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Network Centrality and Dissent Voting by Directors on Boards

Hong Zhang ⓘ, Zimin Liu ⓘ, and Weiguo Zhong ⓘ

Department of Organization and Strategy Management, Guanghua School of Management, Peking University, Beijing 100871, China
Corresponding author: Zimin Liu (ziminliu@pku.edu.cn)

Abstract

We investigate how directors' positions within board interlocking networks influence their monitoring behaviors from a social network perspective. We argue that the effectiveness of directors' monitoring of a firm's management depends on their ability to overcome the information barrier and their motivation to develop a public reputation in the directorship market. We further contend that network centrality can supplement directors' existing information set and facilitate reputation spillover, leading to an increase in the extent of their dissent on boards. We analyze the unique individual-director-level data of Chinese firms and find that directors occupying positions of greater centrality in the board interlock network are more likely to dissent. We then examine the underlying mechanisms of information and reputation through two moderators: firm transparency and media mention of a director. We also find that the effect of network centrality on dissent is weaker for independent directors. Our study advances the corporate governance literature by examining the micro-foundations of board monitoring and providing a social network perspective.

摘要

我们从社会网络的角度研究了董事在连锁董事网络中的位置如何影响他们的监督行为。我们认为，董事对公司管理的监督效果取决于他们克服信息障碍的能力以及在董事市场上建立公共声誉的动机。我们进一步指出，网络中心性可以补充董事现有的信息集，并促进声誉溢出，从而增加他们在董事会上投反对票的可能。通过分析中国上市公司董事个体层面的独特数据，我们发现：在连锁董事网络中占据更中心位置的董事更可能进行异议投票。更进一步地，我们通过公司透明度，以及媒体对董事的关注这两个调节变量来检验信息和声誉机制。此外我们还发现，网络中心性对董事异议投票的影响在独立董事身上更弱。本研究检验了董事会监督的微观基础，并提供了一种社会网络研究视角，对公司治理文献做出了贡献。

Introduction

Board monitoring is based on the underlying assumption that directors' human and social capital enables them to curb managerial self-interest and act as vigilant monitors to protect shareholders' interests (Boivie, Graffin, Oliver, & Withers, 2016; Eisenhardt, 1989; Fama & Jensen, 1983). The literature has failed to reach a conclusion on the effectiveness of board monitoring (Goranova, Priem, Ndofor, & Trahms, 2017). What constitutes effective monitoring? Hambrick, Misangyi, and Park (2015: 324) posited that 'the locus of effective monitoring is the individual director'. However, divergent findings on the effectiveness of board monitoring have indicated the importance of understanding the roles and behaviors of individual directors.

Effective monitoring is arduous and risky. The key to understanding the differences in the monitoring efforts of directors lies in their information-processing ability (Boivie, Bednar, Aguilera, &

Andrus, 2016) and career motivation (Hambrick et al., 2015; Westphal & Zajac, 2013). On the one hand, boards rely on firm information to effectively monitor managers; however, they are often at an information disadvantage as managers exploit information asymmetry to increase the monitoring costs for directors (Aboody & Lev, 2000; Adams & Ferreira, 2007; Frankel & Li, 2004). Xiao, Sun, and Weng (2021) found that managers can control information through tactics such as earnings management to reduce directors' dissent on managers' proposals in public. On the other hand, directors are motivated to maintain acquiescence in the boardroom by adhering to prevailing social norms because corporate elites can punish directors for introducing conflict (Boivie, Graffin, & Gentry, 2016; Harrison, Boivie, Sharp, & Gentry, 2018; Westphal & Khanna, 2003). Researchers have found that directors appointed by insiders (Ma & Khanna, 2016) and those appointed based on CEO–director friendship ties (Westphal, 1999) are negatively associated with board monitoring.

To effectively monitor a firm's management, directors must overcome information barriers and be motivated to acquire a favorable reputation for protecting shareholders' welfare. In this study, we argue that centrality in the interlocking network can supplement directors' existing information set and facilitate reputation spillover, leading to more effective director monitoring. In particular, according to social network theory, a social network can not only influence the flow and quality of information but also 'dominate motivation' (Granovetter, 2005: 34). Moving beyond the atomistic perspective in the literature on director monitoring, in which the individual director is viewed as an independent entity who makes decisions, we contend that the board interlock network is one of the most important social contexts in which directors are embedded (Brass, 1984; Kilduff & Brass, 2010; Tasselli, Kilduff, & Menges, 2015). A director's information-processing ability and reputation concerns are either potentiated or constrained by their position in this network (Brass, Galaskiewicz, Greve, & Tsai, 2004), leading to differences in monitoring effectiveness.

A board can be viewed as a black box (Adams, Hermalin, & Weisbach, 2010), which makes it difficult for researchers to observe the internal dynamics. To address the problem of endogeneity in board formation and to open the black box of director monitoring, we take advantage of the special regulatory environment in China since 2004 – the China Securities Regulatory Commission (CSRC) requires publicly traded companies to disclose all instances of directors' dissent during board meetings. This research setting provides us with a suitable opportunity to examine the internal process related to the behaviors of directors on a board. From this unique dataset, we find that directors who occupy positions of greater centrality in the board's interlocking network are more likely to dissent. In addition, we examine the underlying mechanisms of information and reputation through two moderators: firm transparency and media mention of director. Furthermore, we find that the effect is contingent on the type of director, which indicates that the characteristics of the nodes in the network play an important role.

This study contributes to the literature on board of directors by highlighting the roles and behaviors of socially situated and constituted directors (Westphal & Zajac, 2013). Specifically, we posit that a social network serves as an important social context that alters the information environment and reputation concerns of directors, thus influencing the effectiveness of their monitoring. We show that a social network enhances the efficiency of the directorship market (Jones, Hesterly, & Borgatti, 1997; Raub & Weesie, 1990). Furthermore, our study contributes to the literature on the micro-foundations of corporate governance by proposing hypotheses on and empirically examining the information-processing ability and motivation of directors in the context of their monitoring behaviors (Hambrick et al., 2015). Finally, this study contributes to the literature on corporate governance in emerging economies (Zhu & Yoshikawa, 2015) by showing that in a board of directors, independent directors may not actively perform monitoring functions.

Theoretical Background and Hypotheses

Dissent Voting by Directors on Boards

A board of directors influences corporate decision-making by participating in the ratification and monitoring process (Fama & Jensen, 1983). Dissent voting by a director on the board plays a vital role in this process. The expression of different opinions by directors is considered a valuable and

vital attribute of effective corporate governance (Marchetti, Siciliano, & Ventoruzzo, 2017). Recent studies have shown that dissent improves firm performance and firm value through improved corporate governance (Choi, Rabarison, & Wang, 2021; Xiao et al., 2021). Ye, Zhu, Lu, and Zhang (2011) found that most proposals that were not approved by independent directors were associated with subsequent proposal improvements. For example, the rejection of a proposal on related-party transaction was followed by reduced related-party activity in the subsequent year. Using data on Korean listed firms, Kang, Kim, and Oh (2022) treated director dissent against proposals as a proxy for cognitive diversity and found that this cognitive diversity helps enhance monitoring effectiveness and increase firm value. Specifically, they found that firms with boards that reject proposals engage in earnings management to a smaller extent, are less likely to restate their financial statements, and are more likely to replace poorly performing CEOs in the years following the proposal rejection. In general, Kang et al. (2022) showed that dissent acts as active monitoring that prevents bad behaviors (Tirole, 2001).

Although dissent-driven proposal rejections are less frequent in some countries, such as China than in other countries, such as Korea, studies have shown that dissent voting can make a difference as a type of passive monitoring that provides 'performance measurement' of the focal firm's corporate governance practices (Tirole, 2001). Jiang, Wan, and Zhao (2016) found that in their sample of Chinese firms, 92% of the proposals were eventually passed despite dissent, indicating that director dissent in China is mainly a form of passive monitoring. They also found that dissent in Chinese listed firms results in the dissemination of value-relevant information, leading to an improvement in corporate governance and market transparency through the responses of stakeholders such as shareholders, creditors, and regulators, even though voting 'no' on the board may not necessarily prevent a proposal from being passed.

Although studies have shown that dissent voting is effective in monitoring management, improving corporate governance, and increasing firm performance and value, expressing dissent is not easy for directors. Dissent voting is often perceived to be an act that is against the interests of management and controlling shareholders, and that violates the norms of reciprocity (Ma & Khanna, 2016). In 2001, CSRC made it mandatory for discussion material to be provided before meetings. Therefore, management and the CEO have the opportunity to communicate with directors and seek their support or advice before the official meeting. Dissent occurs when managers refuse to heed the advice of directors and directors decide to defend their views and officially discipline the managers. Dissenting opinions may attract the attention of regulators and investors when announced to the public. Jiang et al. (2016) showed that dissent almost always triggers investigations by the CSRC. These investigations bring firms' managerial behaviors under increased scrutiny and are likely to result in punishment.

A violation of the interests of management and controlling shareholders can result in relational penalties for the dissenting directors, such as social distancing (Shani & Westphal, 2015; Westphal & Khanna, 2003). Such penalties may be particularly severe given that the ownership is concentrated and the management and controlling shareholders sponsor most proposals (Jiang et al., 2016). Zheng, Li, Huang, and Hu (2016) found that dissenting independent directors are less likely to be re-elected for a second term. Du, Hou, Tang, and Yao (2018) reported substantial director turnover and a decrease in the number of board seats after independent directors voted 'no'.

Network Centrality and Director Dissent

According to agency theory, the effectiveness of director monitoring depends on both the effective acquisition of information and the efficient directorship market that rewards vigilant directors while punishing passive directors (Fama, 1980; Fama & Jensen, 1983). Effective acquisition of information enables directors to take part in corporate decision-making on the board, and an efficient directorship market motivates them to fulfill their fiduciary duty and act in the best interests of both the company and shareholders. We argue that network centrality, which is defined as the extent to which a director is directly or indirectly linked to others in the entire directors' network (Freeman, 1979), significantly affects the effectiveness of the information and reputation mechanisms, thus influencing the probability of dissent voting.

First, directors with higher network centrality may have greater information advantage. Boards rely on firm information to effectively monitor managers; however, they often experience information

disadvantages as managers exploit information asymmetry to increase monitoring costs for directors (Aboody & Lev, 2000; Adams & Ferreira, 2007; Frankel & Li, 2004). As a social network, a board interlock provides an alternative channel for directors, especially well-connected directors, to obtain firm-specific information in order to attenuate the information asymmetry problem. Through modeling, Fracassi (2017) found that information on corporate decision-making spills over through the interlocking director network. After interviewing the CEOs of Fortune 100 firms, Beckman and Haunschild (2002: 97) noted that 'tacit information that board members bring to the table' is important in firms' decision-making. They also stated that board interlocks, as 'inexpensive, trustworthy, credible information sources', are important sources of first-hand information for board directors (Haunschild & Beckman, 1998: 817). Social networks facilitate information transfer by improving the flow and quality of information, particularly for actors with better connections (Haythornthwaite, 1996; Jackson, Rogers, & Zenou, 2017). Therefore, information obtained from an external social network may supplement directors' existing information set and help them fulfill the monitoring role (Fama & Jensen, 1983).

Central directors in a board interlock network can access a greater amount of information in the external environment of the firm. Board connections promote information exchange (Larcker, So, & Wang, 2013), which enables directors to gain a deeper understanding of evolving market conditions, helps the prediction of growing trends (Mizruchi, 1996; Moore, 2001), and narrows the information gap between stakeholders (Schoorman, Bazerman, & Atkin, 1981). Well-positioned outside directors have access to a greater amount of information about suppliers, competitors, and customers (Coles, Daniel, & Naveen, 2012). Although some connections may not directly provide firm-specific information to a director, by obtaining a greater amount of information, directors can verify the quality of information provided to them by management. For example, directors can better assess whether a compensation proposal or a merger and acquisition (M&A) premium decision is reasonable by comparing it with practices in other firms.

When a director's centrality increases, they can obtain a greater amount of support and resources from the board's interlocking network. Thus, they will have greater influence on decision-making in the board and greater power in influencing how the CEO and other board members perceive them and interpret their actions (Sauder, Lynn, & Podolny, 2012). In exchange for these resources, management may be more willing to share a greater amount of information with central directors and pay greater attention to their opinions (Boivie, Bednar, et al., 2016).

Second, directors with higher network centrality may be more concerned about reputation. Central directors are more visible to other directors in the network. Therefore, their reputation for effective monitoring may diffuse more broadly and quickly (Brass, Butterfield, & Skaggs, 1998). The higher the centrality of a director in a network, the more often the director tends to be noticed in the network (Gould, 2002; Podolny, 1993, 2001; Rao, Monin, & Durand, 2005). This visibility also provides directors with greater credibility and a greater number of cues on the appropriateness of their behavior in the director network (Borgatti, 2005; Lin, 2001). Using game-theoretic models, Raub and Weesie (1990) concluded that efficiency is more easily attained in perfectly embedded systems than in systems of atomized interactions because individuals in a perfectly embedded system are more rational and protect their reputations. Moreover, efficiency becomes more restrictive when actors receive information after a greater time lag. When the director is in a position of greater centrality, their reputation spillover is considerably quicker (Brass et al., 1998; Yu & Lester, 2008), thus increasing the strength of the reputation mechanism and improving the efficiency of the market.

This visibility may also act as a liability for a central director. Directors who are more central in their networks are more visible and are therefore more likely to face legal or regulatory scrutiny if they do not exhibit agentic qualities (Adut, 2005; Fine, 1996). For example, Brass et al. (1998: 21) argued that 'being well known provides additional constraints from surveillance and possible loss of reputation'. Therefore, central directors must strive to portray a responsible, capable, and independent image of themselves in the directorship market in order to build an agentic reputation. Considered together, these two forces equip directors with both the capability and the motivation to perform effective monitoring via dissent (Hambrick et al., 2015).

Based on the information and reputation mechanisms discussed above, we propose the following hypothesis.

Hypothesis 1 (H1): Directors with greater centrality within the board's interlocking network are more likely to dissent.

To further examine the information and reputation mechanisms of interlocking networks, we developed the moderating effect of firm transparency and the moderating effect of media mention of director. High firm transparency was supposed to attenuate the information advantage brought by network, and intense media attention was supposed to reduce reputation concerns caused by central network position. In addition, we also explored the heterogeneous effects of network centrality on director dissent by developing the moderating effect of director type, which is an important boundary condition of our theoretical arguments.

Moderating Effect of Firm Transparency

Firm transparency is the availability and reliability of firm-specific information disclosed to stakeholders (Bushman, Piotroski, & Smith, 2004; Qian, Gao, & Tsang, 2015). In firms with less transparency, insiders such as managers find it easier to abuse their information advantage in order to increase the directors' costs of obtaining corporate information (Adams & Ferreira, 2007; Coles, Daniel, & Naveen, 2008; Duchin, Matsusaka, & Ozbas, 2010; Linck, Netter, & Yang, 2008). Duchin et al. (2010) reported that the accessibility of required information can influence the monitoring effectiveness of outside directors. A restrictive information environment in firms with less transparency increases information-processing demands on boards, and some information-processing challenges may inhibit directors' monitoring and reduce board effectiveness (Boivie, Bednar, et al., 2016). The cognitive burden caused by difficulties in information processing may prevent directors from fully using their human capital (Khanna, Jones, & Boivie, 2014). In a recent study, Xiao et al. (2021) found that the level of earnings management – an indicator of financial transparency – was negatively associated with the likelihood of board dissent.

Although emerging markets lack transparency and have an opaque information environment (Liao, Ma, & Yu, 2022), the transparency of firms in China can differ due to several factors. Studies have shown that auditor quality (Fan & Wong, 2005) and external information gathering by intermediaries such as analysts (Lang, Lins, & Maffett, 2012) can influence firm transparency. In particular, when a firm is audited by a large audit firm rather than a small one and covered by a greater number of analysts, it is more likely to disclose a greater amount of reliable information and attenuate information asymmetry between managers and the board. When firm transparency is greater, the cost of obtaining information and the demand for information processing for directors is lower, and directors rely on the board network to a smaller extent to access firm-specific information and verify information provided by the management. Therefore, the information mechanism underlying the influence of a director's centrality on dissent is weakened when firm transparency is greater. Based on this discussion, we propose the following hypothesis:

Hypothesis 2 (H2): Firm transparency moderates the positive relationship between network centrality and director dissent in such a way that the relationship is weaker for firms with greater transparency.

Moderating Effect of Media Mention of Director

Media can play an active role in disciplining deviant behaviors in corporate governance in both developed and developing countries (Dyck, Volchkova, & Zingales, 2008). Dyck, Morse, and Zingales (2010) showed that negative media coverage, such as misreporting, may damage the reputation of managers and incur litigation risks. To protect personal reputations, managers are sensitive to how media comment on their decisions (Dyck & Zingales, 2002). Furthermore, Liu and McConnell (2013) found that media coverage affects managers' decisions to abandon value-reducing acquisition

attempts by influencing managers' reputations and future employment opportunities in the managerial labor market. In the context of China, Ji, Quan, Yin, and Yuan (2021) found that media coverage can mitigate the effect of local gambling attitudes of Chinese listed firms on the stock price crash risk.

Given the role of media in gathering and disseminating information, directors' behaviors in corporate governance are amplified through media coverage. Fos, Li, and Tsoutsoura (2018) found that directors seem to receive a greater amount of media attention when their firm has experienced poor performance and when director elections are approaching. Jiang et al. (2016) showed that media coverage has a considerable influence on directors' reputations. On the one hand, professional reputation is important for directors because it is one of the major considerations of the board chair when appointing new directors (Kaplan & Reishus, 1990). Research has shown that directors with a reputation for 'tough' monitoring get a greater number of opportunities for the future in the directorship market, especially from firms that want to demonstrate their commitment to good corporate governance. Although relationships and loyalty are important factors in directors' retention, reputation continues to be a major concern for boards when appointing new directors (Kaplan & Reishus, 1990). Thus, directors are motivated to be diligent monitors because a good reputation is rewarding. On the other hand, directors whose dereliction of duty is disclosed by the media face higher risks of penalties, litigation, and reputation damage (Brochet & Srinivasan, 2014; Jiang et al., 2016). Thus, intense media exposure of directors increases their concerns about reputation and prompts them to exercise due diligence.

Under intense media attention, the difference in the reputation concerns of central directors and peripheral directors in the board network is attenuated. Directors who are at peripheral locations in the board interlock network and have a large amount of media coverage can be as visible as directors with greater centrality. Directors' reputations for effective or ineffective monitoring can be quickly amplified through media coverage, and directors' wrongdoings can be detected more easily by regulators. Therefore, the reputation mechanism underlying the influence of a director's centrality on dissent is weakened when the director has a greater number of media mentions. Based on this discussion, we propose the following hypothesis:

Hypothesis 3 (H3): Media mention moderates the positive relationship between network centrality and director dissent in such a way that the relationship is weaker for directors with a greater amount of media attention.

Moderating Effect of Director Type

The effects of network centrality on director dissent may be contingent on director type. The board often consists of inside directors and outside directors. Inside director positions are held by key executives in management, such as the CEO and the Chief Financial Officer (CFO), whereas outside director positions are usually held by independent directors. In China, independent directors are mostly former officials or academics (Huang, Lee, Lyu, & Zhu, 2016). They are usually hired by the board to comply with regulations or provide resources to the firm (Cowen & Marcel, 2011; Lester, Hillman, Zardkoohi, & Cannella, 2008), and the labor market for directors has specific function expectations for them. In the context of monitoring functions, independent directors are expected to 'not make trouble for CEOs' (Hermalin & Weisbach, 2003: 4). Owing to these expectations, the effects of network centrality on director dissent may vary for independent directors.

First, the information mechanism associated with network centrality is weaker for independent directors. Although independent directors can obtain additional information from the external social network, their abilities to process the information may be limited. According to the information-processing perspective, board monitoring is 'most effective when available information-processing capacity equals or exceeds information processing demands' (Khanna et al., 2014: 563). Boivie, Bednar, et al. (2016) argued that the degree to which a director's outside job demands are similar or dissimilar to those of the focal firm influences their information-processing capabilities. Carpenter and Westphal (2001) also reported that similarities between the demands of an outside

job and those of the focal firm affect directors' perceptions of the extent to which they can contribute during board meetings. As most independent directors are former officials or academics, the demands of their outside job and those of the director's role are dissimilar; owing to this dissimilarity, they are less likely to have a fair understanding of the firm's business and operation. Therefore, the information advantage that they gain due to a central network position decreases when they monitor the management.

Second, the reputation mechanism associated with network centrality is weaker for independent directors. Li et al. (2018) argued that independent directors have two concerns when they perform monitoring: reputation concerns as a dutiful fiduciary of shareholders' interests (Fama & Jensen, 1983; Gilson, 1990) and labor market concerns about future board positions that rely heavily on powerful insiders. For example, Ma and Khanna (2016) found that a large proportion of independent directors are appointed by board chairs. In a set of 14,148 firm-year observations, they found that in 55.5% of firms, all independent directors on the board had been appointed by the board chair at that time. Although investors may add value to effective board monitoring through means such as dissent, studies have shown that the labor market does not reward vigilant independent directors with future board positions (Du et al., 2018; Zheng et al., 2016). Labor market concerns can suppress independent directors' concerns about the spillover of their reputation for being vigilant through the board network; consequently, independent directors may adopt a more passive approach to monitoring and may become more insider-oriented.

Considered together, limited information-processing capability and labor market concerns may attenuate the effect of network centrality on dissent by independent directors. Based on this discussion, we propose the following hypothesis:

Hypothesis 4 (H4): Director type moderates the positive relationship between network centrality and director dissent in such a way that the relationship is weaker for independent directors.

Methods

Research Context

Since 2004, the CSRC has mandated the disclosure of directors' voting records by Chinese listed A-share companies. According to revised clauses, directors' voting records should include their affirmation, dissent, abstentions, and other opinions on every board proposal (Tang, Du, & Hou, 2013), such as mergers and acquisitions (M&A), compensation of the top management team (TMT), and related transactions. This new policy, aimed at protecting investors' interests by improving the board's decision quality, also provides a suitable opportunity for examining the internal process associated with directors' behavior in the boardroom. Previous studies are mostly based on the Western corporate governance context, in which the board's decision-making process does not have to be revealed. Consequently, a Chinese context, and especially the unique director voting data that is available, offers us a valuable opportunity to advance our knowledge of corporate governance.

The existence of interlocking directorates among listed companies is a ubiquitous phenomenon in both Western countries such as the United States (Mintz & Schwartz, 1981; Useem, 1984) and Asian countries such as China (Markóczy, Li Sun, Peng, & Ren, 2013). The interlocking directors' network is a typical two-mode affiliation network (Wasserman, Faust, & Iacobucci, 1994) in which directors are actors, and a board as an event or affiliation, is associated with each actor. Meanwhile, boards are related to each other through directors. Like many previous studies on director network (El-Khatib, Fogel, & Jandik, 2015; Tao, Li, Wu, Zhang, & Zhu, 2019), we focus on one of the modes – the actors (directors), not the event (board). In the analysis, 'the occasions on which people interact (the events) are only important in that they link people' (Wasserman et al., 1994: 307). We identify the links between two directors when they serve on at least one common board. Due to the existence of interlocking directorates, directors on different boards can be connected through a large network. This network of board directors is an important nexus for the social relationships in which the directors are embedded (Fracassi & Tate, 2012).

Sample and Data

The firms in our sample were publicly listed on the Shanghai and Shenzhen Stock Exchanges from 2006 to 2013. The votes cast by directors for various proposals were manually collected from annual reports of firms and announcements. We identified 454 firms with 1,785 proposals on which at least one director cast a vote of dissent (voted 'abstain' or 'against').

Network indicators were calculated based on director affiliation information obtained from the China Stock Market and Accounting Research (CSMAR) database, and data on media mentions were obtained from the Chinese Research Data Services Platform (CNRDS), both of which are leading sources of data on the Chinese stock markets. Other control variables were calculated based on data from CSMAR.

Definitions of Variables

Dependent variable

Dissent vote by director. We generated a dummy variable (*Dissent*) for each proposal-director observation; the variable was coded as 1 if the director's vote was one of dissent, and as 0 if it was not one of dissent. Consistent with previous studies (Jiang et al., 2016; Kang et al., 2022; Xiao et al., 2021), we classified both 'abstain' and 'against' as dissent. This classification is reasonable because regulators consider these two negative votes to be similar. According to the requirements of the Company Law of China, only 'for' votes are considered effective for board proposals. Both 'abstain' and 'against' are ineffective by nature and must be disclosed identically. Furthermore, directors who vote either 'abstain' or 'against' are exempt from the liabilities caused by a company's malpractice (Jiang et al., 2016).

Independent variables

Network centrality. Network centrality is an important indicator in social network analysis. There are four main centrality measures (Wasserman et al., 1994): degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality. (1) Degree centrality is a measure of the number of direct ties between the focal individual and all other individuals within the network. (2) Closeness centrality is the inverse of the sum of the shortest distance between the focal individual and each of the other individuals within the network. It captures the focal individual's efficiency in obtaining information from the network. (3) Betweenness centrality is the frequency with which a focal individual is located on the shortest path between any other pair of individuals within the network. In essence, it captures the power of the focal individual over the information flow in the network because a person in that position can either facilitate or obstruct information flow between the pair of individuals. (4) Eigenvector centrality is a measure of the extent to which the focal individual is tied with other highly connected individuals. It can indicate the importance of the focal individual within the network. The mathematical formulas for these four network centrality measures are available in the Supplementary Appendix.

In our study, we constructed annual networks based on the position information of directors. As the Chinese stock markets grew and the number of listed firms increased, the board network became monotonically larger over time. In the period considered in our study – from 2006 to 2013 – the size of the board network increased from 13,415 (one node represents a unique director) to 22,369 and the number of non-directional links increased from 69,031 to 133,829. To address the issue of comparability between centrality measures across time, we followed the approach used by El-Khatib et al. (2015) and transformed the original centrality measures to percentile values ranging from 1 (the least central) to 100 (the most central). Thus, the network size becomes insignificant and the centrality values across different years can be directly compared. This transformation maintains the ranking order of the network importance of each individual and enables a clear and simple interpretation of the centrality measures.

We used the software package Pajek, a widely used tool for social network analysis (De Nooy, Mrvar, & Batagelj, 2011), to calculate the network centrality indicators based on the affiliation information of all of the directors. In addition, as the centrality variables are correlated and even collinear, we conducted a principal component analysis and used the first principal component (also the only

principal component whose eigenvector is greater than 1) of the four centrality variables to determine the main effect of all of the centrality factors.

Moderators

Firm transparency. Ma, Zhang, Zhong, and Zhou (2020) showed that large audit firms have a greater amount of expertise to monitor client firms and ensure transparency than small audit firms. Therefore, we used the audit firm indicator 'Big Four' to measure firm transparency. We coded firm transparency as 1 if the company was audited by a 'Big Four' audit firm ('Big Four' firms were identified based on the market share of their audited clients' total assets each year), and as 0 otherwise.

Media attention. Following Jiang et al. (2016), we used the natural logarithm of the number of articles containing the director's name that were published in major Chinese newspapers, such as *China Securities Journal*, by distribution volume from year $t–3$ to year $t–1$, to measure the media attention on a focal director, where year t is the year in which directors voted on a proposal.

Independent director. We operationalized *Independent Director* as a dummy variable; a value of 1 indicates that a director is an independent director at the focal firm. Independence is also a control variable in the main effect model.

Control variables

We controlled for several variables at the individual level in our main analysis. Director's *gender* was coded as 1 if the director was male, and as 0 otherwise. Director's *age* is the age of the director in the year of the vote on the proposal. Director's *education* level was assigned a value in the range 1 to 5 (1: primary school; 2: secondary school; 3: bachelor's degree; 4: master's degree; 5: doctorate). *Paid Director* was coded as 1 if the director received a salary from the focal listed firm, and as 0 if the director received a salary from the shareholder company or received only an allowance from the focal listed firm. We also controlled for the professional background of directors using the following dummy variables: *Politician director* was coded as 1 if the director was a former official in the government, and as 0 otherwise. *Academic director* was coded as 1 if the director was a current or former scholar in a university or a research institute, and as 0 otherwise. *Finance director* was coded as 1 if the director had work experience in the finance field, such as the banking and investment business, and as 0 otherwise. *Foreign experience* was coded as 1 if the director had studied or worked abroad, and as 0 otherwise. Furthermore, we controlled for the total *number of directorships (#Directorship)* of the director, which was the number of director positions that the director held in both listed and non-listed firms in the focal year. We also controlled for the director's *tenure* (measured in months) on the focal board. We controlled for the relationship between the director and chairperson because studies have shown that this relationship significantly influences the director's voting behavior (Coles, Daniel, & Naveen, 2014; Khanna, Kim, & Lu, 2015; Ma & Khanna, 2016). In our study, *co-opted tie* was coded as 1 for directors who were appointed by a board chair, and as 0 for others. In addition, we controlled for the duration (measured in months) for which the director worked together with the chairperson (*Coworktime*).

We controlled for several variables at the board and firm level in our robustness check models. At the board level, we controlled for *board size*, the number of committees (*#Committee*), the percentage of independent directors (*% Independent*), *tenure dispersion*, and *CEO duality*. The variable *board size* represents the total number of directors on the board, *#Committee* is the total number of committees formed by board members, and *% Independent* is the fraction of independent directors on the board. The variable *tenure dispersion* represents the standard deviation of the tenures of all of the directors on the same board, scaled by the mean values. *CEO duality* was coded as 1 if the CEO was also the board chair, and as 0 otherwise.

At the firm level, we controlled for *firm size, leverage, state ownership, cross-listing, firm performance, ownership concentration,* and indicators of *related-party transactions* (RPTs). Firm size is the natural logarithm of the total assets, and leverage is the ratio between total liabilities and total assets.

State ownership is captured by a dummy variable equal to 1 if the firm was controlled by the state or shareholders associated with the state, and 0 otherwise. For cross-listing, we controlled for *BHList*, a dummy variable equal to 1 if the firm issued B-shares on Chinese stock exchanges for foreign accounts or H-shares on the Hong Kong Stock Exchange. We used two indicators to measure firm performance: *ROA* and *Tobin's Q*. ROA is the return on asset and Tobin's Q is the sum of stock market capitalization and the book value of liabilities is divided by total assets. ROA captures firm financial performance while Tobin's Q captures firm value in the capital market. Ownership concentration was measured using the Herfindahl index of the share ratio of the top 10 shareholders. RPTs are widely recognized as the most common form of potential expropriation by outside shareholders. We used two measures to capture RPTs: the net value of other accounts receivables (*AR*) and the total value of bank loans guaranteed by the company on behalf of a related party (*Guarantee*). AR is the difference between other receivables and other payables due to RPTs, scaled by total assets, and Guarantee is the total value of the bank loans guaranteed by the company on behalf of a related party (e.g., subsidiaries and affiliates), scaled by the firm's equity.

Education-related information was missing in approximately 64% of the observations. To ensure the presence of a large number of samples in our analysis, we replaced a missing value with the mean value. To attenuate the influence of extreme values, *#Directorship*, tenure, *coworktime*, *board size*, *#Committee*, *% Independent*, *tenure dispersion*, firm size, leverage, ROA, Tobin's Q, ownership concentration, AR, and guarantee were winsorized at the top and bottom 1%.

Estimation Strategy

In our main analysis, we applied the *conditional logit model* grouped *at the proposal level* for model estimation. Following Jiang et al. (2016), our main regression includes the following proposal fixed effects:

$$Dissent_{i,j,k,t} = \beta \cdot DirectorChar_{i,t} + \gamma \cdot Control + \alpha_k + \varepsilon_{i,j,k,t}$$

where $Dissent_{i,j,k,t}$ is a dummy variable that is equal to 1 if director i in firm j casts a vote of dissent on proposal k at time t. $DirectorChar_{i,t}$ is a vector of variables that describe the network position characteristics of directors. *Control* is a vector of control variables, which have been described in the subsection Definitions of Variables. Furthermore, α_k is the proposal fixed effect, and $\varepsilon_{i,j,k,t}$ is the residual. We did not include firm-level or board-level control variables in our model because in the conditional logit model, the proposal fixed effect automatically subsumes unobserved heterogeneity at the firm, board, proposal, and time-period levels (Jiang et al., 2016). In the data analysis, firm- and board-level variables were excluded from the estimation. This identification helps filter out board formation and proposal inclusion, which are the two most important sources of endogeneity, and relies on the variation in directors' vote outcomes within the same proposal. Using this method, we identified a 'local average treatment effect' on the conditional sample of a proposal involving dissent. Based on this model specification, we constructed Panel A.

Although Jiang et al. (2016) showed that the conditional logit model grouped at the proposal level has fewer endogeneity problems than other models such as the ordinary logit model and provides relatively clean identification for the causes of dissent, we reran the main effect model by applying *the conditional logit model grouped at the firm level*; the results are presented in the subsection Robustness Checks. This regression includes proposal type fixed effects, firm fixed effects, and year fixed effects, as well as firm-level and board-level control variables. Based on this model specification, we constructed Panel B. The sample size of Panel B was smaller than that of Panel A because some board-level and firm-level control variables were missing for some of the observations.

Summary Statistics

Table 1 shows the distribution of proposal types with at least one vote of dissent from the main sample. Excluding miscellaneous issues, the top four categories, which account for approximately half of the

Table 1. Distribution of proposals with dissenting votes by the topic

Issues	#Proposal	% of the sample	Cumulative percentage
Director and officer selection, appointment, and turnover	265	14.85	14.85
Financial reporting	256	14.34	29.19
Investment and M&A	250	14.01	43.2
Board or shareholder meeting agenda	110	6.16	49.36
Financing and capital structure	97	5.43	54.79
Loan guarantee	88	4.93	59.72
Restructuring	82	4.59	64.31
Ownership structure	67	3.75	68.06
Profit distribution plan	62	3.47	71.53
Audits and accounting treatment	57	3.19	74.72
Related-party transactions	50	2.8	77.52
Executive and director pay	48	2.69	80.21
Articles of incorporation revision	32	1.79	82
Miscellaneous issues	321	17.98	100
	1,785	100	

sample, address the following issues: (1) director and officer selection, appointment, and turnover (14.85%), (2) financial reporting (14.34%), (3) investment and M&A (14.01%), and (4) board or shareholder meeting agenda (6.16%). Table 2 shows the descriptive statistics for Panel A.

Table 3 shows the descriptive statistics for Panel B, and Table 4 shows the pairwise correlations matrix for all of the variables. The correlations between director centrality variables and dissent are negative. Considering that central directors have a greater number of options for board positions and firms with good corporate governance may have a smaller extent of dissent, this negative correlation is likely to be driven by the selection problem – central directors are more likely to have a seat on a board at a firm with good corporate governance, therefore, may cast fewer votes of dissent. We need to address this problem in our model specification to avoid spurious relationships.

Results

Table 5 shows the results of the conditional logit regression on dissent voting by directors. Director centrality is measured by degree in Model 1, closeness in Model 2, betweenness in Model 3, the eigenvector in Model 4, and the principal component in Model 5. We use each of these centrality measurements to test Hypothesis 1. The coefficients in the tables are the original log-odds ratios. Therefore, it is easy to transform them to the ratio of odds ratios by using the exponential function.

We discuss the results of the hypothesis testing. Controlling for director characteristics, director centrality is statistically significant and positive at the 1% level in Model 1, and statistically significant and positive at the 0.5% level in Model 2 to Model 5. The significantly positive coefficient for the principal component of centralities in Model 5 implies that the four centrality indicators have a substantial joint influence on directors' propensity to dissent. Considering this joint influence of the four indicators, directors occupying central positions within the board interlock network have a stronger tendency to dissent; thus, Hypothesis 1 is supported. We interpret the results by considering Model 5. The odds ratio for principal component of centrality indicators is approximately 1.112 (exp

Table 2. Descriptive statistics (Panel A)

	N	Mean	Std. Dev.	Min	Median	Max
Dissent	17,980	0.15	0.35	0	0	1
Degree	17,980	0	0	0	0	0
Closeness	17,980	0.09	0.05	0	0.11	0.19
Betweenness	17,980	0	0	0	0	0.03
Eigenvector	17,980	0	0.02	0	0	0.2
Degree$_{(per)}$	17,980	59.68	34.13	1	71	100
Closeness$_{(per)}$	17,980	54.51	32.16	1	55	100
Betweenness$_{(per)}$	17,980	20.7	38.68	1	1	100
Eigenvector$_{(per)}$	17,980	38.42	40.08	1	1	100
Principal	17,980	0.01	1.59	−2.48	−0.14	3.08
Gender	17,980	0.89	0.32	0	1	1
Age	17,980	48.88	8.85	26	48	84
Education	17,980	3.69	0.57	1	3.69	5
Paid	17,980	0.3	0.46	0	0	1
Politician	17,980	0.27	0.44	0	0	1
Academic	17,980	0.65	0.48	0	1	1
Finance	17,980	0.23	0.42	0	0	1
Foreign	17,980	0.03	0.18	0	0	1
#Directorship	17,980	1.66	1.29	1	1	8
Tenure	17,980	34.78	30.51	0	28	142
Co-opted	17,980	0.5	0.5	0	1	1
Coworktime	17,980	23.07	21.02	0	18	100
Independent	17,980	0.39	0.49	0	0	1
Big4 audit	17,980	0.11	0.32	0	0	1
Media mention	17,980	0.08	0.45	0	0	5.51

Notes: Degree$_{(per)}$, Closeness$_{(per)}$, Betweenness$_{(per)}$, and Eigenvector$_{(per)}$ are percentile values of the centrality measures. Principal is the first principal component of Degree$_{(per)}$, Closeness$_{(per)}$, Betweenness$_{(per)}$, and Eigenvector$_{(per)}$ centrality measures.

(0.106)), which indicates that a 1-unit increase in director centrality is associated with an 11.2% increase in the odds of dissent versus non-dissent (1.112−1). The probability of drawing an incorrect inference about this positive relationship is less than 0.5%.

Table 6 shows the results of all moderating effects.[1] In Model 3, the coefficient of the interaction term of director centrality and Big Four audit is statistically significant and negative (coefficient = −0.546, $p < 0.01$), which indicates that the positive relationship between director centrality and the probability of dissent is weaker for firms audited by the Big Four. To facilitate interpretation and further investigate whether the hypotheses are supported, we plotted the predicted probabilities (Figure 1a) and the marginal effects of centrality on director dissent (Figure 1b). To create Figure 1a, we set all variables other than centrality and Big Four audit in Model 3 of Table 6 to their sample means. In Figure 1a, we can find that for firms without Big Four audit, as centrality increases from 5 to 95% of the range, the predicted probability of dissent would increase from 7.17% to 12.45%, representing a 73.64% increase. However, for firms with Big Four audit, as centrality increases from 5 to 95% of the range, the predicted probability of dissent would decrease rather than increase. Besides, we can find in Figure 1b that the marginal effects of centrality on the probability of

Table 3. Descriptive statistics (Panel B)

	N	Mean	Std. Dev.	Min	Median	Max
Dissent	13,672	0.14	0.34	0	0	1
Degree$_{(per)}$	13,672	60.32	33.32	1	71	100
Closeness$_{(per)}$	13,672	57.03	30.36	1	59	100
Betweenness$_{(per)}$	13,672	22.23	39.74	1	1	100
Eigenvector$_{(per)}$	13,672	41.09	40.26	1	41	100
Principal	13,672	0.08	1.55	−2.53	−0.14	3.05
Gender	13,672	0.89	0.32	0	1	1
Age	13,672	49.06	8.69	26	48	84
Education	13,672	3.71	0.59	1	3.72	5
Paid	13,672	0.32	0.47	0	0	1
Politician	13,672	0.28	0.45	0	0	1
Academic	13,672	0.73	0.44	0	1	1
Finance	13,672	0.22	0.41	0	0	1
Foreign	13,672	0.04	0.2	0	0	1
#Directorship	13,672	1.7	1.32	1	1	8
Tenure	13,672	35.96	31.29	0	29	144
Co-opted	13,672	0.51	0.5	0	1	1
Coworktime	13,672	24.48	21.85	0	19	104
Independent	13,672	0.39	0.49	0	0	1
Board size	13,672	10.6	2.85	6	9	18
#Committee	13,672	4.03	0.94	0	4	8
% Independent	13,672	0.36	0.04	0.25	0.33	0.5
Tenure dispersion	13,672	0.75	0.35	0.04	0.71	2.25
CEO duality	13,672	0.17	0.37	0	0	1
Firm size	13,672	22.01	2.04	19.17	21.63	28.72
Leverage	13,672	0.56	0.24	0.05	0.58	0.97
State	13,672	0.6	0.49	0	1	1
BHList	13,672	0.15	0.35	0	0	1
ROA	13,672	0.03	0.06	−0.22	0.03	0.24
Tobin's Q	13,672	1.81	1.94	0.07	1.25	11.47
Ownership concentration	13,672	0.14	0.11	0.01	0.1	0.48
AR	13,672	0.03	0.05	0	0.02	0.49
Guarantee	13,672	0.01	0.16	−0.54	0	0.78
Big4 audit	13,672	0.13	0.33	0	0	1
Media mention	13,672	0.09	0.45	0	0	5.74

dissent are all positive and significant (the confidence interval does not include zero) for firms without Big Four audit. However, the marginal effects of centrality on the probability of dissent are not significantly different from zero (the confidence interval includes zero) for firms with Big Four audit, In general, Hypothesis 2 is supported.

Table 4. Pairwise correlations (Panel B)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Dissent	1																
(2) Degree	−0.06	1															
(3) Closeness	−0.04	0.52	1														
(4) Betweenness	−0.01	0.57	0.41	1													
(5) Eigenvector	−0.04	0.38	0.71	0.27	1												
(6) Principal	−0.05	0.79	0.86	0.70	0.77	1											
(7) Gender	−0.04	0.03	0.03	0.02	0.02	0.04	1										
(8) Age	−0.04	0.09	0.08	0.07	0.10	0.11	0.10	1									
(9) Education	−0.05	0.13	0.14	0.14	0.10	0.17	0.06	−0.09	1								
(10) Paid	−0.03	−0.14	−0.01	−0.24	0.02	−0.11	0.01	−0.14	−0.10	1							
(11) Politician	−0.04	0.20	0.15	0.26	0.11	0.23	0.05	0.22	0.05	−0.15	1						
(12) Academic	−0.02	0.03	−0.01	0.02	−0.13	−0.03	−0.02	0.07	−0.02	0.02	0.03	1					
(13) Finance	0.01	0.23	0.24	0.16	0.22	0.27	−0.05	0.04	0.14	−0.05	0.19	0.03	1				
(14) Foreign	0.05	0.04	0.00	−0.01	0.03	0.02	0.04	0.00	0.10	−0.03	0.03	0.10	0.05	1			
(15) #Directorship	0.00	0.16	0.17	0.22	0.16	0.22	0.05	0.00	0.06	0.09	0.11	0.03	0.17	0.02	1		
(16) Tenure	0.06	−0.01	0.08	−0.02	0.08	0.04	0.00	0.19	−0.02	0.19	0.00	0.02	0.00	−0.01	0.05	1	
(17) Co-opted	−0.04	0.02	−0.03	0.00	0.00	0.00	0.01	−0.10	−0.01	−0.08	0.02	0.02	−0.04	−0.02	−0.04	−0.44	1
(18) Coworktime	0.04	−0.02	0.08	−0.02	0.10	0.04	0.00	0.15	−0.03	0.16	0.00	0.04	0.00	0.00	0.05	0.72	−0.11
(19) Independent	−0.09	0.21	0.08	0.38	0.05	0.22	−0.02	0.20	0.18	−0.55	0.22	0.03	0.07	0.02	−0.06	−0.10	0.04
(20) Board size	−0.08	0.50	0.32	0.05	0.30	0.38	0.05	0.13	0.09	0.04	0.11	−0.07	0.32	0.01	0.18	0.06	0.04
(21) #Committee	−0.04	0.21	0.21	0.06	0.25	0.24	0.04	0.12	0.08	0.06	0.12	0.14	0.31	0.05	0.21	−0.01	0.01
(22) % Independent	−0.01	0.05	0.10	0.03	0.09	0.09	0.00	0.02	−0.01	−0.04	−0.01	−0.04	−0.03	0.04	−0.07	0.02	−0.03
(23) Tenure dispersion	−0.01	0.13	−0.03	0.03	−0.06	0.02	0.00	−0.07	0.06	−0.05	0.00	−0.05	0.01	−0.07	−0.06	−0.16	0.15
(24) CEO duality	0.03	−0.13	−0.10	−0.03	−0.15	−0.13	−0.05	−0.11	−0.08	0.02	−0.06	0.06	−0.07	0.04	−0.03	−0.06	0.03
(25) Firm size	−0.08	0.38	0.37	0.08	0.39	0.40	0.03	0.19	0.15	0.09	0.15	0.08	0.43	0.11	0.27	0.08	0.01
(26) Leverage	−0.06	0.17	0.14	0.03	0.16	0.16	0.03	0.10	0.10	0.04	0.06	−0.10	0.21	−0.05	0.05	0.00	0.03
(27) State	−0.03	0.13	0.11	0.02	0.06	0.10	0.01	0.08	0.10	−0.11	0.02	−0.07	−0.09	0.00	−0.06	0.04	0.00

(*Continued*)

Table 4. (*Continued.*)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(28) BHList	−0.04	0.25	0.22	0.06	0.28	0.26	−0.02	0.12	0.07	0.02	0.09	0.08	0.30	0.10	0.21	0.10	−0.02
(29) ROA	−0.01	0.01	0.06	0.02	0.04	0.04	0.01	−0.01	−0.02	−0.03	0.01	0.05	−0.02	0.02	0.02	−0.05	−0.07
(30) Tobin's Q	0.02	−0.10	−0.09	0.01	−0.09	−0.09	−0.06	−0.06	−0.07	−0.05	−0.04	−0.12	−0.10	−0.06	−0.08	−0.01	−0.05
(31) Ownership concentration	−0.04	0.03	0.07	−0.02	0.03	0.04	0.01	0.07	0.04	−0.05	0.02	0.07	−0.05	0.09	0.00	−0.02	−0.11
(32) AR	0.01	−0.17	−0.17	−0.05	−0.13	−0.17	0.04	−0.03	−0.04	−0.08	−0.06	−0.11	−0.11	−0.08	−0.12	−0.10	0.02
(33) Guarantee	0.00	0.12	0.12	0.03	0.10	0.12	−0.02	0.03	0.02	0.04	0.03	0.01	−0.01	0.00	−0.02	0.07	0.06
(34) Big4 audit	−0.06	0.30	0.30	0.06	0.31	0.32	0.02	0.14	0.09	0.07	0.13	0.04	0.36	0.06	0.24	0.07	0.04
(35) Media mention	0.04	0.07	0.06	0.08	0.08	0.09	0.02	0.04	0.01	0.16	0.10	0.03	0.08	0.07	0.18	0.13	−0.05

	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
(18) Coworktime	1																
(19) Independent	−0.07	1															
(20) Board size	0.11	−0.02	1														
(21) #Committee	−0.02	−0.02	0.36	1													
(22) % Independent	−0.01	0.09	−0.17	−0.02	1												
(23) Tenure dispersion	−0.25	−0.01	0.03	0.00	−0.04	1											
(24) CEO duality	−0.05	0.01	−0.21	−0.05	0.08	−0.01	1										
(25) Firm size	0.11	−0.01	0.66	0.51	0.01	0.00	−0.22	1									
(26) Leverage	−0.02	−0.01	0.37	0.19	0.02	0.21	−0.25	0.49	1								
(27) State	−0.02	0.01	0.11	−0.03	0.10	0.06	−0.25	0.11	0.15	1							
(28) BHList	0.08	−0.01	0.46	0.31	−0.02	0.02	−0.17	0.60	0.29	−0.08	1						
(29) ROA	−0.02	0.00	−0.03	0.02	−0.07	−0.18	−0.04	−0.07	−0.27	−0.04	−0.10	1					
(30) Tobin's Q	−0.05	0.02	−0.18	−0.11	0.05	−0.01	0.09	−0.47	−0.26	−0.11	−0.12	0.25	1				
(31) Ownership concentration	−0.03	0.01	−0.03	−0.07	0.08	−0.24	−0.06	0.13	−0.06	0.28	−0.02	0.19	−0.06	1			
(32) AR	−0.13	0.00	−0.18	−0.11	0.00	0.17	0.04	−0.29	0.11	−0.15	−0.16	−0.06	0.15	−0.19	1		
(33) Guarantee	0.08	0.02	0.06	−0.02	0.11	0.13	−0.12	0.06	−0.03	0.05	−0.02	−0.16	0.00	−0.03	−0.04	1	
(34) Big4 audit	0.11	−0.02	0.62	0.49	−0.07	−0.07	−0.12	0.71	0.30	−0.08	0.62	−0.09	−0.22	−0.05	−0.18	−0.01	1
(35) Media mention	0.09	−0.13	0.12	0.12	0.01	−0.03	0.05	0.19	0.06	−0.11	0.13	−0.05	−0.08	−0.07	−0.08	0.00	0.17

Note: Correlation coefficients in bold indicate significance at the 0.05 level or better.

Table 5. Main effects on dissension

	(1)	(2)	(3)	(4)	(5)
DV = Dissent	Model 1	Model 2	Model 3	Model 4	Model 5
Degree	0.003**				
	(0.001)				
Closeness		0.008***			
		(0.002)			
Betweenness			0.002***		
			(0.001)		
Eigenvector				0.005***	
				(0.002)	
Principal component					0.106***
					(0.028)
Independent	−0.808***	−0.797***	−0.819***	−0.787***	−0.828***
	(0.058)	(0.057)	(0.059)	(0.057)	(0.059)
Gender	−0.118[+]	−0.126[+]	−0.121[+]	−0.116[+]	−0.123[+]
	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Age	−0.007*	−0.007*	−0.007*	−0.007*	−0.007*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Education	−0.232***	−0.234***	−0.231***	−0.233***	−0.235***
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Paid	−0.855***	−0.856***	−0.856***	−0.865***	−0.852***
	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)
Politician	−0.233***	−0.228***	−0.246***	−0.225***	−0.246***
	(0.057)	(0.057)	(0.058)	(0.057)	(0.058)
Academic	−0.920***	−0.837***	−0.943***	−0.867***	−0.888***
	(0.113)	(0.117)	(0.113)	(0.115)	(0.114)
Finance	0.611***	0.606***	0.601***	0.607***	0.598***
	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)
Foreign	0.644***	0.644***	0.648***	0.635***	0.644***
	(0.124)	(0.124)	(0.124)	(0.124)	(0.124)
#Directorship	0.010	0.008	0.004	0.013	0.002
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Tenure	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Co-opted	−0.249***	−0.253***	−0.246***	−0.256***	−0.248***
	(0.075)	(0.075)	(0.075)	(0.075)	(0.075)
Coworktime	−0.003	−0.003	−0.003	−0.003	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Proposal FE	Yes	Yes	Yes	Yes	Yes

(Continued)

Table 5. (*Continued.*)

	(1)	(2)	(3)	(4)	(5)
DV = Dissent	Model 1	Model 2	Model 3	Model 4	Model 5
Observations	17,980	17,980	17,980	17,980	17,980
Pseudo *R*-squared	0.067	0.068	0.067	0.068	0.068
Chi-square	684.958	692.114	686.311	688.300	692.129
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000

Notes: ***$p < 0.005$, **$p < 0.01$, *$p < 0.05$, ⁺$p < 0.1$. Standard errors in parentheses.

In Model 4, the coefficient of the interaction term of director centrality and media mention is statistically significant and negative (coefficient = −0.163, $p < 0.005$), which indicates that the positive relationship between director centrality and the probability of dissent is weaker for directors who have a greater number of media mentions. Similarly, we plotted the predicted probabilities (Figure 2a) and the marginal effects of centrality on director dissent (Figure 2b). To create Figure 2a, we set all variables other than centrality and media mention in Model 4 of Table 6 to their sample means. In Figure 2a, we can find that for directors without media mention, as centrality increases from 5 to 95% of the range, the predicted probability of dissent would increase from 7.20% to 12.13%, representing a 68.47% increase. However, for directors with media mention, as centrality increases from 5 to 95% of the range, the predicted probability of dissent has barely changed. Besides, we can find in Figure 2b that the marginal effects of centrality on the probability of dissent are all positive and significant (the confidence interval does not include zero) for directors without media mention. However, the marginal effects of centrality on the probability of dissent are not significantly different from zero (the confidence interval includes zero) for directors with media mention. In general, Hypothesis 3 is supported.

Model 5 shows the results of the moderating effect of director type. We find that the coefficient of the interaction term of director centrality and independent director is statistically significant and negative (coefficient = −0.230, $p < 0.005$), which indicates that the positive relationship between director centrality and the probability of dissent is weaker for independent directors. Similarly, we plotted the predicted probabilities (Figure 3a) and the marginal effects of centrality on director dissent (Figure 3b). To create Figure 3a, we set all variables other than centrality and independent director in Model 5 of Table 6 to their sample means. In Figure 3a, we can find that for directors who are not independent directors, as centrality increases from 5 to 95% of the range, the predicted probability of dissent would increase from 8.37% to 20.42%, representing a 143.97% increase. However, for independent directors, as centrality increases from 5 to 95% of the range, the predicted probability of dissent has barely changed. Besides, we can find in Figure 3b that the marginal effects of centrality on the probability of dissent are all positive and significant (the confidence interval does not include zero) for those who are not independent directors. However, the marginal effects of centrality on the probability of dissent are not significantly different from zero (the confidence interval includes zero) for independent directors. In general, Hypothesis 4 is supported.

Robustness Checks

To ensure the robustness of our results, we conducted a battery of additional analyses by (1) applying the conditional logit model with the board- and firm-level control variables; (2) performing propensity score match (PSM) at the director-year level and rerunning the main effects; (3) using alternative proxy variables for moderators; and (4) regressing dissent to network indicators to exclude reverse causality. The results of (1)–(3) are generally consistent with those obtained using the baseline specification model shown in Table 5, and we do not find evidence in support of reverse causality between dissent and director centrality. All of the results are available in the Supplementary Appendix.

Table 6. Main effects of principal component and moderating effects

	(1)	(2)	(3)	(4)	(5)	(6)
DV = Dissent	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Principal component		0.166***	0.183***	0.173***	0.311***	0.348***
		(0.043)	(0.043)	(0.043)	(0.053)	(0.054)
Big4 audit			−			−
Principal component*			−0.546**			−0.429*
Big4 audit			(0.207)			(0.212)
Media mention				0.161*		0.158*
				(0.065)		(0.065)
Principal component*				−0.163***		−0.183***
Media mention				(0.053)		(0.055)
Principal component*					−0.230***	−0.251***
Independent					(0.049)	(0.050)
Independent	−0.769***	−0.828***	−0.831***	−0.815***	−0.860***	−0.852***
	(0.056)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Gender	−0.113[+]	−0.123[+]	−0.123[+]	−0.117[+]	−0.109	−0.100
	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Age	−0.007*	−0.007*	−0.007*	−0.008*	−0.007*	−0.008*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Education	−0.227***	−0.235***	−0.235***	−0.235***	−0.239***	−0.239***
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Paid	−0.868***	−0.852***	−0.853***	−0.853***	−0.846***	−0.848***
	(0.065)	(0.065)	(0.065)	(0.065)	(0.066)	(0.066)
Politician	−0.218***	−0.246***	−0.236***	−0.256***	−0.225***	−0.223***

(*Continued*)

Table 6. (*Continued.*)

DV = Dissent	(1)	(2)	(3)	(4)	(5)	(6)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(0.057)	(0.058)	(0.058)	(0.058)	(0.058)	(0.058)
Academic	−0.944***	−0.888***	−0.889***	−0.886***	−0.821***	−0.814***
	(0.113)	(0.114)	(0.114)	(0.114)	(0.115)	(0.115)
Finance	0.621***	0.598***	0.599***	0.603***	0.600***	0.605***
	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)
Foreign	0.643***	0.644***	0.655***	0.577***	0.643***	0.578***
	(0.124)	(0.124)	(0.124)	(0.127)	(0.124)	(0.127)
#Directorship	0.019	0.002	0.011	0.004	0.003	0.012
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)
Tenure	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Co-opted	−0.253***	−0.248***	−0.247***	−0.233***	−0.248***	−0.233***
	(0.075)	(0.075)	(0.075)	(0.075)	(0.075)	(0.075)
Coworktime	−0.004[+]	−0.003	−0.003	−0.003	−0.003	−0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Proposal FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,980	17,980	17,980	17,980	17,980	17,980
Pseudo *R*-squared	0.066	0.068	0.069	0.069	0.070	0.072
Chi-square	677.562	692.129	699.547	705.146	714.247	736.008
Prob > Chi^2	0.000	0.000	0.000	0.000	0.000	0.000

Notes: ***$p < 0.005$, **$p < 0.01$, *$p < 0.05$, +$p < 0.1$. Standard errors in parentheses. Director centrality variables are standardized. The main effect of Big4 audit is omitted, because it is invariant within a specific proposal.
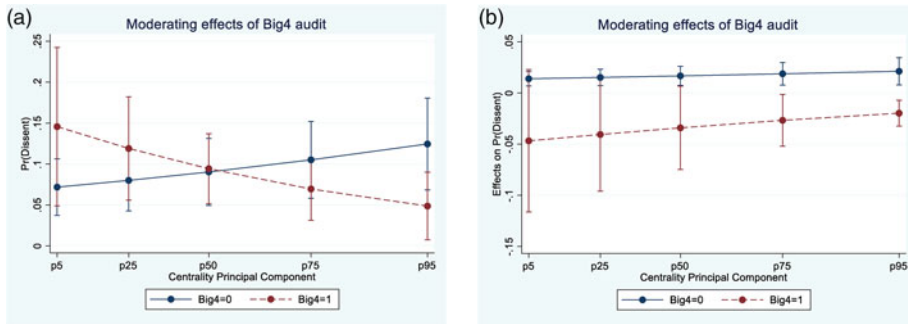
Figure 1. (a) The predicted probabilities of dissent (b) The marginal effects of centrality
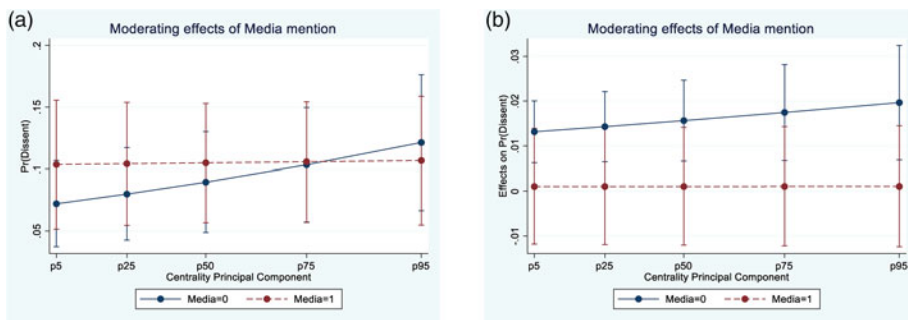

Figure 2. (a) The predicted probabilities of dissent (*Notes*: Media mention is a continuous variable. In this figure, Media = 1 when Medi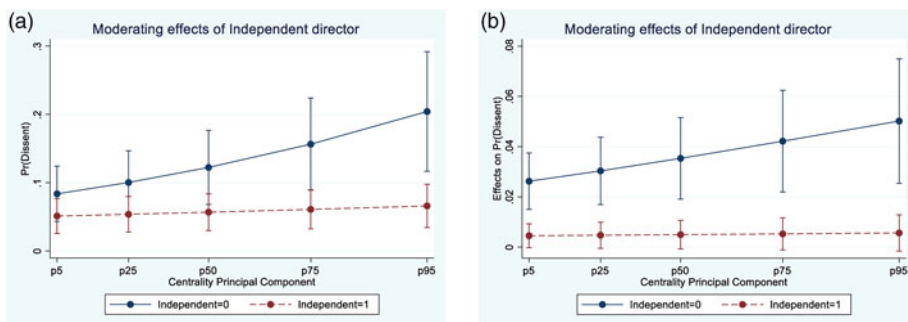a mention = mean + 2SD and Media = 0 when Media mention = 0) (b) The marginal effects of centrality (*Notes*: Media mention is a continuous variable. In this figure, Media = 1 when Media mention = mean + 2SD and Media = 0 when Media mention = 0)

Figure 3. (a) The predicted probabilities of dissent (b) The marginal effects of centrality

Discussion

This study was motivated by the lack of understanding of directors' monitoring behavior and its antecedents, especially from a social perspective (Westphal & Zajac, 2013). Drawing on social network and corporate governance research, we developed a framework of the effects of directors' positions within the board interlock network on their dissenting behaviors. In line with our argument, we find that directors who occupy central positions in the board's interlocking network are more likely to dissent. Our results also show that this positive relationship is weaker for firms with greater transparency and directors with a greater number of media mentions, supporting the information and reputation

mechanisms described in our arguments. Furthermore, we find that the effect of a director's network centrality on dissent is contingent on director type. The effect is weaker for independent directors. Considered together, these findings have several important implications.

Contributions to Theory and Practice

Given that it is exceptionally challenging to effectively monitor a corporate board, it is essential to identify people who could perform this task well (Hambrick et al., 2015). The first step is to examine why directors may have the capability and motivation for effective monitoring (Cowen & Marcel, 2011). To the best of our knowledge, this study is the first to investigate how network positions influence director dissent and to examine the underlying information and reputation mechanisms. Adopting an information-processing perspective, Boivie, Bednar, et al. (2016) proposed that boards are essentially groups of individuals obtaining, processing, and sharing information. We extend this stream of research by studying how a social network can supplement the information set of directors and facilitate effective monitoring. In general, we respond to Westphal and Zajac's (2013) call for a behavioral theory of corporate governance by examining the socially situated and socially constituted agency.

We find that for the same centrality of positions, independent directors are likely to project a reputation of being passive directors. This significant finding extends the findings of Li et al. (2018) who used an experimental design and reported that boardroom transparency drives directors who are inclined toward vigilant monitoring to become more vigilant and directors who are inclined toward passive monitoring to become more passive. Although the findings of Li et al. (2018) offered insights and showed strong internal validity, the study lacked significant external validity owing to the experimental design. In our study, we improved the external validity of research on director voting through analyses of archival data.

Our findings have two major implications for theory and research on the board interlock network. First, while researchers have typically emphasized the importance of the inter-organizational nature of the board interlock network in determining alliance formation and dissolution (Gulati & Westphal, 1999; Yue, 2012) and practice diffusion (Galaskiewicz & Burt, 1991; Haunschild, 1994), the results of this study suggest that the interpersonal nature of the board interlock network may also be an important determinant of a firm's behaviors and outcomes, such as board effectiveness.

Second, our study contributes to the emerging literature on the micro-foundations of a social network (Tasselli et al., 2015). Social network research has long assumed that motivation and opportunity can be treated 'as one and the same' (Burt, 1992: 36). However, the opportunity to access and leverage information does not necessarily indicate that actors have the capability to process information and the motivation to realize their potential. We extend current research by demonstrating that network actors may have different levels of information-processing capability and motivation. A more comprehensive analysis of the determinants of network actors' behaviors should consider both the structures of the relationships and the properties of the nodes, such as roles, interests, motivations, and capabilities (Phelps, Heidl, & Wadhwa, 2012; Shipilov & Li, 2012; Tasselli et al., 2015).

Limitations and Directions for Future Research

Our study has several limitations, which can serve as opportunities for future studies. First, due to the nature of archival data, we were unable to directly measure the underlying mechanisms of information and reputation. Future research could obtain additional insights by using other research designs, such as surveys, experiments, and case studies. These methods could be used to verify our results and provide a more nuanced examination of the decision-making process in director monitoring. Future research could also use more refined measures as moderators. For example, the use of fine-grained measures of information-processing capability and various concerns collected at the individual director level could improve the accuracy of our theoretical predictions.

Second, we focus on theorizing at the individual director level, thus providing several opportunities for future exploration. Individual voice and dissent in general, and board monitoring in particular, could be determined by environmental, firm, board climate, and position characteristics (Boivie,

Bednar, et al., 2016; Hambrick et al., 2015; Zhou, Shin, Brass, Choi, & Zhang, 2009). Therefore, future studies could obtain more insights by incorporating additional factors into the theoretical framework. In a similar vein, as an explorative study, we focused on only one network position and its influence on a specific behavior of directors. Future studies could examine other social network indicators, other social contexts, and other behaviors of directors, such as departure and exit from the firm.

Third, our sample was drawn from directors in publicly listed Chinese firms; therefore, the results should be carefully considered when generalizing the findings to other economies. We believe that the core concept of directors having information barriers and various reputation concerns during their monitoring process and the finding that directors who occupy positions of greater centrality dissent to a greater extent also apply to broader contexts. However, the results related to the moderating effect of director types must be carefully examined because different director characteristics may exist in other institutional and market contexts.

Conclusion

Despite these limitations, to the best of our knowledge, our study is among the first to examine the relationship between directors' network positions and their dissenting behavior on boards. By investigating the contingent governance effects of directors' network centrality, our study integrates and contributes to multiple streams of literature on boards of directors, board interlocks, and corporate governance in emerging economies. Thus, our study offers new insights and opens up many new areas of research in an effort to answer the broader question of what constitutes effective monitoring in corporate governance.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/mor.2023.29

Data availability statement. Replication code for this article has been published in Open Science Framework at: https://osf.io/c3a74/

Note

1. We have multiple centrality measurements (degree, closeness, betweenness, eigenvector centrality, and principal component score) and the moderating effects remain consistent across different centrality measurements. To save space, we only report the moderating results using the principal component score as a demonstration, while the results of the other centrality measurements are provided in Supplementary Appendix Tables S1–S4.

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Hong Zhang (hongzhang@pku.edu.cn) is a postdoctoral researcher at the Guanghua School of Management, Peking University, where he also obtained his PhD. His current research interests include non-market strategy, firm innovation, and strategic leadership. He has published his research in journals such as *Management and Organization Review* and *Technological Forecasting and Social Change*.

Zimin Liu (ziminliu@pku.edu.cn) is a PhD candidate at the Guanghua School of Management, Peking University. Her current research interests include strategic leadership, creativity and innovation, and micro-foundations of strategy.

Weiguo Zhong (zwg@gsm.pku.edu.cn) is an Associate Professor of Strategy at the Guanghua School of Management, Peking University. He received his PhD from the City University of Hong Kong. His research interests include firm innovation, non-market strategy, and internationalization strategy of multinational companies from emerging markets. He has published his research in journals such as the *Academy of Management Journal*, *Journal of International Business Studies*, *Journal of Management*, and *Management and Organization Review*.