effects} + \textit{Year fixed effects} + \varepsilon$$

	OLS		Robust Regression	
	(1)	(2)	(3)	(4)
Intercept	13.092***	13.077***	8.601***	8.586***
	(4.64)	(4.64)	(37.94)	(37.93)
IDRank	0.544**		0.218**	
	(2.05)		(2.25)	
Block_not_bottom		0.205***		0.064**
		(3.04)		(2.10)
Board Size	0.009	0.008	0.010*	0.008
	(0.66)	(0.65)	(1.68)	(1.42)
ID%	1.079**	1.420**	0.757***	0.852***
	(2.22)	(2.51)	(3.28)	(3.77)
Board Ownership	0.127	0.118	0.403***	0.407***
	(0.47)	(0.42)	(3.36)	(3.40)
Firm Size	-0.499***	-0.505***	-0.304***	-0.304***
	(-3.56)	(-3.59)	(-29.14)	(-29.31)
SOE	-0.080	-0.085	-0.057**	-0.057**
	(-1.17)	(-1.27)	(-2.42)	(-2.43)
ROA	6.504***	6.419***	4.095***	4.099***
	(2.90)	(2.97)	(25.28)	(25.38)
CAPEX	0.085	0.088	-0.104*	-0.101*
	(0.49)	(0.52)	(-1.82)	(-1.76)
Industry fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
N	4,972	4,988	4,972	4,988
R^2	42.2%	42.1%	31.2%	31.1%
Model F statistic	100.6***	100.8***	233.0***	233.7***

Table 5
The Changes Regression

The table presents the robust-regression estimation of the changes regression of the basic model. See Appendix C for the definitions of the levels variables. The changes variables are measured from the previous year (t-1) to the current year (t). *△CEO* is 1 for firm-years with CEO change in year t and 0 otherwise. *△Chairman* is 1 for firm-years with board chairman change in year t and 0 otherwise. *△Director50%* is 1 if at least half of the directors are new in year t and 0 otherwise. The mean values of *△CEO, △Chairman,* and *△Director50%* are 0.192, 0.140, and 0.099, respectively. The estimation is robust to outliers and violations of normality; it iteratively reweights observations until the estimated coefficients converge. The t-statistics are in parenthesis, robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

	Changes Regression of the Basic Model		Additionally controlling for Large Governance Change	
Dep. Var.=*△Tobin's Q*	(1)	(2)	(3)	(4)
Intercept	1.066***	1.049***	1.062***	1.041***
	(37.50)	(40.56)	(35.77)	(38.27)
△IDRank	0.658***		0.689***	
	(2.84)		(2.95)	
△Block_not_bottom		0.083*		0.085*
		(1.67)		(1.71)
△Board Size	-0.013	-0.011	-0.010	-0.008
	(-0.77)	(-0.64)	(-0.58)	(-0.49)
△ID%	-0.098	0.145	-0.103	0.152
	(-0.22)	(0.33)	(-0.23)	(0.34)
△Board Ownership	-0.683	-0.756	-0.663	-0.726
	(-1.36)	(-1.49)	(-1.32)	(-1.43)
△Firm Size	-0.178***	-0.229***	-0.172***	-0.220***
	(-3.03)	(-3.87)	(-2.92)	(-3.72)
△SOE	-0.055	-0.102	-0.042	-0.090
	(-0.52)	(-0.96)	(-0.40)	(-0.84)
△ROA	1.139***	1.056***	1.150***	1.076***
	(4.73)	(4.35)	(4.77)	(4.44)
△CAPEX	-0.043	-0.052	-0.049	-0.060
	(-0.47)	(-0.55)	(-0.53)	(-0.64)
△CEO			-0.093**	-0.091**
			(-2.22)	(-2.14)
△Chairman			0.165***	0.167***
			(3.41)	(3.40)
△Director50%			-0.006	0.011
			(-0.10)	(0.20)
Industry fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
N	3,224	3,237	3,224	3,237
R^2	49.9%	49.7%	50.0%	49.7%
Model F statistic	323.6***	553.5***	284.4***	445.0***

Table 6
Controlling for Director Fixed Effects

This table reports the OLS regression results using firm-year-director observations with director fixed effects. See Appendix C for variable definitions. The t-statistics with standard errors clustered by firm and year are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

	OLS	
Dep. Var.=*Tobin's Q*	(1)	(2)
Rank	0.422***	0.266**
	(3.95)	(2.45)
Board Size	0.006	-0.005
	(0.45)	(-0.38)
ID%	0.263	0.248
	(0.73)	(0.69)
Board Ownership	-1.692***	-1.201***
	(-4.21)	(-2.95)
Firm Size	-0.694***	-0.690***
	(-17.82)	(-17.70)
SOE	0.051	0.103
	(0.63)	(1.27)
ROA	1.714***	2.052***
	(8.27)	(9.88)
CAPEX	-0.175**	-0.194***
	(-2.42)	(-2.70)
Age		3.875**
		(2.40)
Tenure		-0.000
		(-0.04)
Seats		0.016
		(0.72)
IDpay		-0.036
		(-1.54)
Acctg		-0.069
		(-1.53)
Legal		-0.112
		(-1.13)
Political		0.041
		(0.64)
Director fixed effects	yes	yes
Firm fixed effects	yes	yes
Industry fixed effects	yes	yes
Year fixed effects	yes	yes
N	15,467	15,186
R^2	80.3%	81.0%
Model F statistic	508.4***	389.5***

Table 7
The Instrumental Variable Approach

The instrumental variable, *Average Provincial IDRank*, in the first stage is the average rankings of independent directors in firms headquartered in the same province as the sample firm. Column (3) reports the two-stage least squares regression result. Column (4) reports the Heckman selection model results after the Inverse Mills Ratio *(IMR)* is added to the model. See Appendix C for variable definitions. The t-statistics are in parenthesis. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

	The first-stage regression		The second-stage regression	
	(1)	(2)	(3)	(4)
Dependent variables	*IDRank*	Block_not_bottom	Tobin's Q	Tobin's Q
Intercept	0.011	-0.014	13.128***	12.812***
	(0.33)	(-0.03)	(32.49)	(28.44)
Average Provincial IDRank	0.017***	0.213***		
	(8.63)	(7.12)		
IDRank			0.539***	
			(3.14)	
Block_not_bottom				0.952**
				(2.07)
Board Size	-0.004***	0.035***	0.009	0.003
	(-4.81)	(2.58)	(0.86)	(0.26)
ID%	0.431***	-0.557	1.072***	1.495***
	(13.05)	(-1.05)	(2.62)	(3.62)
Board Ownership	-0.034*	-0.423	0.152	0.186
	(-1.95)	(-1.47)	(0.71)	(0.84)
Firm Size	-0.005***	-0.048**	-0.497***	-0.495***
	(-3.50)	(-2.03)	(-26.72)	(-25.23)
SOE	-0.005	-0.107**	-0.083**	-0.070
	(-1.59)	(-2.02)	(-1.99)	(-1.60)
ROA	0.021	-0.248	6.518***	6.467***
	(0.90)	(-0.71)	(22.67)	(22.01)
CAPEX	-0.000	-0.126	0.078	0.102
	(-0.04)	(-0.94)	(0.76)	(0.97)
Marketization	-0.001	-0.006	-0.008	-0.005
	(-1.45)	(-0.53)	(-0.81)	(-0.48)
IMR				-0.405
				(-1.63)
Industry fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
.N	4,972	4,988	4,972	4,988
R^2	7.7%		42.2%	
Pseudo R^2		2.7%		
Model F statistic	17.9***		157.2***	
LR chi2		101.3***		
Wald chi2				3510.6***

Table 8
The Expanded Model

The expanded model is obtained by adding independent-director characteristics to the basic model. See Appendix 3 for variable definitions and Table 4 for other notes.

	OLS		Robust Regression	
Dep. Var.=*Tobin's Q*	(1)	(2)	(3)	(4)
Intercept	13.174***	13.146***	8.758***	8.753***
	(4.59)	(4.61)	(35.15)	(35.11)
IDRank	0.598**		0.223**	
	(2.14)		(2.26)	
Block_not_bottom		0.182***		0.053*
		(3.01)		(1.73)
Board Size	0.010	0.007	0.010	0.008
	(0.79)	(0.53)	(1.61)	(1.41)
ID%	0.996**	1.279**	0.667***	0.765***
	(2.09)	(2.48)	(2.86)	(3.34)
Board Ownership	0.179	0.174	0.390***	0.387***
	(0.68)	(0.64)	(3.21)	(3.18)
Firm Size	-0.525***	-0.525***	-0.322***	-0.322***
	(-3.57)	(-3.59)	(-29.04)	(-29.06)
SOE	-0.083	-0.080	-0.061**	-0.061**
	(-1.27)	(-1.22)	(-2.56)	(-2.54)
ROA	6.430***	6.453***	4.007***	4.012***
	(2.87)	(2.87)	(24.50)	(24.53)
CAPEX	0.075	0.081	-0.135**	-0.133**
	(0.44)	(0.47)	(-2.32)	(-2.29)
AvgAge	0.006	0.005	0.003*	0.003
	(1.53)	(1.24)	(1.76)	(1.54)
Female%	-0.112	-0.106	-0.006	-0.006
	(-1.18)	(-1.10)	(-0.11)	(-0.10)
AvgTenure	0.016	0.013	0.002	0.001
	(0.71)	(0.57)	(0.24)	(0.09)
AvgSeats	0.013	0.008	0.030	0.029
	(0.36)	(0.22)	(1.19)	(1.14)
AvgIDpay	0.107**	0.106**	0.073***	0.073***
	(2.41)	(2.41)	(3.53)	(3.54)
Acctg%	0.141	0.150	0.019	0.022
	(0.88)	(0.93)	(0.46)	(0.54)
Legal%	-0.121	-0.105	-0.070	-0.065
	(-1.16)	(-1.00)	(-1.09)	(-1.02)
Political%	-0.055	-0.059	-0.036	-0.039
	(-0.52)	(-0.55)	(-0.69)	(-0.74)
Industry fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
N	4,926	4,926	4,926	4,926
R^2	42.4%	42.4%	31.4%	31.4%
Model F statistic	73.5***	73.6***	170.7***	170.6***

Table 9
Controlling for Independent-director Social Power and Director-Status Clarity

The table presents robust-regression estimation results of our basic model, with *ID Social Power* and *Status Clarity* replacing our hierarchy measures in Columns 1 and 2 and being added to the basic model in Columns 3 and 4. The robust-regression estimation method is robust to outliers and violations of normality; it iteratively reweights observations until the estimated coefficients converge. The standard errors are robust to heteroskedasticity. The t-statistics are in parenthesis. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

Dep. Var.=*Tobin's Q*	Model 1	Model 2	Model 3	Model 4
Intercept	8.636***	8.645***	8.661***	8.656***
	(38.10)	(38.10)	(38.08)	(38.08)
IDRank			0.201**	
			(2.07)	
Block_not_bottom				0.057*
				(1.88)
ID Social Power	0.170**		0.141**	0.143**
	(2.54)		(2.07)	(2.09)
Status Clarity		0.193**	0.152*	0.152*
		(2.22)	(1.70)	(1.71)
Board Size	0.009	0.009	0.010*	0.009
	(1.54)	(1.55)	(1.74)	(1.50)
ID%	0.870***	0.816***	0.767***	0.855***
	(3.84)	(3.60)	(3.31)	(3.77)
Board Ownership	0.411***	0.395***	0.396***	0.402***
	(3.43)	(3.29)	(3.30)	(3.35)
Firm Size	-0.307***	-0.308***	-0.308***	-0.309***
	(-29.45)	(-29.40)	(-29.30)	(-29.47)
SOE	-0.060**	-0.063***	-0.061**	-0.061***
	(-2.55)	(-2.69)	(-2.58)	(-2.59)
ROA	4.081***	4.061***	4.049***	4.057***
	(25.19)	(25.02)	(24.89)	(24.99)
CAPEX	-0.097*	-0.104*	-0.101*	-0.097*
	(-1.69)	(-1.82)	(-1.75)	(-1.69)
Industry fixed effects	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes
N	4,988	4,988	4,972	4,988
R^2	31.2%	31.1%	31.2%	31.2%
Model F statistic	233.6***	233.3***	213.8***	214.5***

Table 10
Independent-Director Rankings and Voting Against the Management

Panel A summarizes the votes of independent directors of our sample firms on contentious voting items (i.e., the board is not unanimous in supporting the management' proposal). In Panel B the dependent variable, *Dissent*, is 0 if the independent director supports the proposal and 1 otherwise. The z-statistics are in parenthesis, robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test.

Panel A: Votes by independent directors

Voting Type	Support	Dissent	Total	% of "Dissent"
1. Financial reporting	465	36	501	7.2%
2. Personnel changes	400	44	444	9.9%
3. Investing	348	41	389	10.5%
4. Guarantee	202	18	220	8.2%
5. Financing	174	3	177	1.7%
6. Asset disposal	155	18	173	10.4%
7. Ownership change	112	17	129	13.2%
8. Related party transactions	70	12	82	14.6%
9. Compensation	47	15	62	24.2%
10. Other	594	54	648	8.3%
Total	2,567	258	2,825	9.1%

Panel B: Multivariate logit model voting analysis

Dep. Var.=*Dissent*	All	Financial Reporting	Personnel Changes	Investing
Intercept	-1.088	-2.933	-9.495**	5.209
	(-0.62)	(-0.72)	(-2.47)	(1.39)
Rank	1.103***	2.096**	0.290	1.470
	(2.78)	(2.50)	(0.26)	(1.57)
Age	-0.543	-0.189	1.657*	-1.978**
	(-1.39)	(-0.19)	(1.71)	(-2.06)
Tenure	0.049	-0.049	0.160**	0.025
	(1.58)	(-0.56)	(2.52)	(0.29)
Seats	0.132	0.460***	-0.212	0.074
	(1.41)	(2.66)	(-0.82)	(0.25)
Female	-0.272	-0.112	-1.022	0.496
	(-1.25)	(-0.20)	(-1.35)	(1.09)
Acctg	-0.024	-0.001	0.731*	-0.371
	(-0.14)	(-0.00)	(1.82)	(-0.88)
Legal	-0.128	0.445	1.125**	-0.419
	(-0.54)	(0.69)	(2.15)	(-0.78)
Political	-0.071	-0.119	-0.041	-0.533
	(-0.34)	(-0.19)	(-0.08)	(-0.87)
Type fixed effects	yes	no	no	no
N	2,825	501	444	389
Model Fit (χ^2)	51.53***	13.83*	11.86	14.48*
Pseudo R^2	3.2%	3.9%	4.5%	4.5%

Table 11

Independent-Director Rankings and Earnings Management

We use the robust-regression estimation method, which is robust to outliers and violation of normality; it iteratively reweights observations until the estimated coefficients converge. The t-statistics are in parenthesis, robust to heteroskedasticity. See Appendix 3 for variable definitions. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level in a two-tailed test, respectively.

Panel A: Summary statistics

	N	Mean	STD	Min	Q1	Median	Q3	Max
EM	4,967	0.001	0.122	-0.279	-0.070	0.000	0.073	0.289
Beta	4,969	1.000	0.205	0.320	0.892	1.033	1.142	1.364
MB	4,988	3.996	2.626	0.709	2.013	3.320	5.164	12.485
Leverage	4,988	0.501	0.185	0.051	0.370	0.515	0.638	0.927
CF	4,988	0.067	0.083	-0.108	0.014	0.060	0.117	0.276
Big10	4,988	0.367	0.482	0	0	0	1	1

Panel B: The robust-regression estimation of earnings management analysis

Dep. Var.= *EM*	Model 1	Model 2
Intercept	-0.010	-0.011
	(-0.30)	(-0.34)
IDRank	-0.028**	
	(-2.21)	
Block_not_bottom		-0.007*
		(-1.87)
ID%	0.009	-0.006
	(0.30)	(-0.19)
Firm Size	0.004**	0.004***
	(2.56)	(2.80)
Beta	-0.010	-0.009
	(-1.45)	(-1.35)
MB	0.001	0.001
	(1.00)	(0.88)
Leverage	-0.014	-0.014
	(-1.57)	(-1.62)
CF	-0.968***	-0.968***
	(-54.55)	(-54.59)
ROA	0.455***	0.457***
	(18.67)	(18.78)
SOE	-0.007**	-0.007**
	(-2.35)	(-2.28)
Big10	-0.000	-0.000
	(-0.16)	(-0.10)
Industry fixed effects	yes	yes
Year fixed effects	yes	yes
N	4,932	4,948
R^2	27.5%	27.4%
Model F statistic	127.8***	127.9***