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GROUP POLARIZATION ON CORPORATE BOARDS: THEORY AND EVIDENCE ON BOARD DECISIONS ABOUT ACQUISITION PREMIUMS

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This study investigates how a fundamental group decision-making bias referred to as group polarization can influence boards' acquisition premium decisions. The theory suggests that when prior premium experience would lead directors on average to support a relatively high premium prior to board discussions, they will support a focal premium that is even higher after discussions; but when directors' prior premium experience would lead them on average to support a relatively low premium prior to board discussions, they will support a focal premium that is even lower after discussions. Results provided strong support for the theory. Moreover, group polarization was reduced by demographic homogeneity among directors and by minority expertise but increased by board influence. This study introduces a fundamental group decision-making bias into governance research and explains how group processes can influence network diffusions. Copyright © 2012 John Wiley & Sons, Ltd.

INTRODUCTION

Corporate governance scholars have long been interested in understanding major controversial decisions made by top executives. Excessively high acquisition premiums in particular have often been criticized (e.g., Jensen, 1993). Acquisition premiums, the percentage difference between the final per share price paid to the target firm and the target's prior share price, have averaged 25–40 percent and often exceeded 100 percent. Excessively high premiums generally have negative impacts on acquisition performance and can even lead to the bankruptcy of the acquiring firm (Berkovitch and Narayanan, 1993; Haunschild, 1994). As premiums have remained relatively high despite evidence of their negative performance implications, management scholars have explored whether these controversial decisions can be explained by decision-making biases such as overconfidence or hubris on the part of chief executive officers (CEOs) (Hayward and Hambrick, 1997; Roll, 1986).

Although boards of directors have been widely recognized as playing critical roles in premium decisions (Haunschild, 1994; Lorsch and Maclver, 1989) and an increasing number of studies have built on social psychological theories to understand boards' controversial decisions (e.g., Belliveau, O'Reilly, and Wade, 1996; Boivie *et al*., 2011; Fredrickson, Davis-Blake, and Sanders, 2010; Hillman, Nicholson, and Shropshire, 2008; Westphal and Zajac, 1995; Zajac and Westphal, 1996), little systematic research has built on social psychological theories on group decision making to explain extreme acquisition premium decisions determined by directors as a group. In fact, we still have limited understanding about whether boards' collective strategic decisions are influenced by the

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fundamental group decision-making biases identified in social psychological research (Baron and Kerr, 2003). In the present study, I introduce such a fundamental group decision-making bias referred to as group polarization into corporate governance research to explain boards' extreme premium decisions.

Group polarization is said to occur when group members' pre-meeting average position is amplified in the group's post-meeting collective decision[1] (Isenberg, 1986). For example, when group members are initially inclined to take risks, their post-discussion collective decision tends to become even more risky; but when group members are initially inclined toward a conservative position, their post-discussion collective decision will be even more conservative (Friedkin, 1999). Group polarization has been documented in hundreds of studies under many different situations and has been widely considered as a quintessential group decision-making bias, partially because it results from a combination of powerful and fundamental psychological processes, including social influence, attribution bias, and informational influence (see reviews by Baron and Kerr, 2003; Isenberg, 1986; Moscovici and Doise, 1994). A complete understanding of board decision making from a social psychological perspective thus requires an investigation into the potential for group polarization on boards.

In this study, I draw from theory and research on the social psychology of groups to understand how extreme acquisition premium decisions could be explained by group polarization on corporate boards. More specifically, I begin by suggesting that directors on average will tend to support a relatively high (or low) premium prior to a board meeting when they on average experienced high (or low) premiums in prior acquisitions across different boards (Haunschild, 1994). The group polarization theory then suggests that when directors on average would support a relatively high premium (by virtue of their prior premium experience across different boards) prior to a board meeting, they tend to support an even higher focal premium following board discussions; but when directors on average would support a relatively low premium (by virtue of their prior premium experience) prior to a board meeting, they will support an even lower focal premium after board discussions. I also suggest several key moderators of the group polarization effect (i.e., the degree of demographic homogeneity among directors, the acquisition expertise of directors with minority opinions,[2] and board influence).

This study makes two fundamental contributions. First, it makes significant contributions to the corporate governance literature. Although directors make major decisions as a group and an increasing number of studies have built on social psychological theories to understand boards' decisions (e.g., Belliveau *et al*., 1996; Boivie *et al*., 2011; Fredrickson, Davis-Blake, and Sanders, 2010; Hillman, Nicholson, and Shropshire, 2008; Westphal and Zajac, 1995; Zajac and Westphal, 1996), very limited systematic research has built on social psychological theories of group dynamics to understand boards' major strategic decisions. Whereas Westphal and Bednar (2005) suggested how pluralistic ignorance as a group-level bias may explain boards' failure to change strategy in response to poor firm performance, group polarization is a different and fundamental group-level bias (Baron and Kerr, 2003; Isenberg, 1986) that can explain how directors reach extreme decisions. In introducing group polarization into board research, the present study thus complements prior limited research on group dynamics on boards (i.e., Westphal and Bednar, 2005) and adds new insights into social psychological processes that can lead to controversial board decisions. Group polarization theory also complements existing sociological and economic perspectives on corporate governance and leads to novel understandings of board behavior. For example, whereas prevailing perspectives on governance have generally suggested that outside directors' influence on strategic decisions is beneficial (Jensen, 1993; Pfeffer and Salancik, 1978), the theory and findings from this study suggest that the greater board influence often conferred by outside directors can also make certain group-level biases (i.e., group polarization biases) more prominent in strategic decisions.

Second, understanding how strategic decisions can be influenced by group polarization on boards

[1] 'Polarization' is often used to describe the split *within* a group of people; but in academic research, 'group polarization' has been used with a specialized meaning.

[2] The group decision-making literature has often used the concept of 'minority opinion' to describe an opinion that is supported by less than half of group members. Accordingly, I follow this tradition and use 'minority opinion' and 'majority opinion' only in this sense throughout this paper.

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also has important implications for research on interlock networks. The interlock network is an important channel through which directors bring the knowledge and insights that they obtained on other boards to influence focal board decisions (Davis, 1991; Haunschild, 1994; Palmer, Jennings, and Zhou, 1993; also see a review by Mizruchi, 1996). One central argument from this literature is that there will be a positive association between the focal decision and directors' average prior decision. In contrast, the group polarization perspective offers a more precise prediction and suggests that subsequent board decisions will reflect the *amplification* of directors' average prior experience, thus suggesting how group discussions may strengthen or distort the network diffusion effect (e.g., directors tend to approve a focal premium that is even higher than the average premium they previously experienced when the average prior premium is relatively high). More generally, the present study addresses the recent call for more research on behavioral processes underlying network ties (Gulati and Westphal, 1999; Mizruchi, Stearns, and Marquis, 2006) by introducing group dynamics into theoretical perspectives on interlock network diffusion.

THEORY AND HYPOTHESES

In this section, I first discuss social psychological research on group polarization and the mechanisms that can explain this fundamental group decision-making bias. Next, I discuss how group polarization is related to other group decision-making biases such as groupthink or pluralistic ignorance. I then develop several hypotheses to explain how boards' decisions about acquisition premiums may be influenced by group polarization.

Group polarization

Although group polarization has not been studied in the context of boards, existing studies have documented group-induced polarization in many other situations (see reviews by Baron and Kerr, 2003; Isenberg, 1986; Myers and Lamm, 1976). In his classic study, Stoner (1961) observed that the collective decision following a group discussion was riskier than group members' pre-discussion average position. This 'risky-shift' phenomenon soon motivated a series of investigations of group risk taking. Scholars had speculated that risky-shift could be explained by the diffusion of responsibility or by the normative value of risk-taking behavior in the Western culture. But these interpretations were soon discounted, as subsequent studies also found that on certain issues the post-discussion collective decision tended to be more cautious than members' pre-discussion average position (Burnstein and Vinokur, 1973). Moreover, studies also showed that on issues unrelated to risk taking (such as opinions toward race, feminism, pacifism, equality, and teenage drinking), the post-discussion group decision also amplified members' pre-discussion average position (see reviews by Isenberg, 1986; Myers and Lamm, 1976). Accordingly, scholars restated these findings in more general terms as 'group polarization.'

Group polarization can result from biases in both the group's information exchange and its information processing (Isenberg, 1986; Myers and Lamm, 1976). The group's information exchange can be biased for several reasons. First, individuals tend to emphasize position-consistent arguments and avoid expressing counterarguments so that they can present the self favorably and confidently before others (Leary *et al*., 1994; Vohs, Baumeister, and Ciarocco, 2005). Accordingly, arguments in favor of members' pre-meeting average position tend to be overemphasized during the discussion while arguments that can reveal the uncertainties of supporting such a position tend to be poorly expressed.

Second, as group discussions reveal the prevailing position supported by most members, individuals may tend to avoid expressing concerns about the prevailing position due to the social risks of voicing minority opinions (Moscovici and Doise, 1994). A substantial body of group research suggests that individuals who voice minority opinions tend to receive more negative evaluations from others (Moscovici and Doise, 1994). Therefore, as group members emphasize position-consistent arguments and avoid revealing minority opinions, arguments that are consistent with members' pre-discussion average position tend to prevail while counterarguments tend to be poorly represented during group discussions.

Groups may also be biased in processing information. Members may develop enhanced confidence about supporting their initial position when arguments in favor of the position prevail and become particularly salient and accessible (see

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reviews by Echterhoff, Higgins, and Groll, 2005). Conversely, counterarguments may appear to be less salient to group members as fewer people tend to raise them. Members may also become increasingly certain about supporting the initial member position when they observe that most members seem to share similar views (Baron *et al*., 1996). By contrast, members with minority opinions may become even less confident about questioning the prevailing position when most people seem to have few concerns about that position.

The tendency to develop enhanced confidence about supporting the group's initial position can be further amplified by a general 'lay dispositionalism,' an attribution bias in interpreting others' public behaviors (Hewstone, 1991; Ross and Nisbett, 1991). Specifically, an individual may tend to overattribute others' support for the prevailing position to their confidence about the position while underattributing such support to other avoidance motivations, such as motivations to avoid voicing minority opinions or motivations to avoid revealing position-inconsistent information. Accordingly, group members can become excessively confident about supporting the prevailing position when they overestimate the confidence of others about that position; conversely, they may become particularly hesitant to raise concerns about the prevailing position as they underestimate the extent to which others share such concerns. Since individuals' enhanced confidence about supporting a position (e.g., to take a risk) tends to be manifested in their support for a more extreme position (e.g., to take a greater risk) (Stroebe and Fraser, 1971; Zalesny, 1990), the collective decision made after group discussions tends to be more extreme than the pre-discussion average position of members.

Group polarization is distinct from groupthink (Janis, 1972). While group polarization occurs when a group decision amplifies the members' pre-meeting average position, groupthink typically does not compare a group decision with the initial average position of members (Janis, 1972; Whyte, 1998). In addition, whereas Janis (1972) suggested that groups are most likely to experience groupthink under a set of antecedent conditions such as high social cohesion, directive leadership, and insulation from experts, these antecedents are not necessary for group polarization to occur. Finally, while groupthink is typically associated with disastrous group decision outcomes, group polarization can sometimes lead to more desirable outcomes (e.g., Myers and Bishop, 1970).

Group polarization has also been demonstrated in social psychology research to have important effects on group dynamics that are distinct from biases such as pluralistic ignorance, which is a systematic tendency for group members to underestimate the extent to which others share their concerns about certain practices or events (Miller, Monin, and Prentice, 2000). For instance, Westphal and Bednar (2005) found that there was a systematic tendency for directors to underestimate the extent to which other directors share their concerns about the viability of the firm's strategy. In contrast, group polarization is a tendency for group members to amplify their pre-discussion average position in their post-discussion collective decision. Although some studies have suggested that pluralistic ignorance can sometimes become a mechanism underlying group polarization (there is rich evidence that pluralistic ignorance often does not lead to polarized group decisions (see Miller *et al*., 2000) and that group polarization can occur in the absence of pluralistic ignorance (Myers and Lamm, 1976).

Group polarization is typically defined as a group-level phenomenon (Burnstein and Vinokur, 1977; Friedkin, 1999; Isenberg, 1986), in part because the biases of members are interdependent. Biases in information exchange and processing should only persist to the extent that they are shared by others. If other members are less biased than a focal person in exchanging and processing information, they will express their concerns about the prevailing position more fully, thus lessening the focal person's bias. In addition, known antecedents of group polarization are group-level factors. For example, in a series of studies, Burnstein and Vinokur (1973, 1977) have shown that group polarization bias depends on the number and persuasiveness of exchanged arguments in favor of members' pre-discussion average position (i.e., when group information exchange is less biased in favor of the initial position, polarization biases are lessened). As discussed further below, the theoretical arguments in the present study suggest that the increased influence of members with minority opinions and open communications resulting from demographic homogeneity may present two important moderators of group polarization bias. Therefore, theory and evidence on group polarization consistently suggest that this phenomenon

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can be better explained by the collective biases of group members than the biases of any one individual.

Group polarization and board discussions about acquisition premiums

Social psychological studies on group polarization have typically compared members' pre-discussion average position or inclination to the post-discussion collective decision to see if the group's decision amplified members' pre-discussion average position (Burnstein and Vinokur, 1973, 1977; Isenberg, 1986; Myers and Lamm, 1976). The post-meeting decision in the present study is the focal acquisition premium. Because a premium is a standardized measure of overpayment relative to the target's market price, premiums can be compared across firms. I explain below why directors' pre-meeting average position can reflect their average prior premium experience.

Specifically, behavioral research on organizations suggests that the limited cognitive resources of decision makers often cause them to rely on prior experience to make complex and uncertain decisions such as those concerning acquisitions (Hambrick and Mason, 1984). Psychological research similarly suggests that previous decisions often serve as reference points or anchoring points in subsequent uncertain decisions (Tversky and Kahneman, 1974). Moreover, studies on interlock network diffusion provide strong evidence that directors tend to use the average decision that they were previously exposed to on various boards as models for imitation in subsequent board decisions (Davis, 1991; Mizruchi, 1996; Palmer *et al*., 1993), including decisions about acquisition premiums (Haunschild, 1994). This is also consistent with evidence from the decision-making literature, which suggests that individuals' subsequent judgments tend to reflect their previously endorsed collective decisions as they develop beliefs to justify their previous behaviors (Festinger, 1957; Whyte, 1993). The average premium previously experienced by directors across various boards should therefore reflect the premium that they tend to support prior to discussions about the focal premium.

Qualitative research on boards suggests that social norms encourage directors to express views in a confident manner, which leads them to suppress arguments that may convey uncertainties about their supported positions (Lorsch and Maclver, 1989: 88). For example, when directors on average would support a relatively high premium, they might emphasize that a high premium is essential to win the competition of acquiring a valuable target (Jennings and Mazzeo, 1993), that a high premium is justified considering the expected high synergies from combining two firms (Gupta and Gerchak, 2002), that a similarly high premium is common and legitimate in many previous acquisitions (Haunschild, 1994), and so on. By contrast, when directors on average would support a relatively low premium before a board meeting, they may stress in board discussions that a low premium is critical to ensuring that the acquisition will achieve positive returns (Hayward and Hambrick, 1997), that a low premium will help avoid the threat of lawsuits (Black, Cheffins, and Klausner, 2006), and that a low premium has been common and successful in many other previous acquisitions (Haunschild, 1994). Accordingly, information in favor of directors' pre-discussion average position is likely to be overemphasized while counterarguments may tend to be poorly represented during board meetings.

Moreover, as group discussions reveal the position favored by most directors, those who initially have reservations about such a prevailing position may hesitate to express their concerns due to social risks of voicing minority opinions (Moscovici and Doise, 1994; Westphal and Bednar, 2005). As discussed above, individuals who voice minority opinions tend to receive more negative evaluations from others (Moscovici and Doise, 1994). Expressing minority opinions may lead to less favorable evaluations by fellow directors who have similar social status and often control access to resources and positions that are potentially important for directors. For example, when the majority of directors are expressing their enthusiasm about approving a high premium because of the expected high synergies, a director who expresses concerns about high premiums may be viewed as trying to be different, challenging fellow directors' judgment and initiative, or being incapable of understanding the target's strategic importance, and thus lose potential opportunities to be nominated by fellow directors to serve on other boards (Westphal and Bednar, 2005). In addition, evidence suggests that the average level of social cohesion (e.g., level of friendship ties) among directors is relatively low (Westphal, 1999) and low social cohesion

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has been shown to increase concerns of voicing minority opinions (Moscovici and Doise, 1994). Accordingly, information exchange during board discussions tends to be biased toward favoring a relatively high (or low) premium when directors on average experienced a high (or low) premium in prior acquisitions across different boards.

Directors also tend to become increasingly confident about supporting high (or low) premiums when arguments in favor of high (or low) premiums prevail and become particularly salient and accessible (Echterhoff *et al*., 2005), when they perceive such arguments to be shared by others (Baron *et al*., 1996), and if they tend to overattribute fellow directors' support for a high (or low) premium to their confidence about paying a high (or low) premium and underattribute such support to avoidance motivations (e.g., motivations to avoid revealing minority status) (Ross and Nisbett, 1991; Westphal and Bednar, 2005). There are also reasons to believe that directors are especially likely to experience the biased attributions noted above. For one thing, the conventional boardroom configuration typically makes directors highly visible to each other. Observing that most directors are expressing support for the prevailing position can thus lead to the attribution bias noted above, resulting in group polarization. Moreover, there is evidence that directors typically do not interact with each other outside the boardroom to discuss strategic issues (Lorsch and MacIver, 1989; Westphal and Bednar, 2005), reducing the likelihood that they will correct biased attributions through informal communications. As a result, when the prior premium experience of directors would lead them on average to support a relatively high (or low) premium prior to a board meeting, they will develop enhanced confidence about supporting a high (or low) premium following board discussions. Social psychological studies suggest that individuals' enhanced confidence about a position tends to be manifested in their support for a more extreme position (e.g., Stroebe and Fraser, 1971; Zalesny, 1990). This suggests that directors' enhanced confidence about a high (or low) premium will lead to their collective support for an even higher (or lower) focal premium than the average premium they experienced in prior acquisitions.

Hypothesis 1: When the average prior premium experienced by directors is relatively high (or low), the focal premium will become even higher (or lower) than the average prior premium experienced by directors.

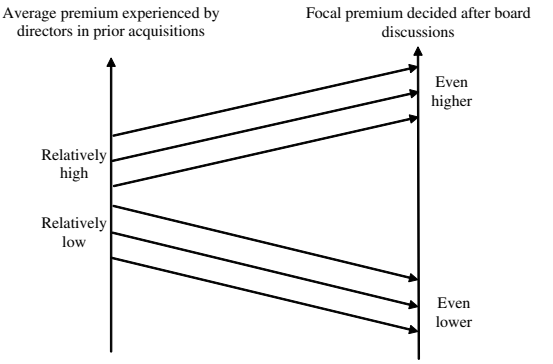

Figure 1. The group polarization effect

The group polarization effect is illustrated in Figure 1.

Demographic homogeneity and group polarization

The level of demographic homogeneity among directors may influence the extent to which group polarization is present on corporate boards. Whereas cognitive perspectives on group diversity often emphasize the benefits of having diverse perspectives and diverse groups (Hambrick and Mason, 1984), social psychological perspectives have long suggested that demographic heterogeneity can reflect low degrees of social integration and difficulties in communications (Hambrick, Cho, and Chen, 1996; Michel and Hambrick, 1992; Smith *et al*., 1994; also see reviews by Westphal and Bednar, 2005; Williams and O'Reilly, 1998). In the present study, demographic heterogeneity is also expected to exacerbate group polarization bias by reducing effective communications among directors.

A substantial body of research on group demography suggests that similarity on salient demographic characteristics tends to increase interpersonal trust and promote open communications among group members (Smith *et al*., 1994; Williams and O'Reilly, 1998), while demographic diversity can lead to increased conflict and reduced social cohesion (see reviews by Westphal and Bednar, 2005; Williams and O'Reilly, 1998). Members are more likely to communicate openly with

DOI: 10.1002/smj

each other when their common backgrounds and experiences provide a common vocabulary and the basis for interpersonal trust and mutual understanding. Recent research on board decisions also provides evidence that demographic homogeneity among directors similarly increases interpersonal trust, which in turn increases the openness of communications among directors (Westphal and Bednar, 2005). Therefore, although directors generally tend to present arguments to support their favored positions and avoid expressing uncertainties about supporting such positions, they are more likely to acknowledge such uncertainties when there is a relatively high level of interpersonal trust and relatively open communications on more homogeneous boards. In addition, concerns about voicing minority opinions can also be reduced when directors trust each other and tend to be less hesitant to have open discussions (Moscovici and Doise, 1994). These arguments suggest that demographic homogeneity can reduce polarization bias by facilitating effective information exchange among directors.

Moreover, although arguments in favor of high (or low) premiums may still prevail when directors on average tend to support a high (or low) premium, directors may perceive these arguments to be less salient and accessible when they publicly express arguments both pro and con and observe that such arguments are shared by others. Thus, biases in information processing may also be less pronounced when directors' common demographic backgrounds allow them to trust each other more and express their opinions more openly. Taken together, these arguments suggest that group polarization bias can be reduced by the degree of demographic homogeneity among directors.

Hypothesis 2: When the average prior premium experienced by directors is relatively high (or low), demographic homogeneity among directors will reduce the extent to which the focal premium exceeds (or falls below) the average prior premium experienced by directors.

Acquisition expertise of the minority and group polarization

The minority group in the present study is the subgroup of directors who support the position held by less than half of directors, and the term 'minority' is consistently used here to refer to group members who support a minority position, rather than describing members' demographic characteristics. As discussed earlier, one important source of the group polarization bias is the poor representation of minority opinions during group decisions (Moscovici and Doise, 1994; Westphal and Khanna, 2003; Williams and O'Reilly, 1998). However, minority opinions may be better represented to the extent that directors with the minority viewpoint have more experience with acquisition decisions.

More specifically, when directors with the minority viewpoint have more experience in making acquisition decisions than the majority, the majority is more likely to rely on the minority's expertise in the process of determining acquisition premiums. Social psychological research on group decisions suggests that group members often rely on experts for important information related to the task, such that experts' opinions are relatively well expressed in group decisions (Vinokur *et al*., 1985). There is also evidence that experts are often sought out for advice in making board decisions, including decisions about acquisitions (McDonald, Westphal, and Graebner, 2008). Accordingly, although generally minority opinions are not well represented during board decisions, directors with the minority viewpoint who have rich acquisition experience may have more opportunities to express their views as fellow directors invite them to do so. Accordingly, biases in group information exchange and the resulting polarization effect can be reduced when the minority has more acquisition experience.

In addition, when the minority has more acquisition experience than the majority, biases in group information processing may also be reduced. More specifically, the expertise of the minority can grant their arguments more credibility, making arguments that challenge the prevailing position especially salient and reducing the dominance of arguments that support the majority's position. There is rich evidence from social psychological research that the perceived expertise of the message source tends to increase the salience and persuasiveness of the message to the recipient in making complex decisions (DeBono and Klein, 1993; cf. Fiske and Taylor, 2008). Accordingly, while arguments supportive of the majority's position may still prevail in board discussions, the credibility of the minority's arguments may help dampen the board's confidence about the

DOI: 10.1002/smj

prevailing position, thus reducing biases in group information processing and the resulting polarization effect. This is also consistent with research on corporate elites, which similarly suggests that top executives with relevant expertise can obtain expert power and may have a significant influence on related strategic decisions (Finkelstein, 1992; McDonald *et al*., 2008).

In sum, although minority opinions are usually poorly represented during board decisions, such biases can be reduced when the minority has more experience with acquisition decisions than the majority, reducing the group polarization effect.

Hypothesis 3: When the average prior premium experienced by directors is relatively high (or low), the acquisition experience of minority viewpoint directors will reduce the extent to which the focal premium exceeds (or falls below) the average prior premium experienced by directors.

Board influence and group polarization

The extent to which group polarization on boards will be manifested in premium decisions may also depend on the degree to which directors can influence premium decisions. Although there is evidence that both outside and inside directors are very involved in premium decisions and can have substantial influence on this decision (Beckman and Haunschild, 2002; Haunschild and Beckman, 1998), research also suggests that the extent to which outside directors influence strategic decisions through monitoring and advising management can vary across companies (Shropshire, 2010; Westphal, 1999). For instance, long-tenured outside directors are more familiar with the focal firm's resources and methods of operation and hence can have greater influence on strategic decisions through better monitoring and advising management on these decisions (Finkelstein, 1992; Westphal and Zajac, 1995). Similarly, outside directors who have board appointments at multiple firms are typically viewed as more legitimate in the boardroom and can be better positioned to advise and monitor management on strategic decisions (Finkelstein, 1992; Shropshire, 2010; Westphal and Khanna, 2003). Research also suggests that outside directors can have a greater influence on strategic decisions when the percentage of outside directors is relatively high and when the CEO and the board chair positions are occupied by different individuals (see reviews by Dalton *et al*., 1998). Therefore, the extent to which group polarization on boards is manifested in premium decisions may depend on the extent to which boards can influence such strategic decisions through monitoring and advising management. This suggests that the board's influence will be positively associated with the degree of group polarization effects in premium decisions.

Hypothesis 4: When the average prior premium experienced by directors is relatively high (or low), the board's influence on strategic decisions will increase the extent to which the focal premium exceeds (or falls below) the average prior premium experienced by directors.

DATA AND METHOD

Sample and data

The sample included acquisition premiums paid by firms on the 1995 *Fortune* 500 Companies list between 1995 and 2006 on 691 acquisitions recorded by the Securities Data Corporation (SDC). Missing data on independent and control variables resulted in a final sample of 541 premium decisions by 199 firms, which is comparable to the sample size reported in prior studies (Beckman and Haunschild, 2002; Haunschild, 1994). In addition, acquisition premium decisions made by all public firms between 1991 and 2006 were also collected from the SDC dataset to track directors' prior premium experience across all boards. Two-sample t-tests revealed no significant differences between the initial 691 premium decisions and the final 541 premium decisions with respect to the dependent variable or the control variables. I also adopted the Heckman sample selection model to address potential sample selection biases.

Data about board membership came from the Compact Disclosure database (1991–2006), which contains information from 10-K filings reported to the Securities and Exchange Commission and is perhaps the most comprehensive dataset for director membership information. I developed a set of computer programs to correct typographical and spelling errors in directors' names. Among several million name-year-board records, only about one percent of the records could not be cleaned

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by systematic programming. I then generated common variations of the same name (e.g., 'Owen-Smith' will correspond to 'Owen-Smith,' 'Smith-Owen,' 'Owen Smith,' and 'Smith Owen') and used the name and birth year of a *Fortune* 500 director to identify the director's board appointments across all publicly traded U.S. companies over time. I also adopted three increasingly strict name matching criteria, affecting about five percent of the matched records, but did not find any systematic difference in the results. Biographies of directors mainly came from Capital IQ (previously *Standard & Poor's Register*), supplemented by *Marquis' Who's Who*, corporate proxy statements, and annual reports (Michel and Hambrick, 1992; Westphal and Zajac, 1995). Two research assistants independently coded these biographies and the intercoder reliability is high (0.89). Other information came from various sources, including COMPUSTAT, CRSP, Thomson Financials, and IRRC.

Dependent and independent variable

Focal acquisition premium was measured by the percentage difference between the actual price paid to a target firm and the market price of the target before the acquisition event (Beckman and Haunschild, 2002; Hayward and Hambrick, 1997). To avoid stock price distortions caused by information leakage surrounding the acquisition announcement, the SDC calculated the premium as the percentage difference between the final price per target share paid by the acquiring firm and the target's stock price several weeks before the announcement date (Haunschild, 1994). In the primary analysis, I used premiums calculated four weeks prior to the announcement dates. In separate analyses, I also used different time periods to calculate premiums (i.e., one week and one day) and calculated the industry-adjusted premium by subtracting the yearly average premium in the acquired firm's primary industry from the focal premium. Using these alternative measures generated consistent results.

Average prior premium was calculated as the grand mean of all premiums experienced by a focal board of directors across all boards, including the focal board, during the prior 48-month period (month t-48 to t-1, inclusive). Observations were dropped when data for over a quarter of directors' prior premium experience were missing (Westphal and Zajac, 1995). The grand mean is simply the mean of individual-level average prior premiums. As discussed above, the average prior premium of the focal board of directors should be a reasonable measure of these directors' pre-meeting average position (Davis, 1991; Haunschild, 1994; Mizruchi, 1996; Palmer *et al*., 1993). This is also consistent with evidence from social psychological research on judgment, which suggests that individuals' subsequent judgments tend to reflect their previously endorsed collective decisions as they develop beliefs to justify their previous behaviors (Festinger, 1957; Whyte, 1993). Moreover, research on *Fortune* directors also suggests that directors of major companies tend to present their decisions as reflecting consensus and having the board's unanimous support (Hirsch, 1982; Westphal and Khanna, 2003). Therefore, the grand mean of all premiums experienced by the focal board of directors across all boards should capture the average premium that these directors tend to support prior to board discussions about the focal premium. In separate analyses, I also used different lag structures (e.g., month t-36 to t-1 and month t-24 to t-1) and used the *median prior premium* to replace the average prior premium of directors and found consistent results.

Demographic homogeneity was measured according to five demographic characteristics that have been shown to be salient bases for promoting interpersonal trust and open communication among top executives (Boivie, Graffin, and Pollock, 2012; Hambrick *et al*., 1996; Smith *et al*., 1994; Westphal and Bednar, 2005), including gender, industry of employment, highest degree (i.e., PhD, Masters, Bachelors, or lower), Ivy League educational background, and functional background.[3] Following existing studies on demographic homogeneity (e.g., Westphal and Zajac, 1995), I calculated homogeneity on each demographic characteristic by using a variant of Blau's index, defined as $\sum (P_i)^2$, where P_i is the proportion of directors in the i^{th} category (i.e., functional background, primary industry of employment, having an Ivy League degree or

[3] Functional backgrounds were coded into three categories: throughput functions (production, operations, process engineering, and accounting), output functions (marketing and sales, and research and development), and peripheral functions (finance, law, human resource, and labor relations) (Hambrick and Mason, 1984; Westphal and Zajac, 1995).

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not, highest degree obtained, and gender). The primary measure of demographic homogeneity was an index calculated as the sum of standard scores of the above five measures of demographic homogeneity. I also created an index measure of demographic homogeneity by using principal components analysis (PCA) (Jackson, 1991), a data reduction technique that has been shown to be appropriate for combining causal indicators of a construct (MacCallum and Browne, 1993). I standardized all measures of demographic homogeneity in PCA to account for PCA's sensitivity to variable scales and used PCA without rotations to ensure the maximum variance property of principal components. Results based on these two alternative measures were essentially identical.

Minority expertise was calculated as the average number of acquisitions experienced by minority viewpoint directors 48 months prior to the focal decision divided by the average number of acquisitions experienced by the majority in the same time period. To identify a director as a minority viewpoint director, I first followed existing group polarization research to identify the reference point for relatively high or low premiums through a *post hoc* analysis. Because it is often difficult to conceptually specify a reference point *ex ante*, most studies on group polarization based on lab experiments have also adopted this approach to reveal the reference point (see reviews by Myers and Lamm, 1976). As discussed further below, the revealed reference point was 36 percent in this study. It is very close to the mean (34%) and median (38%) premium in the study period and is comparable to the median premium (36%) reported by Factset/Mergerstat's recent control premium study (2009). Thus, the revealed reference point also makes intuitive sense. If more than 50 percent[4] of directors on the focal board experienced average premiums that were higher (or lower) than 36 percent, a director whose average prior premium was lower (or higher) than 36 percent was labeled as a minority viewpoint director. I then calculated the minority expertise variable as the average number of acquisitions experienced by all minority viewpoint directors on the focal board divided by the average number of acquisitions experienced by all majority directors in the prior 48 months. Results from separate analyses further suggest that the moderating effects of minority expertise were robust to the specification of alternative reference points, including the mean premium (34%) and the median premium (38%) in the entire study period and the mean and median premium paid by *Fortune* firms in the previous three-year and four-year periods. Moreover, the moderating effect of minority expertise remained significantly negative when I dropped boards whose directors' average prior premium fell between 20 and 50 percent (i.e., within 0.5 standard deviation from the mean), further suggesting that the results are robust to the specification of reference points. The primary analyses thus used 36 percent as the reference point in measuring minority expertise.

Board influence was measured based on four different variables that have been widely used to measure outside directors' influence on strategic decisions (see reviews by Finkelstein, Hambrick, and Cannella, 2009; Shen, 2003). The first measure is the total tenure of outside directors on the focal board (Finkelstein, 1992; Westphal and Zajac, 1995). The second measure is the total number of board appointments held by all outside directors (Certo, 2003; Shropshire, 2010; Westphal and Khanna, 2003). The third measure is the proportion of outside directors on the board (Finkelstein *et al*., 2009). The fourth measure is the structure of the board in terms of the separation of CEO and board chair positions (Boyd, 1995; Dalton *et al*., 1998). I used the sum of standard scores of these four variables as the primary measure of board influence. I also combined these four measures of board influence into a single index by using principal components analysis, as noted above (Jackson, 1991). Results based on this alternative measure were essentially identical to the results based on the primary measure.

Control variables

I controlled for the *size of the acquirer*, *the performance of the acquirer*, *the size of the target*, *and the performance of the target*. Firm size was measured by the logarithm of total assets and firm performance was measured by return on equity (ROE) 12 months prior to the acquisition. I also controlled for the *number of bidders* (Jennings and Mazzeo, 1993), *completed acquisition* (a dummy variable set to 0 if not completed), *product market synergy* (measured by industry-relatedness using

[4] In separate analyses, 55 percent and 60 percent are used and the findings are very consistent.

Standard Industrial Classification or SIC codes: equal to i if the target and the acquirer share a common i-digit SIC code, where i = 1, 2, 3, and 4; and 0 if the target and the acquirer are in unrelated industries), *financial synergy* (measured as debt/equity ratio of the target minus the same ratio of the acquirer) (Gupta and Gerchak, 2002; Haunschild, 1994; Hayward and Hambrick, 1997), and the *method of payment* (a dummy variable set to 1 if over half of the payment was in cash) (Faccio and Masulis, 2005). To control for the influence of investment bankers (Haunschild, 1994; Haunschild and Beckman, 1998), I further included *the mean premium of involved investment bankers* in the prior 48 months and the logarithm of *involved investment bankers' total number of prior deals* in the same period (Haunschild, 1994; Haunschild and Beckman, 1998) in the analysis. I also controlled for three factors that can reflect corporate governance practices. These factors are the percentage of *institutional ownership*, the index of *board influence* as described above, and whether any *takeover defense* has occurred during the focal acquisition (set to 1 if there was a defense). Following Beckman and Haunschild (2002), I further controlled for the *diversity of network partners' prior premiums* (measured as the coefficient of variation of interlock network partners' prior premiums, i.e., the standard deviation of partners' prior premiums divided by partners' mean prior premium).[5] In addition, I followed prior studies to control for the focal firm's prior acquisition experience by using the logarithm of *the focal firm's total number of prior deals* in the prior 48 months (Beckman and Haunschild, 2002). I also controlled for the average premium paid by the focal firm in the prior 48 months *(focal firm's average prior premium)*. Moreover, excessively high levels of premiums may also result from CEOs' overconfidence (Hayward and Hambrick, 1997). Thus, I controlled for the *acquirer's prior stock return* (i.e., stock return in the previous year) and *CEO relative cash compensation* (measured as the focal CEO's cash compensation divided by the cash compensation of the second-highest-paid executive officer). Hayward and Hambrick (1997) reported that these two variables were correlated with their CEO hubris index at 0.46 and 0.74, respectively. Accordingly, these two variables can partially control for CEO hubris. *Board size* was also included because existing research on group dynamics suggests that the size of the group may sometimes influence group decisions (Moscovici and Doise, 1994). Finally, primary industry of the acquirer and year of the acquisition were controlled for by using *industry dummies* and *year dummies*, respectively.

Analytical methods

As suggested by prior group polarization research (e.g., Friedkin, 1999), a straightforward method of detecting the group polarization effect is to regress the focal premium on directors' average prior premium to see if the coefficient for directors' average prior premium is significantly greater than 1 (i.e., if the slope of the regression line is greater than 45 degrees).

As illustrated in Figure 2, on the 45-degree line the focal premium equals directors' average prior premium, holding constant other factors that may influence focal premiums. The intersection of the 45-degree line with the estimated regression line (i.e., the bold solid line) reveals the *reference point*. The bold solid regression line on the right side of the reference point suggests that, holding other factors constant, the focal premium decided after board discussions will become higher than the premium on the 45-degree line (i.e., higher than directors' average prior premium). The regression line on the left side of the reference point suggests that the focal premium decided after board discussions will become lower than the premium on the 45-degree line (i.e., lower than directors' average prior premium). Therefore, a regression line with a greater than 45-degree slope will reflect the group polarization effect. Such a regression line suggests that when directors' average prior premium is higher than (i.e., on the right side of) the reference point, the focal premium made after board discussions will become even higher than directors' average prior premium; but when directors' average prior premium is lower than (i.e., on the left side of) the reference point, the focal premium made after board discussions will become even lower than directors' average prior premium. In contrast, a

[5] In separate analyses, I further included the interaction of this variable with directors' average prior premium because the diversity of members' initial opinions may potentially influence the degree of polarization (Burnstein and Vinokur, 1977). Including or excluding the interaction term did not change the findings of this study.

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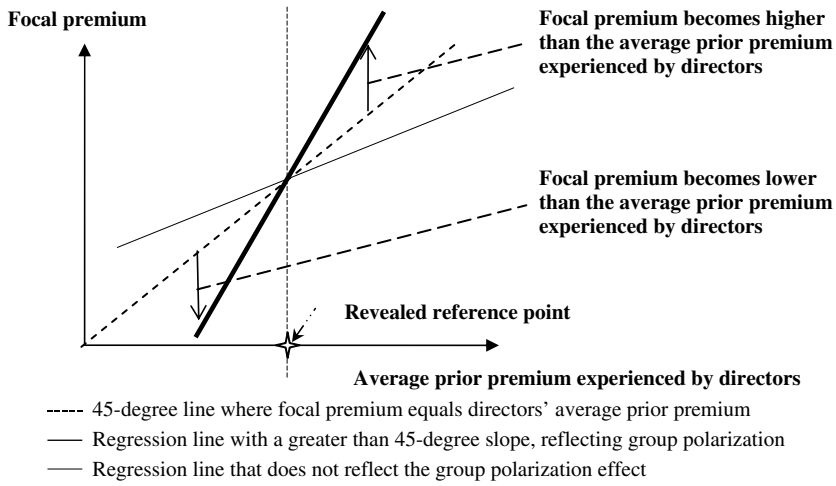

Figure 2. Group polarization effect in regressions

regression line with a less than 45-degree slope (e.g., the thin solid line) will not reflect such a group polarization effect. To test the hypothesized moderating effects, I examine the interaction effects between directors' average prior premium and the proposed moderators.

It is worth noting that a regression line with a greater than 45-degree slope also indicates a strengthened or distorted network diffusion effect. Specifically, existing research has shown the network diffusion effect by a positive association between the focal decision and directors' average prior decision across various boards (Davis, 1991; Haunschild, 1993, 1994; Palmer *et al*., 1993), indicating that a unit increase (or decrease) in directors' average prior premium will simply increase (or decrease) the focal premium, holding other factors constant. In contrast, a greater than one regression coefficient for the variable of directors' average prior premium suggests that a unit increase (or decrease) in directors' average prior premium will cause a more than one unit increase (or decrease) in the focal premium, holding everything else constant. Accordingly, a greater than one regression coefficient also reflects a distortion or strengthening of the network diffusion effect.

Because acquisition premiums were not observed randomly, the sample may not be considered a random sample of acquisitions made by *Fortune* 500 companies. Accordingly, I adopted the Heckman sample selection model with robust standard errors to test the hypotheses. The selection model included 3,424 acquisitions made by *Fortune* 500 companies in the study period. Variables used in the selection model included the acquirer's prior number of acquisitions, total number of acquisitions in the acquirer's primary industry, total number of acquisitions by the acquirer's interlock network partners, size of the acquirer, size of the target, prior performance of the acquirer, synergies between the acquirer and the target, CEO duality (acquirer), proportion of outside directors (acquirer), industry dummies, and year dummies. To assess the robustness of the findings, I further adopted the feasible generalized least squares (GLS) models, ordinary least squares models with clustered and robust standard errors, and the GLS random-effects models to analyze the data. The results from these models were consistent with the reported results based on the Heckman selection models.

RESULTS

Table 1 presents descriptive statistics and bivariate correlations for key study variables. Table 2 reports findings based on a paired t-test. As shown in Table 2, when directors' average prior premium is high, the focal premium tends to be significantly higher than directors' average prior premium; but when directors' average prior premium is low, the focal premium tends to be significantly lower than the average prior premium. These results were obtained without controlling for other factors that may influence premium decisions and, hence, should only be taken as preliminary evidence.

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Table 1. Descriptive statistics and pearson correlation coefficients[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11
1. Focal premium	37.54	33.15											
2. Average prior premium	37.16	20.45	0.75										
3. Board influence	0.02	2.60	0.02	0.05									
4. Demographic homogeneity	−0.22	2.38	0.05	0.05	−0.15								
5. Minority expertise	1.20	1.28	−0.09	−0.05	0.04	−0.11							
6. Size of the acquirer	9.93	1.44	−0.15	−0.15	0.23	−0.27	0.00						
7. Size of the target	6.41	2.09	−0.16	−0.07	0.08	−0.08	0.08	0.37					
8. Acquirer ROE	0.19	0.17	0.04	0.06	0.08	−0.10	−0.07	0.04	−0.06				
9. Target ROE	2.32	88.98	0.00	−0.02	0.00	0.03	0.08	−0.03	0.18	−0.03			
10. Number of bidders	1.10	0.38	0.12	0.13	−0.11	0.05	0.01	−0.05	0.18	−0.06	0.04		
11. Completed acquisition	0.90	0.30	0.06	0.07	0.08	−0.02	−0.01	0.04	−0.12	0.01	−0.04	−0.24	
12. Product market synergy	2.02	1.62	−0.03	−0.03	0.07	0.02	0.02	0.01	0.24	0.06	0.03	0.15	−0.06
13. Financial synergy	39.56	278.69	−0.05	−0.07	0.09	−0.11	−0.01	0.23	0.21	0.00	0.01	0.01	−0.01
14. Method of payment	0.52	0.50	0.11	0.09	0.04	0.05	−0.11	0.05	−0.18	0.03	−0.05	0.05	0.02
15. Mean premium of inv. banker	27.62	20.78	0.15	0.17	0.10	−0.04	0.19	−0.06	0.23	−0.01	0.08	0.10	0.06
16. Inv. bankers total prior deals	5.14	1.17	−0.10	−0.10	0.07	−0.03	−0.05	0.07	0.05	0.05	−0.01	−0.03	0.03
17. Institutional ownership	59.40	18.28	0.09	0.09	0.09	0.01	0.03	−0.36	−0.12	−0.02	0.02	0.05	0.04
18. Takeover defense	0.01	0.07	0.05	0.01	−0.01	0.08	0.06	0.00	0.04	−0.03	0.00	0.11	−0.14
19. Diversity of partner's premium	1.45	2.29	−0.04	−0.03	−0.08	0.19	−0.11	−0.11	−0.03	−0.05	0.01	−0.02	0.00
20. Focal firm total prior deals	1.47	1.01	−0.03	−0.07	0.10	−0.08	−0.18	0.31	−0.08	0.14	−0.12	−0.06	0.06
21. CEO relative cash compenp.	2.01	0.97	0.08	0.05	0.00	0.05	−0.11	−0.11	0.01	0.07	−0.02	0.11	−0.03
22. Acquirer prior stock return	25.87	181.74	−0.05	−0.06	−0.21	0.02	0.00	0.13	0.05	−0.10	0.02	−0.03	0.01
23. Focal firm ave. prior premium	19.41	26.49	0.10	0.33	0.12	0.05	−0.17	0.12	−0.03	0.10	−0.06	−0.03	0.07
24. Board size	12.68	4.50	−0.02	−0.02	0.12	−0.26	0.03	0.30	0.12	0.02	0.00	−0.02	0.01

Table 1. *Continued*

Variable	12	13	14	15	16	17	18	19	20	21	22	23
13. Financial synergy	0.00											
14. Method of payment	−0.12	0.02										
15. Mean premium of inv. banker	0.05	−0.05	−0.12									
16. Inv. bankers total prior deals	0.04	−0.04	−0.07	0.11								
17. Institutional ownership	−0.02	−0.09	−0.06	0.08	−0.06							
18. Takeover defense	0.08	0.09	−0.03	0.06	−0.07	−0.09						
19. Diversity of partner's premium	−0.03	−0.04	−0.01	−0.01	−0.07	0.04	0.09					
20. Focal firm total prior deals	−0.03	0.11	0.15	−0.14	0.02	−0.07	−0.01	−0.04				
21. CEO relative cash compenp.	0.08	0.03	0.05	0.03	0.01	0.09	0.05	0.00	0.00			
22. Acquirer prior stock return	−0.13	0.00	0.09	−0.09	0.04	−0.25	−0.01	−0.01	0.03	−0.22		
23. Focal firm ave. prior premium	−0.02	0.00	0.09	0.03	0.03	−0.01	0.07	−0.09	0.30	0.07	0.01	
24. Board size	0.02	0.16	0.00	0.01	0.00	−0.06	−0.04	0.16	0.10	−0.02	−0.18	−0.04

[a] N = 541; coefficients greater than 0.085 are significant at $p < 0.05$.

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Table 2. Results from paired T test (N = 541)

	Average prior premium	Focal premium	Difference	p-value (one-tail)
Boards with a relatively high average prior premium (N = 267)	52.615	56.337	3.722***	0.006
Boards with a relatively low average prior premium (N = 274)	22.095	19.219	−2.876***	0.009

*** $p < 0.01$

Table 3 reports results from the Heckman sample selection models. The dependent variable is the focal premium. Model 1 is the base model, containing only the control variables. Model 2 adds the average prior premium variable. Models 3–5 further add interaction terms. I discuss the findings based on the complete model (i.e., Model 5).

The results provide strong support for the hypotheses. As shown in Table 3, Hypothesis 1 is strongly supported. After controlling for other factors that may influence the focal acquisition premium, the coefficient for directors' average prior premium is significantly greater than 1 (model 5: $\beta = 1.27$, $p < 0.01$; significance is shown by using •••). This suggests that when directors' average prior premium was relatively high, the board supported an even higher focal premium after board discussions, but when directors' average prior premium was relatively low, the board supported an even lower focal premium following board discussions.

In a separate analysis, I replaced the average prior premium of all directors with the average prior premium of the *majority* viewpoint directors. The results of this analysis suggest that the majority also experienced polarization after board discussions. In other words, when the average premium previously experienced by all directors is relatively high, the focal premium becomes significantly higher than the average prior premium of the majority viewpoint directors (i.e., directors who experienced relatively high prior premiums); similarly, when the average premium previously experienced by all directors is relatively low, the focal premium is significantly lower than the average prior premium of the majority (i.e., directors who experienced relatively low prior premiums). This suggests that the group polarization effect cannot be fully explained by the majority rule or by the minority's conformance to the majority. It indicates that even the majority's initial position becomes more extreme after board discussions. Further analyses show that group polarization also occurs when the *median premium* previously experienced by directors is compared with the focal premium, confirming that the skewness of directors' prior premiums is not driving the observed group polarization effect (see reviews by Myers and Lamm, 1976). These results provide further support for the theoretical expectations of this study.

The results also support Hypothesis 2. As shown in Table 3, the interaction of demographic homogeneity and directors' average prior premium is significantly negative (Model 5: $\beta = -0.04$, $p < 0.01$). As predicted by theory, this suggests that the degree of demographic homogeneity (based on gender, functional background, education affiliation, highest degree, and industry of employment) reduces the extent to which the focal premium exceeds (or falls below) directors' average prior premium when the average premium previously experienced by directors is relatively high (or low). The results also suggest that, holding other moderating variables at their means, the polarization effect will disappear (i.e., when the coefficient of directors' average prior premium falls below 1) when demographic homogeneity reaches the 95th percentile of its value. This means that although demographic homogeneity can significantly reduce group polarization, it alone cannot completely eliminate polarization effects in most board decisions about acquisition premiums.

The results also provide support for Hypothesis 3. The interactions of directors' average prior premium and minority expertise are significantly negative (Model 5: $\beta = -0.03$, $p < 0.01$). This suggests that when directors' average prior premium is relatively high, the minority's acquisition expertise relative to the majority will reduce the

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Table 3. Results from Heckman sample selection models[a]

Variable	(1)	(2)	(3)	(4)	(5)
Directors' average prior premium[a]		1.26•••	1.23•••	1.25•••	1.27•••
		(0.02)	(0.02)	(0.02)	(0.03)
Directors' average prior premium X demographic homogeneity			−0.04***	−0.04***	−0.04***
			(0.01)	(0.01)	(0.01)
Directors' average prior premium X minority expertise				−0.03***	−0.03***
				(0.01)	(0.01)
Directors' average prior premium X board influence					0.03***
					(0.01)
Nonselection hazard[a]	−31.44***	−11.74***	−12.86***	−14.54***	−15.35***
	(2.57)	(1.44)	(1.38)	(1.34)	(1.47)
Demographic homogeneity	0.04	0.28	1.54***	1.41***	1.59***
	(0.29)	(0.17)	(0.34)	(0.34)	(0.40)
Board influence	0.16	0.13	0.01	−0.05	−1.21***
	(0.34)	(0.19)	(0.19)	(0.22)	(0.32)
Size of the acquirer	2.82***	1.18***	0.80**	0.84**	0.57*
	(0.81)	(0.33)	(0.36)	(0.37)	(0.34)
Size of the target	−5.59***	−3.32***	−3.32***	−3.66***	−3.46***
	(0.55)	(0.30)	(0.29)	(0.28)	(0.31)
Acquirer ROE	−5.00*	−3.50*	−4.05**	−4.09*	−4.89**
	(2.84)	(1.96)	(2.03)	(2.23)	(2.47)
Target ROE	0.004	0.01***	0.01**	0.01***	0.01***
	(0.01)	(0.002)	(0.003)	(0.002)	(0.002)
Number of bidders	10.40***	1.00	1.48*	1.76**	1.75**
	(1.45)	(0.85)	(0.87)	(0.86)	(0.83)
Completed acquisition	7.24***	0.55	0.32	1.18	0.19
	(1.79)	(1.16)	(1.13)	(1.16)	(1.18)
Product market synergy	3.70***	1.75***	1.99***	2.21***	2.30***
	(0.54)	(0.31)	(0.32)	(0.32)	(0.34)
Financial synergy	0.005	0.003	0.004	0.004	0.004
	(0.004)	(0.003)	(0.003)	(0.003)	(0.004)
Method of payment	8.43***	1.76***	1.97***	1.83***	1.79***
	(1.32)	(0.62)	(0.64)	(0.61)	(0.66)
Mean premium of inv. banker	0.09**	0.02	0.01	0.01	0.003
	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)
Inv. bankers total prior deals	−3.05***	−0.58*	−0.77**	−0.87***	−0.49
	(0.58)	(0.30)	(0.34)	(0.32)	(0.33)
Institutional ownership	−0.04	0.04**	0.03*	0.03	0.02
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)

Table 3. *Continued*

Variable	(1)	(2)	(3)	(4)	(5)
Takeover defense	22.72**	16.23	16.77	18.13	18.80
	(10.38)	(13.85)	(13.57)	(13.43)	(13.32)
Diversity of network partner's prior premium	−0.33**	−0.22	−0.25	−0.35*	−0.32*
	(0.16)	(0.21)	(0.20)	(0.18)	(0.18)
Focal firm total prior deals	3.20***	1.45***	1.42***	1.26***	1.32***
	(0.73)	(0.35)	(0.37)	(0.36)	(0.36)
CEO relative cash compensation	0.37	1.47***	1.35***	1.46***	1.29***
	(0.62)	(0.39)	(0.38)	(0.37)	(0.33)
Acquirer's prior stock return	−0.002	0.002	0.001	0.001	0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Focal firm's average prior premium	−0.06*	−0.22***	−0.21***	−0.22***	−0.23***
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Board size	0.34*	0.18	0.22*	0.20*	0.21*
	(0.20)	(0.11)	(0.12)	(0.11)	(0.12)
Industry and year dummies	included	included	included	included	included
Constant	111.53***	1.09	8.73	13.35**	14.08**
	(15.86)	(6.07)	(6.50)	(6.24)	(6.55)
Wald X^2 (p)	0.001	0.001	0.001	0.001	0.001

[a] Standard errors in parentheses;
* $p < 0.10$;
** $p < 0.05$;
*** $p < 0.01$; coefficients for 'Directors' average prior premium' are significantly greater than 1 at $p < 0.01$; N = 3,424 in the first-stage selection model.

extent to which the focal premium exceeds directors' average prior premium; but when directors' average prior premium is relatively low, the minority's acquisition expertise relative to the majority also reduces the extent to which the focal premium falls below directors' average prior premium. Further analysis shows that the polarization effect will disappear (i.e., when the coefficient of average prior premium falls below 1) when the minority experienced eight times more acquisitions than the majority. This indicates that the minority opinion held by acquisition experts can sometimes become the dominant opinion during board decisions, improving the representation of minority opinions and substantially reducing the group polarization effect.

Hypothesis 4 is also strongly supported. The interaction of directors' average prior premium and board influence is significantly positive (Model 5: $\beta = 0.03$, $p < 0.01$). Consistent with the theoretical prediction of this study and with prior group polarization research (Burnstein and Vinokur, 1973; Isenberg, 1986), this suggests that when directors' average prior premium is relatively high, greater board influence on premium decisions through monitoring and advising management will increase the extent to which the focal premium exceeds directors' average prior premium; but when directors' average prior premium is relatively low, greater board influence can also increase the extent to which the focal premium falls below directors' average prior premium. Further analysis shows that the polarization effect will disappear (i.e., the coefficient of average prior premium will fall below 1) when the board influence variable falls below its 15th percentile (or when management influence rises above its 85th percentile). This indicates that the opinion held by very influential managers can sometimes become the dominant opinion, making it unlikely that the board discussion effect will be manifested in premium decisions.

DISCUSSION

Overall, the findings provided strong support for the elaborated theory about group polarization on corporate boards. The results from various models consistently showed a tendency toward group polarization in board decisions about acquisition premiums. Specifically, the focal premium decided upon after board discussions significantly exceeded the average premium experienced by directors in prior deals when directors' average prior premium was relatively high. In contrast, the focal premium significantly fell below the average premium previously experienced by directors when directors' average prior premium was relatively low. Additional results provided evidence for specific social and psychological factors that can attenuate or exacerbate the group polarization bias on corporate boards. In particular, the findings suggested that both the acquisition expertise of the minority and the degree of demographic homogeneity among directors reduced group polarization significantly. In addition, the board's influence on strategic decisions can increase the degree of group polarization in premium decisions.

The theory and findings in this study make significant contributions to the corporate governance literature. While a substantial body of organizational research has examined the influence of boards on key corporate decisions from a social psychological perspective, there is very little systematic research on the group decision-making processes on boards and boardroom dynamics (Westphal and Bednar, 2005 is an exeption). The present study adds to the limited research on boardroom dynamics by introducing group polarization, a distinct and fundamental group decision-making bias, into the study of boards' strategic decision-making processes. In suggesting how strategic decisions may be influenced by group polarization on boards, the present study also complements prevailing economic and sociological research on corporate governance, which has largely focused on social and structural characteristics of boards, such as board structure, composition, and demography. In addition, the group polarization perspective yields novel insights into board behavior. For example, while prevailing perspectives on governance often emphasize the benefits of the board's influence on strategic decisions (Jensen, 1993; Pfeffer and Salancik, 1978), the theory and findings from this study suggest that board influence can also add certain group decision-making biases to strategic decisions and hence may not always be beneficial. In particular, although board influence can increase the tendency for directors to support an even lower focal premium when their average prior premium was low, it can also increase the tendency for directors to support an even higher focal premium when their average prior premium was relatively high.

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Group polarization theory also has important implications for the literature on social networks, especially research on the diffusion of practices and policies through board interlock networks (Davis, 1991; Mizruchi, 1996; Palmer *et al*., 1993). The present paper extends this literature by suggesting how the diffusion of practices through directorial ties may be subject to the influence of group processes. Specifically, while network diffusion research would predict a positive association between the focal decision and directors' average prior decision across various boards, group polarization theory suggests that biases in group information exchange and processing can cause directors to support a focal decision that is more extreme than their average prior experience, reflecting the distortion or strengthening of the diffusion effect. More generally, the present study extends recent research focusing on individual directors' influence on network diffusion (Shropshire, 2010) to group processes that can influence network effects.

The theory and findings of this study may also have implications for research on acquisitions and experience effects. Whereas research on acquisitions has examined individual-level cognitive biases such as CEO hubris (Hayward and Hambrick, 1997) and organizational learning (Hayward, 2002), this study introduces group-level social psychological biases into research on acquisitions. In addition, the theory and findings from this study also generate novel understandings about acquisition decisions. For example, whereas prior research on acquisitions has examined learning from prior acquisition experience (Hayward, 2002) or individual biases in acquisition decisions (Hayward and Hambrick, 1997), this study suggests that social psychological biases unique to group decisions may prevent directors from fully utilizing available information to learn from past experience such that their prior premium experience may not always improve subsequent premium decisions. More specifically, directors who on average experienced high premiums in the past tend to support an even higher focal premium following board discussions although directors who on average experienced low premiums in the past can support an even lower focal premium following board discussions.

A potential explanation for extreme decisions is the escalation of commitment when decision makers commit additional resources to a failing course of action hoping to turn the situation around and demonstrate the ultimate rationality of the original course of action (Staw, 1981). In the context of a board's decision on acquisition premiums, however, it is unlikely that the focal premium decision will influence the overall performance of prior acquisitions that directors experienced across various boards. The theory and supportive findings of this study also suggest that directors who experienced relatively low prior premiums tend to pay an even lower focal premium. To the extent that low premiums are associated with better acquisition performance, escalation of commitment cannot fully explain the results of this study.

In addition, the theory and findings of this paper may also have important implications for group polarization research. While a growing body of social psychological research has examined group polarization in various situations, the present study is perhaps the first systematic large-scale investigation of how corporate decisions can be influenced by this fundamental group decision-making bias. Several factors examined in this study, such as the expertise of the minority relative to the majority and the degree of demographic homogeneity, are also relatively novel to group polarization research.

This study has limitations that suggest future research possibilities. Specifically, although this study has examined how several characteristics of directors (i.e., the acquisition expertise of directors with minority opinions and board influence) may influence acquisition premium outcomes, future research should further explore other key characteristics of directors that may influence premium decisions. For example, future studies could examine how directors' personality (e.g., narcissism) may influence strategic decisions. One can expect that narcissistic directors may demand great attention and influence during board meetings, potentially increasing their impact on strategic decisions. In addition, although group polarization can be studied by using archival data (e.g., Kalven and Zeisel, 1966; Walker and Main, 1973), surveying directors about their pre-meeting position can perhaps provide a more precise measure of directors' pre-discussion position on premium decisions. Since it can be very difficult to conduct surveys right before and then after board decisions, future research might focus on several boards to conduct field research on group polarization.

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Finally, this study focused on publicly traded large corporations and did not examine board decisions in other types of organizations. Accordingly, the conclusions of this study may not apply to all types of boards.

Future studies should also explore other factors that may reduce group polarization effects. In separate analyses, I found that detailed characteristics of minority viewpoint directors' prior premium decisions did not significantly affect group polarization. Specifically, the similarity between the minority's prior acquisitions and the focal acquisition in terms of acquirer size, target size, and type (i.e., related vs. unrelated) did not seem to significantly moderate group polarization effects. This may suggest that directors may not be aware of the detailed characteristics of fellow directors' prior acquisitions or directors may equally value prior experience with various kinds of acquisitions. One possibility is to further examine minority viewpoint directors' prior success in conducting acquisitions because the success of these directors may allow them to exert greater influence in board decisions, improving the representation of minority opinions and reducing the group polarization effect.

Future research could also explore how group polarization may occur under different institutional environments. More specifically, evidence from research on polarization suggests that groups tend to experience different degrees of polarization for different types of discussion issues. For instance, groups tend to polarize less on issues related to religious beliefs than on issues related to sports (Myers and Lamm, 1976). Similarly, the extent to which practices or polices have been institutionalized or taken for granted (Zajac and Westphal, 2004) might also affect the degree to which polarization occurs.

Group polarization as a fundamental group decision-making bias has traditionally been treated as a group discussion induced effect. Accordingly, management scholars can empirically study the group polarization effect in other contexts without having to monitor how group members interact with each other during group discussions (see reviews by Isenberg, 1986; Myers and Lamm, 1976). As long as indicators of members' pre-discussion average position or inclination can be compared with the post-discussion collective decision, researchers can further explore how group polarization may influence other strategic decisions made by boards, such as decisions on executive compensation and changes in the degree of diversification. Other strategic decision-making groups in organizations such as top management teams and various formal or informal decision groups can also be influenced by this group decision-making bias. Future research should also explore how other group-level processes such as groupthink (Janis, 1972) may influence boards of directors' collective strategic decisions. More generally, although there are more and more social psychological studies in strategic management research, research on the social psychology of groups has just started to proliferate in strategy and macro-organization research (Westphal and Bednar, 2005; Zhu and Westphal, 2011). Building and extending social psychological theories on group processes to study collective strategic decisions seems to be a promising future direction.

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