Board interlocks and the diffusion of disclosure policy

Ye Cai
Santa Clara University

Dan S. Dhaliwal
University of Arizona

Yongtae Kim
Santa Clara University

Carrie Pan
Santa Clara University

Abstract

In this study, we examine whether board connections through shared directors influence firm disclosure policies. To overcome endogeneity challenges, we focus on an event that represents a significant change in firm disclosure policy: the cessation of quarterly earnings guidance. Our research design allows us to exploit the timing of director interlocks and therefore differentiate the director interlock effect on disclosure policy contagion from alternative explanations, such as endogenous director-firm matching or strategic board stacking. We find that firms are more likely to stop providing quarterly earnings guidance if they share directors with previous guidance stoppers. We also find that director-specific experience from prior guidance cessations is important for disclosure policy contagion. The positive effect of interlocked directors on the likelihood of quarterly earnings guidance cessation is particularly strong for firms with interlocked directors who experienced positive outcomes from prior guidance cessation decisions. Overall, our evidence is consistent with interlocked directors serving as conduits for information sharing that leads to the spread of corporate disclosure policies.

Keywords Disclosure policy · Board interlocks · Board networks · Social networks · Earnings guidance · Corporate governance.

JEL Classifications G34 · M41

1 Introduction

Prior studies show that corporate practices spread through director networks. Bizjak, Lemmon, and Whitby (2009), for example, report that firms with boards interlocked to backdating firms are more likely to backdate employee stock options. Brown (2011) shows that firms are more likely to adopt corporate-owned life insurance as a tax shelter if they have boards linked to other firms that have adopted such shelters. More recently, Chiu, Teoh, and Tian (2013) find evidence of earnings management contagion in firms with interlocked boards. These studies support the notion that social networks, such as board interlocks, play an important role in facilitating the exchange of information and spreading corporate practices across firms. Not all corporate practices, however, diffuse in the same way (Davis and Greve, 1997).

In this study, we examine whether firm disclosure policy spreads from one firm to another through shared directors. Specifically, we investigate the contagion of quarterly earnings guidance cessation. Contagion of disclosure policy through director interlocks might present patterns that are distinctly different from the diffusion of other corporate practices for several reasons. First, because firms' disclosure policies tend to be "sticky" (Bushee, Matsumoto, and Miller 2003; Skinner 2003; Graham, Harvey, and Rajgopal 2005), the effect of board interlocks on firms' disclosure policies could be limited. Second, unlike the adoption of corporate actions examined in prior studies (e.g., option backdating, earnings management, tax shelters, etc.), guidance cessation represents the decommitment of existing corporate practice for which director learning might work differently. Third, information demand from outside constituents such as financial analysts and institutional investors may weaken disclosure policy contagion through interlocked directors. Fourth, divergences in the information environment and differences in the costs and benefits of voluntary disclosures across firms may affect how knowledge and experience spread to other firms in the director network.

Prior studies are inconclusive about the influence of directors on corporate disclosure policy. Richardson, Tuna, and Wysocki (2005) examine director fixed effects on disclosure policy and conclude that their results are more consistent with directors and firms "matching" their policy preferences than with directors "imposing" their policy preferences on firms. Because of inherent endogeneity challenges, it is difficult to establish a causal relation between interlocked directors and disclosure policy based on panel data. In this paper, we take an event study approach and focus on an event that represents a significant change in firm disclosure policy: the cessation of quarterly earnings guidance. We exploit the timing of director interlocks to tease out causality and therefore differentiate the director interlock effect on disclosure policy contagion from alternative explanations such as endogenous director-firm matching.

Quarterly earnings guidance is a widespread, yet highly controversial disclosure practice among public companies. On the one hand, managers can provide earnings forecasts to guide analysts' expectations within a reasonable range to avoid large earnings surprises and high stock volatility (Ajinkya and Gift 1984), enhance investor confidence in managers' ability (Trueman 1986), decrease information asymmetry and cost of capital (Diamond and Verrecchia 1991; Lang and Lundholm 1993; Coller and Yohn 1997; Easley and O'Hara 2004), and reduce litigation risks (Skinner 1994, 1997). On the other hand, quarterly earnings guidance may encourage myopic managerial behavior at the cost of long-term growth when managers attempt to meet or beat the guided quarterly earnings numbers (Kasznik 1999; Houston, Lev, and Tucker 2010; Chen, Matsumoto, and Rajgopal 2011). Over the last two decades, firms have come under increasing pressure to end the practice of providing quarterly earnings guidance from regulators (Levitt 2000), the CFA Institute (Krehmeyer and Orsagh 2006), the U.S. Chamber of Commerce (2007), and prominent investors such as Warren Buffet (1996).

However, cessation of quarterly earnings guidance, which represents a significant shift in firm disclosure policy, is a very difficult decision. Disclosure theories suggest that managers

have incentive not to disclose unfavorable information (Verrecchia 1983; Dye 1985). Market participants may interpret the cessation of earnings guidance as a negative sign, indicating weak firm performance. Consistent with this view, recent evidence suggests that firms that stop offering quarterly earnings guidance tend to have poor prior performance and, on average, experience negative consequences, such as increases in analyst forecast errors and forecast dispersion (Houston et al. 2010; Chen et al. 2011).

Managers confronted with this difficult decision may seek advice from others who have dealt with similar problems successfully in the recent past. One convenient source of advice comes from board members who also serve as directors at other companies that have recently stopped quarterly earnings guidance. These directors can help managers with this decision by sharing their experience at other firms and providing first-hand expertise in evaluating the disclosure policy change.

We argue that interlocked directors serve as conduits for information sharing that can lead to the spread of corporate disclosure policies. The large network of interlocked directors creates channels through which private information flows. More information reduces outcome uncertainty and interlocked directors' first-hand experience reduces ambiguity. In addition, whether or not a firm changes its disclosure policy depends on the perceived costs and benefits of such policy change. Directors serving on the boards of other firms that have already changed their disclosure policies may have biased estimates of the potential costs and benefits of such policy change. In particular, they are likely to underestimate the costs and overestimate the benefits.[1] As a result, we expect board interlocks to other firms that previously stopped providing quarterly earnings guidance to increase the likelihood of quarterly earnings guidance cessation.

[1] Similarly, in their study of earnings management contagion, Chiu et al. (2013) argue that "an interlocked director observing earnings management in another firm may estimate a lower perceived cost of manipulation and a higher perceived benefit, potentially leading to rational herd behavior or information cascades."

We expect cross-sectional variation in disclosure policy contagion through the director network. Interlocked directors would be more (less) likely to transmit information if they experienced positive (negative) consequences of quarterly earnings guidance cessation at previous stoppers. Interlocked directors are also more likely to influence the focal firm's disclosure policy changes when they are a member/chair of the audit committee that is directly in charge of financial reporting oversight. We also expect that the costs and benefits of voluntary disclosure affect the diffusion of disclosure policy through the director network. Interlocked directors could play a bigger role in stopping decisions when motivations for guidance cessation are weaker. When motivations for guidance cessation are stronger, stopping guidance would be a relatively easy decision and therefore interlocked directors would play a smaller role.

We capture the spread of quarterly earnings guidance cessation via board networks by identifying director interlocks when a current director has gained guidance cessation experience through serving on the board of another company. For each calendar quarter, we identify guidance stoppers as firms that issued quarterly earnings guidance for at least three out of the four pre-event quarters, but gave no quarterly earnings guidance for any of the four quarters in the post-event period. We compare these stoppers with a control sample of guidance maintainers that provided quarterly earnings guidance for at least three out of four quarters in both the pre- and post-event periods.

We find that director interlocks to previous guidance stoppers increase the likelihood of quarterly earnings guidance cessation. After controlling for other firm characteristics that may affect firm disclosure policies, firms with directors who are interlocked to previous stoppers are 12.5 percentage points more likely to stop providing quarterly earnings guidance than those without such interlocked directors. Given that only 21 percent of our sample firms are stoppers, the effect is not only statistically significant but also economically large. Through additional analyses,

we show that poor operating performance of guidance stoppers does not appear to drive the board interlock effect. Furthermore, we find that the positive effect of interlocked directors on the likelihood of quarterly earnings guidance cessation is particularly strong for firms with interlocked directors who experienced positive outcomes from prior guidance cessation decisions. To the best of our knowledge, this study is the first to document that the outcome-specific experience directors gained from previous disclosure policy changes affects disclosure policy contagion.

We find that both audit committee directors and non-audit committee directors contribute to contagion of guidance cessation through interlocked directors. The influence of audit committee directors appears to be greater than that of non-audit committee directors, but the difference is not statistically significant. We obtain similar results if we examine audit committee chairs. We find some weak evidence that better firm performance strengthens the effect of stopper interlocks on guidance cessation while greater litigation risk and larger firm size weakens the effect, supporting the conjecture that interlocked directors play bigger (smaller) roles when motivations for guidance cessation are weaker (stronger).

Studies on social networks are vulnerable to the question of causal interpretation (Stuart and Yim 2010). At least two types of alternative explanations exist for the association between director interlocks and the likelihood of quarterly earnings guidance cessation: endogenous director-firm matching and strategic board stacking. Some omitted variables may determine both director interlocks and the likelihood of quarterly earnings guidance cessation. It is also possible that firms planning to change disclosure policies stack directors with prior experience of such policy changes. To ensure that the observed disclosure policy contagion via board interlocks is not an artifact of endogenous director-firm matching or strategic board stacking, we conduct an array of additional analyses by exploring the timing of directors' appointments and departures. Our results do not

support these alternative explanations. Overall, the evidence is consistent with firm disclosure policies spreading through interlocked directors, who carry their past experience of quarterly earnings guidance cessation to the other directorships they hold.[2]

Our study contributes to the accounting and finance literature as well as the social network literature. A growing body of research (e.g., Cohen, Frazzini, and Malloy 2008; Bizjak et al. 2009; Stuart and Yim 2010; Brown 2011; Cai and Sevilir 2012; Engelberg, Gao, and Parsons 2012) examines the role of board networks in corporate *financial* policy. We show that knowledge and experience gained through director networks also influence firm *disclosure* policy, especially decisions on quarterly earnings guidance cessation. Existing studies (Feng and Koch 2010; Houston et al. 2010; Chen et al. 2011) show that individual firm characteristics influence guidance cessation decisions. We extend this literature by examining whether the inter-firm network of directors affect the diffusion of guidance cessations and by demonstrating that director networks serve as conduits for information sharing that influences corporate disclosure policies.

Our paper is also related to Chiu et al. (2013) who examine the effect of director interlocks on discretionary financial reporting choices. While they study the contagion of earnings management through the director network, we offer evidence on the spread of firm disclosure policy via interlocked directors. Unlike Chiu et al. (2013), we also examine the effect of director-specific experience. We show that interlocked directors' outcome-specific experience affects disclosure policy contagion.

[2] Disclosure policy also may spread across firms through public channels instead of social networks. Houston et al. (2010) find that of 222 stoppers over 2002-2005, only 26 firms (11.7%) publicly announce their policy changes. Because only a few guidance stoppers publicly announce and rationalize their decision to stop providing quarterly guidance and the majority just cease to provide guidance, we believe that information spillover through the public channel cannot explain our results. In addition, we find that director-specific experience from prior cessation is important for disclosure policy contagion, which cannot be explained by spillover through public channels. Our results are robust to the exclusion of firms whose board members are connected to previous stoppers that publicly announce their guidance cessation decisions. The results are also robust to controlling for the potential ripple effect of the widely publicized Coca-Cola's guidance cessation announcement on December 13, 2002.

Two recent papers examine executive fixed effects on firm disclosure policy. Bamber, Jiang, and Wang (2010) find that top executives exhibit unique styles in their firms' voluntary disclosure choices and show that such manager-specific fixed effects are associated with observed demographic characteristics of their personal backgrounds. Brochet, Fraurel, and McVay (2011) find that firms' quarterly earnings guidance policy is associated with top executive turnovers. In particular, they find that CEO turnovers are associated with permanent changes in guidance policy, but CFO turnovers are associated with temporary breaks in guidance. Although our paper is related to these studies as we also investigate the role of executives/directors, as opposed to firm-, industry-, or market-level characteristics, in explaining firm disclosure policy, there are important differences. First, we do not examine manager fixed effects, which are time-invariant and long-lasting, on firms' disclosure policy. Rather, we study how *recent* disclosure-policy-specific experience that directors gained from their directorships at other firms influences voluntary disclosure decisions at the focal firm. While earlier studies rely on executive turnovers to identify manager fixed effects, we focus on director interlocks through pre-existing board networks to isolate the effects of experience and information sharing. Second, manager fixed effects, as documented in Bamber et al. (2010), capture the long-lasting impacts of managers' early-life experience. We show that the relatively recent experience that executives/directors gained from their directorships at previous stoppers also influences their voluntary disclosure decisions. As such, our paper complements earlier studies by offering new evidence on how individuals influence firm disclosure behavior.

The remainder of the paper is organized as follows. Section 2 describes the data and research design. We present our main results in Section 3. In Section 4, we explore alternative explanations through additional analyses. We conclude in Section 5.

2 Data and Research Design

2.1 Sample of guidance stoppers and maintainers

Our initial sample of guidance stoppers and maintainers comes from the First Call Company Issued Guidelines (CIG) database. We collect quarterly earnings guidance from the first quarter of 2001 to the first quarter of 2011. Following Houston et al. (2010) and Chen et al. (2011), we focus on the post-Reg FD period to eliminate the possibility of firms stopping public guidance and replacing it with private guidance.[3] We also require sample firms to be covered by the RiskMetrics Directors database, which provides extensive information on directors of S&P1500 firms and enables us to establish the existence of board interlocks.

Similar to Houston et al. (2010), we refer to each calendar quarter during our sample period as an "event quarter," the preceding four quarters as the "pre-event" period, and the event quarter and the subsequent three quarters as the "post-event" period. We focus on quarterly management forecasts of Earnings per Share (EPS), Earnings before Interests and Depreciation (EBITDA), and Earnings including Goodwill (EPSIGW). Consistent with Houston et al. (2010), we exclude quarterly earnings guidance issued after the fiscal quarter end, because these pre-announcements are part of a firm's earnings announcement strategy rather than a guidance strategy. Following Houston et al. (2010) and Chen et al. (2011), we define guidance stoppers based on quarterly

[3] In October 2000, the US Securities and Exchange Commission (SEC) adopted Reg FD, which mandates that all publicly traded companies must disclose material information to all investors at the same time. Prior to Reg FD, managers often provide guidance to financial analysts and institutional investors through private channels, which are empirically unobservable. Wang (2007) provides evidence that in the pre-Reg FD period, firms with higher proprietary information costs and more predictable earnings are more likely to provide private earnings guidance. Such firms might stop providing public guidance but continue to provide private guidance. Because we cannot observe private guidance, we cannot distinguish guidance cessation from replacing public guidance with private guidance, and therefore it is not possible to reliably identify guidance cessation events in the pre-FD period. In addition, Reg FD changes the information environment in various dimensions. When firms' strategy for voluntary disclosure is fundamentally different between pre- and post-FD periods, applying director learning in the pre-FD period to the post-FD period is difficult. Therefore, we follow Houston et al. (2010) and Chen et al. (2011) and focus on the post-Reg FD period to ensure that our sample firms have truly stopped providing quarterly earnings guidance.

guidance as opposed to annual guidance.[4] If a firm issued quarterly earnings guidance for at least three out of the four pre-event quarters, but gave no quarterly earnings guidance for any of the four quarters in the post-event period, we classify it as a guidance stopper. If a firm provided quarterly earnings guidance for at least three out of the four quarters in both the pre- and post-event periods, we define it as a guidance maintainer. For both the stopper and the maintainer samples, following Houston et al. (2010), we exclude firm-quarters in which the firm is delisted (through acquisitions or bankruptcy) in the six quarters beginning with the event quarter to avoid the influence of confounding events associated with delisting.

For our initial sample of guidance stoppers, we search the Factiva news database to ensure that they have indeed stopped providing quarterly earnings guidance.[5] We find that 89 firms are misclassified by CIG as stoppers, while in fact they continued providing quarterly earnings guidance in the post-event period. We exclude these firms from the guidance stopper sample. We collect additional data on stock returns from the Center for Research in Security Prices (CRSP), quarterly accounting information from Compustat, analyst coverage from I/B/E/S, and institutional ownership from Thomson Financial's CDA/spectrum 13F. Data from 2001/Q1 to 2001/Q4 are used as pre-event period data to determine guidance stoppers and maintainers, so we exclude them from the final sample. Similarly, data from 2010/Q3 to 2011/Q1 are excluded from the final sample because the complete post-event period data are unavailable. Our final sample includes 251 guidance stoppers and 882 guidance maintainers with event quarters from 2002/Q1 to 2010/Q2.

[4] Much of the debate centers on "quarterly" guidance that may motivate managers to engage in myopic behavior. Houston et al. (2010) and Chen et al. (2011) show that firms stop providing "quarterly" guidance, but not necessarily "annual" guidance, as a response to the call from critics.

[5] We search for the history of earnings or revenue guidance for all stoppers from a year before to a year after the event quarter. We search by keywords in the full texts of Business Wire, PR Newswire, Associated Press Newswires, and Reuters Significant Developments. The phrases used include two sets of keywords: (1) guidance, outlook, see(s), expect(s), expectation, forecast(s), project(s), estimate(s), higher, and lower; and (2) net, earnings, income, results, loss, gain, profit(s), improvement, better, performance, revenue(s), and sales. All keywords, except guidance, outlook, and expectation, are used in Kim et al. (2008).

Following Houston et al. (2010), we retain only one observation for each firm during our sample period. For a guidance stopper that appears in more than one quarter, we choose its earliest quarter. For a guidance maintainer that appears in more than one quarter, we randomly choose a quarter from the qualified quarters as this firm's event quarter.[6]

2.2 Board interlock measure

The key variable in our study is *Interlock*, which indicates whether a firm is interlocked through a shared director with another firm that has previously stopped giving quarterly earnings guidance. For each firm-quarter observation in our sample, we use the RiskMetrics Director database to track the list of directors on its board in the years prior to the event quarter. We define a firm as having stopper interlocks if any of its directors also served on the board of another firm that stopped providing quarterly guidance during the two-year period prior to the event quarter. In other words, *Interlock* = 1 when any director of our sample firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years.[7]

Since the interlock measure requires us to know whether a firm is interlocked with guidance stoppers in the previous two years, we cannot identify any stopper interlocks for sample firms in 2002 and 2003. Therefore, our interlock measure starts from year 2004. Table 1 presents the calendar year-quarter distribution of guidance stoppers and maintainers. Between 2004/Q1 and 2010/Q2, there are 191 guidance stoppers, among which 52 (27.2%) are interlocked with previous stoppers through

[6] While earliest stopper quarters are evenly distributed across sample years, earliest maintainer quarters are concentrated in earlier sample years. To better match the time-series distribution of sample and control firm quarters, we randomly draw maintainer quarters. Our results are robust if we use the earliest quarter of maintainers.

[7] Our *Interlock* measure is similar to the *PE Interlock* measure in Stuart and Yim (2010), who examine the role of board interlocks in change-in-control transactions in the private equity industry. The difference is that they use a 5-year window in defining interlocks, while we use a 2-year window. We choose a shorter window in defining interlocks because of our shorter sample period. As a robustness check, we also try a 3-year window and our results are qualitatively and quantitatively similar.

shared directors. During the same period, 702 firms maintain their quarterly earnings guidance and 79 (11.3%) of them have board interlocks with previous stoppers.

2.3 Research design

To examine the effect of board interlocks on the decision to stop quarterly earnings guidance, we estimate the following probit model:

$$Pr\,(Stopper = 1) = \Phi\,(\alpha + \beta\,Interlock + \Sigma\,\gamma\,Controls + \varepsilon) \quad (1)$$

where the dependent variable *Stopper* is an indicator variable that equals one for guidance stoppers and zero for maintainers, and $\Phi\,(\cdot)$ is the cumulative distribution function of the standard normal distribution. The variable of interest is *Interlock*, an indicator variable that equals one if any director of our sample firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. Our primary hypothesis is $\beta > 0$, as board members' past experience with guidance cessation travels with them to other companies, and such knowledge and experience influence the likelihood of quarterly earnings guidance cessation for the firms on whose boards they also serve.

We control for a number of firm characteristics that may affect firm disclosure policies. For example, Chen et al. (2011) find that guidance stoppers have poorer prior performance, more uncertain operating environments, and fewer informed investors. Houston et al. (2010) also find that poor performance is the main reason for quarterly earnings guidance cessation. Following Chen et al. (2011), we control for firm performance, information environment, informed investors, and litigation risk.[8]

[8] Our control variables closely follow those in Chen et al. (2011). Our results are qualitatively and quantitatively similar if we instead control for the same set of variables as in Houston et al. (2010).

Our first measure of firm performance is market-adjusted buy-and-hold stock returns (*BHRET*) in the one-year period prior to the event quarter. Our second performance measure is the change in the percentage of meeting or beating analyst estimates (*ΔPMBAF*), calculated as the change in the percentage of quarters for which the firm meets or beats consensus analyst forecasts in the pre-event period (quarters t-4 to t-1, where quarter t is the event quarter) relative to the year prior to the pre-event period (quarters t-8 to t-5).

Disclosure theories (Dye 1985; Jung and Kwon 1988) suggest that managers will disclose less in more uncertain environments. Following Chen et al. (2011), we construct two proxies of information uncertainty: the change in the standard deviation of daily stock returns (*ΔSTDret*), measured over the pre-event period relative to the preceding 252 trading days, and the change in the analyst forecast dispersion (*ΔDISP*), measured as the standard deviation of the last analyst forecasts prior to quarter t-1 earnings announcement scaled by lagged stock price, relative to the same measure in quarter t-8.

Informed investors also could affect a firm's disclosure policy (Dye 1998). With more informed investors who have knowledge about the manager's information endowment, the manager is less able to pass off non-disclosure as the result of no information (Chen et al. 2011). Jiambalvo, Rajgopal, and Venkatachalam (2002) show that firms with a larger analysts following and higher institutional ownership are more likely to have informed investors. Therefore, we control for the change in analyst following (*ΔAF*) and the change in the percentage of institutional ownership (*ΔPINST*), where *ΔAF* is the change in the number of analysts covering the firm in quarter t-1 relative to the same measure in quarter t-8, and *ΔPINST* is the change in the percentage of shares held by institutional investors in quarter t-1 relative to quarter t-4.

A common reason that firms cite for stopping quarterly earnings guidance is to refocus investor attention on long-run performance (e.g., the Coca Cola Company 2002). If a firm has a growing long-horizon shareholder base, its management will be more inclined to stop providing quarterly earnings guidance to cater to the interests of long-term investors. Alternatively, firms that are losing long-horizon shareholders may have greater incentives to stop quarterly earnings guidance to attract long-horizon shareholders. Following Chen, Harford, and Li (2007) and Watts and Zuo (2012), we classify dedicated institutions and quasi-indexers as long-horizon investors based on Bushee's (1998) classification. We calculate the change in long-term institutional ownership (*ΔLTPINST*) as the difference in the aggregate percentage ownership held by dedicated institutions and quasi-indexers in quarter t-1 relative to quarter t-4.[9]

Litigation risk could limit firms' incentives to provide voluntary disclosures (Rogers and Van Buskirk 2009). Alternatively, firms with a higher likelihood of being sued may be more inclined to provide earnings guidance to mitigate litigation risk and accompanying cost (Skinner 1994, 1997). We measure litigation risk (*LITIGATION*) with the estimated probability of being sued by shareholders, using the litigation exposure model, as in Tucker (2007) and Houston et al. (2010).[10]

Prior research also shows that both firm size and growth opportunities are related to a firm's disclosure policy. We control for firm size (*LNMV*), defined as the natural logarithm of the market value of equity at the end of the pre-event period. We also control for growth opportunities by including *LNMB* in our regression, which is the natural logarithm of the market-to-book ratio at the end of the pre-event period. Because firms' past guidance behavior could affect the cessation decision, we

[9]As a robustness check, we also use public pension funds as a proxy for long-term investors because pension funds tend to have longer investment horizons and often monitor firms more actively than other investors (Smith 1996; Gillan and Starks 2000; Gompers and Metrick 2001; Qiu 2006; Cronqvist and Fahlenbrach 2009). Our results are qualitatively and quantitatively similar with this alternative proxy.

[10] For more information about this litigation risk model, we refer readers to Johnson, Kasznik, and Nelson (2001), Rogers and Stocken (2005), and Houston et al. (2010) Appendix 2.

follow Chen et al. (2011) and include *LNCT*, which is the natural logarithm of one plus the number of management quarterly forecasts made through quarter t-1 in the CIG database. Furthermore, firms that initiate quarterly earnings guidance as a result of Reg FD may be more likely to cease providing guidance (Chen et al. 2011); therefore, we include an indicator variable, *REGFD*, which equals one if the firm's first quarterly earnings guidance in the CIG database appears after the passage of Reg FD.

We also control for the potential effects of executive turnovers and board structure on firm disclosure policy. Brochet et al. (2011) find that firms' quarterly earnings guidance policy is associated with CEO and CFO turnovers, and thus we control for these variables. Firms with similar corporate governance structures may hire from the same pool of directors, and they are also more likely to engage in similar disclosure behaviors. We rely on the existing literature of board composition to identify potential factors that could affect the matching between directors and firms. We include board size, average board tenure, average director age, and the percentage of independent directors to account for board monitoring and advising (Raheja 2005; Coles, Daniel, and Naveen 2008; Linck, Netter, and Yang 2008). We also include a *CEO=Chairman* indicator to proxy for the balance of power between the CEO and the board, and CEOs' stock ownership to control for the level of agency conflict between firm managers and shareholders.

2.4 Summary statistics

Table 2 Panel A summarizes our sample. Among the 893 firm-quarter observations, 21 percent are guidance stoppers, and 15 percent have board members serving at another firm that stopped quarterly earnings guidance in the past two years. On average, our sample firms have a market value of five billion dollars, with a market-to-book ratio of 3.26. The average board has nine members, approximately 73 percent of whom are independent directors. The board members are, on average, 60 years old with tenures of nine years on the board. In 70 percent of

our sample firms, the CEO also serves as the chairman of the board. The CEOs hold approximately 2.25 percent of the firms' common shares, on average. Variables that measure interlocked directors' experience at the previous stopper are available for only the 131 firm-quarter observations with interlocked directors. While the mean values of changes in analyst forecast dispersion and forecast error are negative, the median values are positive, suggesting wide variations across firm-quarter observations. Analyst following decreases, on average, after the guidance cessation at previous stoppers, while return volatility changes little.

In Panel B of Table 2, we compare the subsamples of 191 stoppers and 702 maintainers. Stoppers are more than twice as likely to have stopper-interlocked directors as maintainers; 27.2 percent of stoppers have interlocked directors who served on the board of another company that stopped providing quarterly earnings guidance in the previous two years, compared to only 11.3 percent of maintainers with directors interlocked to previous stoppers. On average, stoppers are larger firms with bigger boards and a lower fraction of CEOs serving as chairman. Stoppers experience inferior performance in the previous year compared to maintainers, as seen in the negative market-adjusted buy-and-hold returns and deteriorating EPS. Stoppers also experience a decline in the percentage of meeting or beating earnings expectations in the past eight quarters. In addition, while stoppers experience larger increases in analyst forecast dispersion, maintainers experience larger increases in analyst coverage and larger decreases in stock return volatility, suggesting that the information environment for stoppers deteriorates relative to that for maintainers.

3 Effect of board interlocks on the decision to stop quarterly earnings guidance

3.1 Results from probit regressions

Table 3 presents the marginal effects from probit regressions of the probability that a firm stops providing quarterly earnings guidance. We control for year fixed effect and industry fixed effect in all regressions. In column 1, we include only the control variables examined in Chen et al. (2011) for comparison purposes. We find that poorer stock performance in the year prior to the event quarter is associated with a significantly greater likelihood of quarterly earnings guidance cessation, consistent with Chen et al. (2011). We also find that in our sample, larger firms and firms experiencing an increase in analyst forecast dispersion or a decrease in informed investors, proxied by ΔAF, are more likely to stop providing quarterly earnings guidance.

In column 2, we include only *Interlock,* the key variable of interest, in the regression. Consistent with our hypothesis, we find that *Interlock* is positively associated with the probability of stopping quarterly earnings guidance. Firms with stopper-interlocked directors are 20.9 percentage points more likely to stop providing quarterly earnings guidance, a result that is statistically significant at the one percent level. In column 3, we add firm-level control variables. We find that after controlling for other firm characteristics, firms with directors interlocked to previous stoppers are 12.5 percentage points more likely to stop providing quarterly earnings guidance. Given that only 21 percent of our sample firms are stoppers, the effect is not only statistically but also economically significant. Thus, the results from the probit regression are consistent with our hypothesis that firms are more likely to stop providing quarterly earnings guidance if their directors have served on the boards of other firms that stopped quarterly earnings guidance in the recent past.

Consistent with Brochet et al. (2011), firms are more likely to change their disclosure policies subsequent to CEO turnovers. Among board characteristics, only the *CEO=Chairman* indicator is significantly associated with a lower likelihood of stopping quarterly earnings guidance. Our finding

that powerful CEOs are less likely to stop providing quarterly earnings guidance is consistent with the notion that investors demand more disclosure as a control mechanism to monitor powerful CEOs.

3.2 Poor performance as a correlated omitted variable

Prior literature documents that poor performance is the primary reason for stopping quarterly earnings guidance (Houston et al. 2010; Chen et al. 2011). Poor performance, if also leading to director interlocks, may drive the observed positive relation between stopper interlocks and the likelihood of quarterly earnings guidance cessation. For example, directors may be recruited based on their experience in "turn-around" situations, and director interlocks happen more frequently when profits are low (Mizruchi 1996). Although we already control for firm performance in our probit regressions, in this section, we conduct additional analyses to ensure that our results are not driven by poor firm performance affecting both quarterly earnings guidance cessation and director interlocks.

First, in addition to the two performance variables (*BHRET* and *ΔPMBAF*) already in the baseline model, we include three more performance proxies from Houston et al. (2010): *ΔEPS, LOSS, and FutureEPS*. We define *ΔEPS* as the average change in diluted EPS in the four pre-event quarters relative to the previous four quarters, deflated by the stock price at the beginning of the pre-event period. *LOSS* is the proportion of loss-reporting quarters in the pre-event period. Our third performance measure, *FutureEPS*, proxies for managers' expectation about future operating performance, computed as the average change in diluted EPS from the four pre-event quarters to the four post-event quarters, deflated by the stock price at the beginning of the pre-event period. Table 3 Column 4 presents the results with these additional performance controls. Our sample size drops to 885 because of missing observations in these variables, but we continue

to observe a positive and significant relation between *Interlock* and the probability of stopping quarterly earnings guidance. Moreover, adding these additional controls does not change the economic significance of the *Interlock* effect. Everything else equal, firms with directors interlocked to previous stoppers are 11.7 percentage points more likely to stop quarterly earnings guidance, only slightly lower than the 12.5 percentage points in our baseline results. To avoid the look-ahead bias in *FutureEPS*, for subsequent analyses, we report the results based on the model without additional performance variables. All results remain qualitatively the same if we use the regression model with additional performance variables.

Next, we investigate whether our results are concentrated among firms with extremely poor performance. Specifically, we add *Low BHRET*, an indicator that equals one if *BHRET* falls in the bottom quartile of the distribution, and its interaction with *Interlock*, to our baseline regression. Consistent with Chen et al. (2011) and Houston et al. (2010), the marginal effect of *Low BHRET* is positive and statistically significant, suggesting that poor prior performance significantly increases the likelihood of quarterly earnings guidance cessation. More importantly, the marginal effect of *Interlock* remains positive and statistically significant. Moreover, the positive relation between *Interlock* and quarterly earnings guidance cessation is not more pronounced for firms with bottom quartile performance, as evidenced by the insignificant marginal effect of the interaction of *Interlock* and *Low BHRET*. The results are qualitatively similar if we define *Low BHRET* as an indicator for below-median *BHRET* or lowest-tercile *BHRET*. In summary, poor operating performance does not appear to drive the effect of board interlocks on quarterly earnings guidance cessation.

3.3 Director-specific experience

Intuitively, if interlocked directors' past experience and knowledge influence the likelihood of quarterly earnings guidance cessation for firms on whose boards they also serve, we would expect the outcome of interlocked directors' prior guidance cessation experience to be important. For example, if stopper-interlocked directors experienced positive (negative) consequences of quarterly earnings guidance cessation at previous stoppers, these individuals might have a good (bad) lingering taste from their guidance cessation experience, and firms on whose boards they also serve would be more (less) likely to take similar actions. Chen et al. (2011) find an increase in analyst forecast dispersion and a decrease in forecast accuracy for stoppers, but no change in analyst following and return volatility. To capture interlocked directors' guidance cessation experience at previous stoppers, we calculate the changes in analyst forecast dispersion, changes in analyst forecast error, changes in the number of analyst following, and changes in stock return volatility from the pre-event quarters to the post-event quarters around the previous stopper's quarterly earnings guidance cessation. For each of these variables, we create an indicator variable that captures the negative post-cessation experience at previous stoppers and let it interact with *Interlock*. We expect firms with interlocked directors who experienced more negative post-cessation outcomes at previous stoppers to be less likely to stop providing quarterly earnings guidance than firms with interlocked directors who experienced more positive outcomes.

Table 4 summarizes our results. We find that the positive effect of stopper-interlocked directors on the likelihood of stopping quarterly earnings guidance remains robust. More importantly, the stopper interlock effect decreases for firms interlocked to previous stoppers that experienced increases in analyst forecast dispersion and analyst forecast error, as the marginal effect of the interactions terms, *Interlock*positive Δ(forecast dispersion)* and *Interlock*positive*

Δ(forecast error), are both negative and significant.[11] We find, however, that prior experience in terms of changes in analyst following and changes in return volatility are not related to the likelihood of stopping quarterly earnings guidance, as evidenced by the insignificant marginal effect of interactions terms, *Interlock*negative Δ(analyst following)* and *Interlock*positive Δ(return volatility)*. It is interesting that two measures, analyst forecast dispersion and analyst forecast error, for which prior studies (e.g., Chen et al. 2011) find significant changes after quarterly earnings guidance cessation, also dictate the influence of interlocked directors' prior experience on the focal firms' guidance cessation decision. Overall, our results indicate that interlocked directors' guidance cessation experience at previous stoppers, especially in terms of analyst forecast dispersion and analyst forecast error, is important for the likelihood of focal firm's quarterly earnings guidance cessation. Our results are quantitatively and qualitatively similar if we instead interact *Interlock* with *high* Δ*(forecast dispersion), high* Δ*(forecast error), low* Δ*(analyst following),* and *high* Δ*(return volatility)*, where we define high (low) as an indicator if the value is higher (lower) than the sample median. The results in Table 4 thus support our conjecture that interlocked directors' experience influences disclosure policy changes.

Because we measure director-specific experience over four post-event quarters, one concern is that interlocked directors at the focal firm that stop providing guidance within one year from the previous stopper's guidance cessation may not fully observe the consequences of stopping guidance at the previous stopper. To address this concern, we conduct an additional

[11] By definition, each of our director-specific experience variables takes the value of zero for all firms with no directors interlocked to previous stoppers. The variation of these variables comes from firms with stopper-interlocked directors. The interactions of director-specific experience variables and *Interlock* are therefore the same as the director-specific experience variable itself. For example, the interaction of *positive Δ(forecast dispersion)* and *Interlock* is the same as that of *positive Δ(forecast dispersion)* itself. The same applies to the variables *Tenure<=2yrs* and *Migrated director* in Table 8.

analysis and find that our results (untabulated) are robust to limiting the interlock effect to those guidance cessations occurring beyond one year from the previous stopper's guidance cessation.

3.4 Audit committee directors

Different types of directors may have different impacts on firm disclosure decisions. In particular, we explore the differences between audit committee directors, defined as directors who serve on the company's audit committee, and non-audit committee directors. When a firm has multiple directors interlocked with previous stoppers, if any of the interlocked directors is an audit committee director, we consider the firm as having an audit committee interlocked director. The effect of interlocks through the focal firm's (or the previous stopper's) audit committee directors may be greater than that of interlocks through non-audit committee directors, presumably because the audit committee is in charge of financial reporting oversight.

Table 5 presents the regression results comparing the interlock effect across different types of interlocked directors. In column 1, we focus on interlocks through the focal firm's audit committee versus non-audit committee directors. We find that while both types of interlocked directors at the focal firm are associated with a greater probability of quarterly earnings guidance cessation, the effect of interlocks through the focal firm's audit committee directors appears to be greater than that of interlocks through the focal firm's non-audit committee directors. The difference, however, is not statistically significant (Likelihood Chi-square=0.221). In column 3 we examine the effect of board interlocks through previous stoppers' audit committee versus non-audit committee directors. Again, we find that both types of interlocked directors are positively associated with the likelihood of quarterly earnings guidance cessation. Interlocks through previous stoppers' audit committee directors appear to have a greater influence on the likelihood of guidance cessation than interlocks through non-audit committee directors, but the

difference is statistically insignificant. We also examine audit committee chairs and find similar results, as shown in columns 2 and 4. Although the marginal effect of interlocked directors who serve as the audit committee chair is twice as large as the marginal effect of non-audit committee chair directors, the difference is not statistically significant, possibly because of a lack of power, as the number of stopper-interlocked directors who serve as the audit committee chair is very small.[12]

3.5 Interaction with motivations for providing guidance

Costs and benefits of voluntary disclosure vary across firms, and such differences could affect the diffusion of disclosure policy through director networks. Interlocked directors could play a bigger (smaller) role in stopping decisions when motivations for guidance cessation are weaker (stronger). In particular, firm performance, firm size, and litigation risk, which are shown to be systematically associated with guidance cessation in Tables 3 and 4, could impact the effect of director interlocks on guidance cessation. Prior studies find that poorly performing firms are less likely to guide. Larger firms have other information channels, and therefore the cost of guidance cessation could be smaller. Alternatively, greater attention and analysts' demand for information could make guidance cessation more difficult for larger firms. Litigation risk could limit a firm's incentive to guide (Rogers and Van Buskirk, 2009). Alternatively, firms may issue guidance to mitigate litigation risk (Skinner, 1994).

[12] We also examine the differences between executive directors, defined as individuals who sit on the board and also hold executive positions (e.g., CEO, CFO) in the company, and non-executive directors. The partition based on executive versus non-executive directors leads to a less clear prediction. One might argue that interlocks through executive directors should have a greater effect because executive directors can exert greater influence on disclosure policy decisions. Alternatively, the effect of interlock through non-executive directors could be greater because the audit committee is consisted of entirely non-executive directors and non-executive directors, who are less likely to be blamed for poor performance, are unlikely to make disclosure policy choices based on firm performance. Untabulated results show no difference between the effect of interlock through the focal firm's (previous stoppers') executive directors and that through the focal firm's (previous stoppers') non-executive directors.

To test how director learning at other firms interacts with the costs and benefits of guidance at the focal firm, we include the interactions of firm performance, firm size, and litigation risk with *Interlock* in probit model (1). Table 6 reports the results. We find that better performance increases the effect of stopper interlock on guidance cessation, while litigation risk and firm size decrease the effect. To the extent that larger firms bear smaller costs from stopping guidance and face greater pressure to end quarterly guidance practice, and litigation risk limits a firm's incentive to guide, the results in Table 6 are consistent with stopper-interlocked directors playing bigger (smaller) roles when motivations for guidance cessation are weaker (stronger).[13]

3.6 Control for information spillover through public channels

Houston et al. (2010) find a relatively high frequency of stoppers immediately after Coca-Cola's well publicized guidance cessation announcement on December 13, 2002. Our results are not likely to be influenced by Coca-Cola's announcement, because our stopper interlock measure starts from 2004. Nonetheless, we re-estimate our probit regressions after excluding observations in the first one, two, or three quarters of 2004 to control for any potential ripple effect of Coca-Cola's guidance cessation announcement. In untabulated results, the marginal effect of *Interlock* is positive and statistically significant, suggesting that firms with stopper-interlocked directors

[13] Powers (2005) points out that an inference based on the coefficient of the interaction term in logit and probit models can be misleading. More generally, Ai and Norton (2003) argue that the magnitude of the interaction effects (marginal effect of changes in two variables) in nonlinear models does not equal the marginal effect of the interaction term, and that the statistical significance of the former is not easily calculated. They present a consistent estimator of the interaction effect for nonlinear models by taking cross-derivative and cross-difference into account. Following prior studies (Ai and Norton 2003; Norton, Wang, and Ai 2004), we calculate the consistent estimators and standard errors of the interaction effects in our probit models. The interaction effects based on Norton et al. (2004) have very similar economic magnitudes, but they are statisitically insignificant for all interaction terms in Table 6. Thus we consider the results in Table 6 very weak at best. The interaction of *Interlock* and *Low BHRET* in Table 3, model (5) has a similar problem. We calculate the interaction effect of *Interlock*Low BHRET* based on Norton et al. (2004) and find that the interaction effect is statistically insignificant, consistent with the insignificant marginal effect reported in Table 3. Note that, as discussed in footnote 12, the interaction terms in Tables 4 and 8 are not standard interaction terms because the variation comes only from firms with stopper-interlocked directors, and thus Norton et al.'s (2004) method does not apply.

are more likely to stop providing quarterly earnings guidance. This result is consistent with those in Table 3. We also replicate analyses in Table 4 with the restricted sample and continue to find consistent results indicating that interlocked directors' experience at previous stoppers is important for focal firm's guidance cessation decisions. Thus, our evidence is robust to controlling for the ripple effect of Coca-Cola's guidance cessation announcement.

Our results are also robust to the exclusion of firms whose boards are connected to previous stoppers that publicly announce their guidance cessation decision. We identify guidance cessation announcements by searching the full texts of Business Wire, PR Newswire, Associated Press Newswires, and Reuters Significant Developments, as well as conference call transcripts through Factiva. Ten firms in our sample have interlocked directors with previous public announcers. Untabulated results from the sample excluding these firms are qualitatively and quantitatively similar to those in Tables 3 and 4. Therefore, information spillover through the public channel cannot explain our results.

3.7 Multiple board interlocks

In our sample, there are cases where the focal firm is interlocked with multiple previous stoppers. Among 131 sample firms interlocked with previous stoppers, 103 (78.6%) are interlocked with one previous stopper, 24 (18.3%) are interlocked with two previous stoppers, 3 (2.3%) are interlocked with three previous stoppers, and one firm (0.8%) is interlocked with four previous stoppers. There are also cases where the focal firm is interlocked with previous stoppers through multiple directors; 97 (74.0%) out of 131 stopper-interlocked firms are interlocked through one director, 27 (20.6%) are interlocked through two directors, 6 (4.6%) are interlocked through three directors, and one firm (0.8%) is interlocked through four directors.

We examine whether having additional interlocks with previous stoppers or having multiple interlocked directors has any incremental impact on the likelihood of quarterly earnings guidance cessation by including both the *Interlock* indicator and the multiple-interlock indicator. While the marginal effect of *Interlock* remains positive and significant, we do not find additional interlocks to have a significant incremental effect, suggesting that it is the existence, rather than the number, of stopper interlocks that matters for a firm's decision to stop providing quarterly earnings guidance.[14]

4 Alternative Explanations and Robustness Tests

4.1 Director-firm matching

Our empirical findings so far are consistent with our hypothesis that board interlocks have an impact on disclosure policy changes. Directors carry their past experience of quarterly earnings guidance cessation to other directorships they hold, and such knowledge and experience influence the guidance cessation decision at other firms whose boards they join. This causal interpretation, however, naturally faces some endogeneity challenges. One challenge comes from endogenous director-firm matching, as some omitted variables may determine both board composition and the guidance cessation decision. For example, firms from the same geographic area, firms in the same industry, or firms sharing the same auditors, investors, or analysts are likely to have interlocked directors, and they are also likely to engage in similar disclosure activities. In this section, we attempt to rule out endogenous director-firm matching as an alternative explanation.

[14] We also re-estimate our probit regressions by replacing the *Interlock* indicator with the natural logarithm of (1 + number of interlocked stopping firms) or the natural logarithm of (1 + number of stopper-interlocked directors). Untabulated results show positive and statistically significant marginal effects of alternative stopper interlock variables, consistent with the results in Table 3.

To address the geography-specific effect, we control for the focal firm's geographic proximity with all previous stoppers. In particular, for each firm year, we compute a *Stopper geographic proximity* variable as the natural logarithm of (1 + total number of previous stoppers in the same Metropolitan Statistical Area (MSA)). MSA data are from the U.S. Census Bureau's MSA cross-map. Untabulated results show that controlling for geographic proximity to previous stoppers does not affect our results. We continue to find a positive and significant relation between stopper interlocks and the likelihood of quarterly earnings guidance cessation. The proxy for stopper geographic proximity is insignificantly associated with the likelihood of quarterly earnings guidance cessation.

Tse and Tucker (2010) document within-industry herding of earnings warnings. In our baseline regressions, we already include industry fixed effects. To further control for the industry-specific effect, we include in our probit regression a *Stopper industry activity* variable, which is defined as the natural logarithm of (1 + number of stoppers in the same Global Industry Classification Standard (GICS) industry and in the same MSA), as an additional control variable. Untabulated results show that the positive relation between stopper interlocks and quarterly earnings guidance cessation is robust to controlling for such an industry-specific effect. The proxy for industry trend is insignificantly associated with the likelihood of quarterly earnings guidance cessation.

We next consider the impact of sharing auditors, investors, or analysts. Demands from common auditors, investors, or analysts could lead firms to make similar corporate decisions on director appointments and disclosure policies. Jung (2013), for example, finds that a firm's decision to follow the industry first-mover in providing more market-risk disclosures is positively associated with an increase in the institutional investor overlap between the two firms. To alleviate

the concern that demands from overlapping auditors, investors, or analysts are driving the positive relation between board interlocks and quarterly earnings guidance cessation, we control for overlapping auditors, institutional investors, and analysts. *Stopper same auditor* is the natural logarithm of (1 + total number of previous stoppers who share the same-office auditor as the focal firm).[15] We construct a *Stopper investor overlap* variable as the average number of overlapping institutional investors between the focal firm and all previous guidance stoppers, scaled by the total number of institutional investors of the focal firm, both measured in the quarter prior to the event quarter. We also construct a *Stopper analyst overlap* variable as the average number of overlapping analysts between the focal firm and all previous guidance stoppers, scaled by the total number of analysts of the focal firm in the quarter prior to the event quarter. With controls for auditor, investor, and analyst overlap, we continue to find a positive and significant marginal effect of *Interlock* (untabulated), suggesting that our results are robust to controlling for overlapping auditors, investors, and analysts.

Even after controlling for geographic proximity, industry-level disclosure activity, and overlapping auditors, investors, and analysts, it is still possible that endogenous director-firm matching stemming from unobserved time-invariant firm characteristics drives our results. To address this concern, we conduct two additional tests by exploiting the timing of director appointments. First, if the stopper interlock effect we find is caused by director-firm matching, conditional on firms being matched with specific directors, the timing of the director appointment should not matter. We include an indicator variable, *Director-firm matching*, which equals one if a firm has a director who serves on the board of another company that stop providing quarterly earnings guidance at any point during our sample period, and zero otherwise.

[15] Following Reichelt and Wang (2010), we first identify geographic city of each auditor from Audit Analytics and categorize it by MSA to define same-office auditors.

If director-firm matching solely explains our results, the marginal effect of *Interlock* should become insignificant once we include the *Director-firm matching* indicator. We find this not to be the case, however. Table 7 Column 1 shows that even after controlling for *Director-firm matching*, the marginal effect of *Interlock* remains positive and statistically significant.

Second, we track those directors who depart from a guidance stopper's board before it stopped providing quarterly earnings guidance (*Left directors*) to determine whether other firms whose boards they join have a higher likelihood of quarterly earnings guidance cessation. Figure 1 Panel A provides an example of *Left directors*. Because they leave the stopper's board prior to the stopping, these *Left directors* do not have the actual knowledge and experience of quarterly earnings guidance cessation to transfer to the interlocked firms. If knowledge and experience influence the likelihood of quarterly earnings guidance cessation as we hypothesize, *Left directors* should have no effect on the focal firm's guidance cessation likelihood. If director-firm matching drives the positive relation between stopper interlocks and the likelihood of quarterly earnings guidance cessation, however, firms that *Left directors* join would also have a higher likelihood of quarterly earnings guidance cessation, because these directors were once matched to stopper firms. Column 2 of Table 8 shows that the stopper interlock effect is robust after controlling for *Left director*. In contrast, *Left director* is not significantly related to the likelihood of quarterly earnings guidance cessation.[16] Overall, it is unlikely that director-firm matching can explain the positive effect of stopper interlocks on the likelihood of stopping quarterly earnings guidance.

4.2 Strategic board stacking

[16] The number of observtions with *Left Director* = 1 is 113. Therefore, lack of power is unlikely the cause for the insignificant marginal effect of *Left Director*.

Another potential explanation for our findings is that a firm planning to stop quarterly earnings guidance may actively seek out and appoint directors who serve on the boards of other companies that have recently done so.[17] We find that the average tenure of stopper-interlocked directors in our sample is 9.0 years (measured at the time of stopping), and interlocked directors with such a long tenure are very unlikely to be recruited for the purpose of stopping quarterly earnings guidance. Although we believe that such strategic board stacking is a less plausible alternative explanation for our findings, we nonetheless address this concern in two ways. First, the board stacking effect should come mostly from recently appointed directors. If we find a robust interlock effect on quarterly earnings guidance cessation for long-seated directors, the interlock effect is unlikely to be driven by strategic board stacking. We create an indicator variable, *Tenure<=2yrs*, which equals one if the stopper-interlocked directors have a tenure of two years or less, and zero otherwise. If a firm has multiple directors interlocked with previous stoppers, we define *Tenure<=2yrs* indicator based on the director with the shortest tenure. In our sample, only 23 firm-quarters are associated with stopper-interlocked directors whose tenures are two years or shorter. In Table 8 column 1, we include the interaction of *Tenure<=2yrs* and *Interlock*. We find that interlocked directors with short tenures are not more likely to stop quarterly earnings guidance, and the marginal effect of *Interlock* continues to show up positively and significantly.

We also follow Stuart and Yim (2010) to examine migrated directors to get a better understanding of board stacking. Consider the scenarios in Figure 1 Panel B. Firms A, B, and C are interlocked through director *x*, and Firm A is identified as a guidance stopper in year 2003. Arrows refer to the tenure of board services, and triangles indicate the years for which Firms B and C have

[17] Some stakeholders of the firm (e.g., financial analysts) may oppose stopping quarterly earnings guidance. To solidify the argument, managers may seek to appoint directors with guidance cessation experience.

Stopper Interlock = 1 because of Director *x*'s stopper experience in Firm A in 2003. Firms B and C represent the cases of pre-existing director and migrated director, respectively. For Firm B, director *x* serves on its board before Firm A becomes a guidance stopper. Director *x*, however, joins Firm C's board in 2004, a year after she/he acquires guidance cessation experience in Firm A in 2003, and we refer to such directors as migrated directors. If management plans to stop providing quarterly earnings guidance in the near future, it might actively recruit migrated directors who have experience with quarterly earnings guidance cessation. This board stacking concern is much alleviated in the case of pre-existing directors who have served on the sample firm's board prior to obtaining any guidance stopping experience (the case of firm B). We create an indicator variable, *Migrated director*, which equals one if the director who triggers the stopper interlock joined the focal firm subsequent to her stopping experience, and zero otherwise.[18] We find that only 3 firm-quarters in our sample are associated with migrated directors. Column 2 of Table 8 shows that migrated directors are not more likely to stop quarterly earnings guidance, inconsistent with the notion that firms stack up directors with guidance cessation experience to prepare for stopping quarterly earnings guidance. More importantly, the marginal effect of the *Interlock* variable remains positive and statistically significant in Table 8, and the magnitude is similar to that in the baseline specification in column 3 of Table 3, suggesting that strategic board stacking alone cannot explain the positive stopper interlock effect on guidance cessation.

In addition, it appears that board stacking is not a common practice used to influence guidance decision by our sample firms, since only 23 firm-quarters are associated with stopper-interlocked directors who have a tenure of two years or less and only 3 firm-quarters are associated with migrated directors. It is possible that low power might have contributed to the

[18] For a firm that has multiple directors interlocked with previous stoppers, we define *Migrated director* = 1if the firm has at least one migrated director.

insignificant marginal effects of those variables. This does not change the main intuition, however; it is unlikely that our results are driven by strategic board stacking in firms that plan to stop quarterly earnings guidance.

5 Conclusion

We examine whether social networks influence firm disclosure policies. We find that network ties via board interlocks increase the likelihood of quarterly earnings guidance cessation and that director-specific experience from prior quarterly earnings guidance cessation is important for disclosure policy contagion. We find that the positive director network effect on the likelihood of quarterly earnings guidance cessation is particularly stronger for firms with stopper-interlocked directors who experienced positive consequences of stopping quarterly earnings guidance at the previous stoppers.

We find that both audit committee directors and non-audit committee directors contribute to the contagion of guidance cessation. The influence of audit committee directors appears to be greater than that of non-audit committee directors, although the difference is not statistically significant. We obtain similar results if we examine audit committee chairs. We find some weak evidence that stopper-interlocked directors play bigger (smaller) roles when motivations for guidance cessation are weaker (stronger).

Further analyses suggest that such disclosure policy contagion is not caused by endogenous director-firm matching or strategic board stacking. Our results are robust to controlling for potential correlated omitted variables, such as geographical proximity, industry trends, and overlapping auditors, investors, and analysts. Following Stuart and Yim (2010), we exploit the sequence of events in the data to further address the endogenous director-firm

matching caused by unobserved factors. The stopper interlock effect is robust even after controlling for director-firm matching and strategic board stacking. Overall, the evidence is consistent with our causal hypothesis that firm disclosure policies spread through social networks such as board interlocks.

Our study contributes to the accounting and finance literature, as well as the social network literature, by demonstrating that board networks serve as specific conduits for information sharing that influences corporate disclosure policies and that the interlocked directors' outcome-specific experience affects policy contagion through shared directors. We also add to the voluntary disclosure literature by demonstrating that firm disclosure behavior is not only determined by firm and industry characteristics, but also influenced by larger social structures. We show that knowledge and experience gained through director networks are important determinants of the quarterly earnings guidance cessation, an important change in firm disclosure policy. Our study can help investors and regulators better understand the mechanics behind voluntary disclosure changes. Future research should control for the effect of director interlocks when examining disclosure policy changes. Researchers should also consider that knowledge and experience that directors gain from other directorships might influence disclosure and other corporate policy changes.

Appendix Variable definitions

Variable	*Description*
BHRET	Market-adjusted buy-and-hold stock returns in the one-year period prior to the event quarter.
ΔPMBAF	Change in the percentage of quarters for which the firm meets or beats consensus analyst forecasts in the pre-event period (quarters t-4 to t-1, where quarter t is the event quarter) relative to the year prior to the pre-event period (quarters t-8 to t-5).
ΔSTDret	Change in the standard deviation of daily stock returns calculated over the pre-event period relative to the standard deviation of daily stock returns measured over the preceding 252 trading days.
ΔDISP	Change in the analyst forecast dispersion, calculated as the standard deviation of the last analyst forecasts prior to quarter t-1 earnings announcement scaled by lagged stock price, relative to the same measure in quarter t-8.
ΔAF	Change in analyst following, calculated as the change in the number of analysts covering the firm in quarter t-1 relative to the same measure in quarter t-8.
ΔPINST	Change in the percentage of institutional ownership, calculated as the change in the percentage of shares held by institutional investors in quarter t-1 relative to quarter t-4.
ΔLTPINST	Change in long-run institutional ownership, calculated as the difference in the aggregate percentage ownership held by dedicated investors and quasi-indexers in quarter t-1 relative to quarter t-4.
LITIGATION	Litigation risk, the estimated probability of being sued by shareholders, based on the litigation exposure model as in Tucker (2007) and Houston et al. (2010).
MV	Market value of equity at the end of the pre-event period in million dollars. We use *LNMV*, the natural logarithm of *MV* in probit regressions.
MB	Market-to-book ratio at the end of the pre-event period. We use *LNMB*, the natural logarithm of *MB* in probit regressions.
LNCT	The natural logarithm of one plus the number of management quarterly forecasts made through quarter t-1 in the CIG database.
REGFD	An indicator variable that equals one if the firm's first management forecast on the CIG database occurs after the passage of Regulation FD.
CEO turnover	An indicator variable that equals one if there is a change in CEO in the fiscal year prior to the event quarter.
CFO turnover	An indicator variable that equals one if there is a change in CFO in the fiscal year prior to the event quarter.
Board size	The number of directors on the board.
Average board tenure	The average number of years severing on the board.
Average board age	The average age of directors on the board.
% of independent directors	Percentage of independent directors on the board.
CEO=Chairman	An indicator variable that equals one if the CEO also serves as the chairman of the board.
CEO ownership	The percentage of CEO's stock ownership.
ΔEPS	The average change in diluted EPS in the four pre-event quarters relative to their respective last year same quarter values, deflated by the stock price at The beginning of the pre-event period.

FutureEPS	The average change in diluted EPS from the four pre-event quarters to the four post-event quarters, deflated by the stock price at the beginning of the pre-event period.
LOSS	The proportion of loss-reporting quarters in the pre-event period.
Low BHRET	An indicator variable that equals one for *BHRET* in the lowest quartile of the distribution.
Positive Δ(forecast dispersion)	An indicator variable that equals one if interlocked previous stoppers have experienced positive changes in forecast dispersion from the pre-event quarters to the post-event quarters, and zero otherwise.
Positive Δ(forecast error)	An indicator variable that equals one if interlocked previous stoppers have experienced positive changes in forecast error from the pre-event quarters to the post-event quarters, and zero otherwise.
Negative Δ(analyst following)	An indicator variable that equals one if interlocked previous stoppers have experienced negative changes in analyst from the pre-event quarters to the post-event quarters, and zero otherwise.
Positive Δ(return volatility)	An indicator variable that equals one if interlocked previous stoppers have experienced positive changes in daily return volatility from the pre-event quarters to the post-event quarters, and zero otherwise.
Director-firm matching	An indicator variable that equals one if a firm has a director who serves on the board of another company that stop providing quarterly earnings guidance at any point during our sample period, and zero otherwise.
Left director	An indicator variable that equals one if any director of the firm departed from a guidance stopper's board before the stopping event, and zero otherwise.
Tenure<=2yrs	An indicator variable that equals one if the stopper-interlocked directors have a tenure of two years or less, and zero otherwise.
Migrated director	An indicator variable that equals one if the director who triggers the stopper interlock joined the focal firm subsequent to her/his guidance stopping experience, and zero otherwise.

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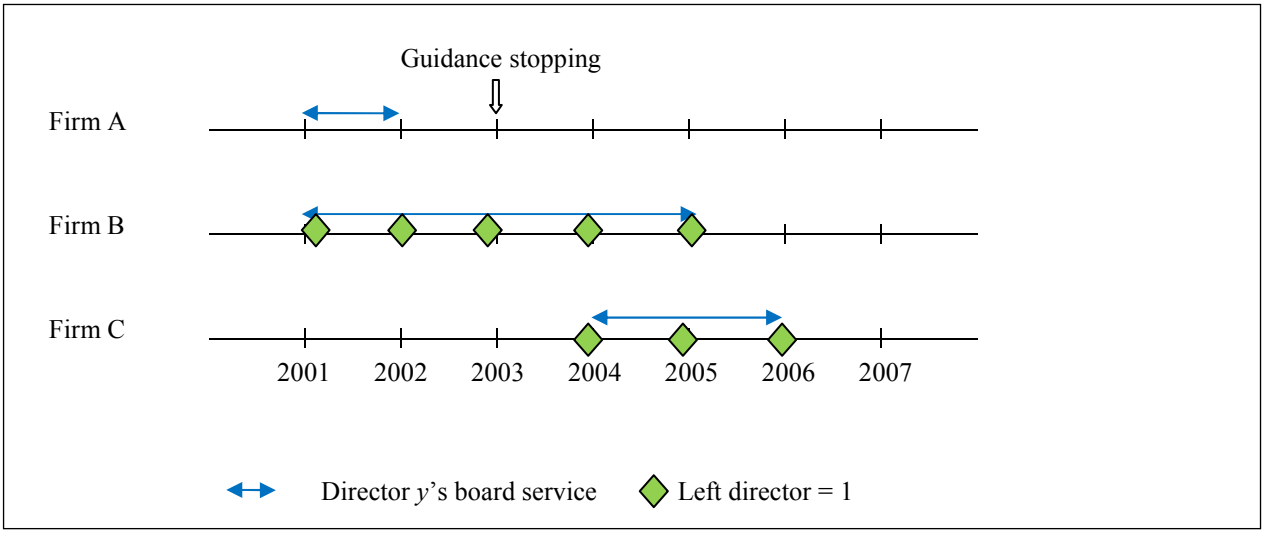
Figure 1 Board interlocks and timing of link activation

Panel A: Left director



Panel B: Migrated director

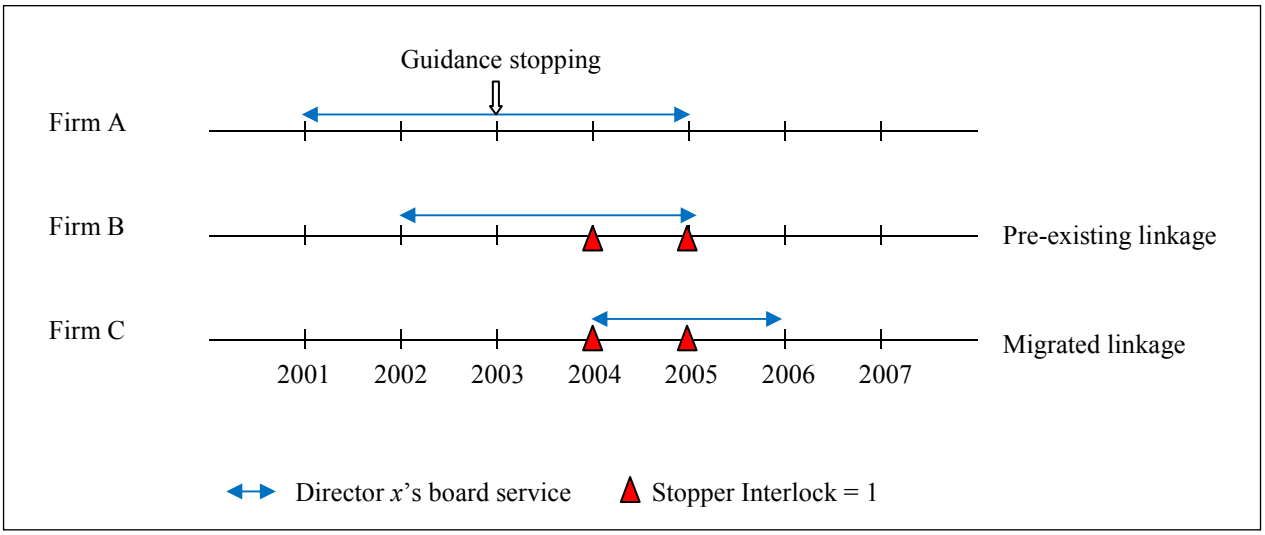


Table 1 Calendar year-quarter distribution of stoppers and maintainers

Year	Quarter	# of stoppers	# of stoppers with interlock	% of stoppers with interlock	# of maintainers	# of maintainers with interlock	% of maintainers with interlock
2002	1	9			29		
2002	2	4			17		
2002	3	4			35		
2002	4	7			19		
2003	1	8			16		
2003	2	16			14		
2003	3	7			22		
2003	4	5			28		
2004	1	5	3	60.0	32	1	3.1
2004	2	5	1	20.0	30	5	16.7
2004	3	4	2	50.0	30	7	23.3
2004	4	3	1	33.3	34	5	14.7
2005	1	11	4	36.4	21	1	4.8
2005	2	10	1	10.0	22	2	9.1
2005	3	7	1	14.3	31	2	6.5
2005	4	5	2	40.0	29	5	17.2
2006	1	13	5	38.5	34	4	11.8
2006	2	10	2	20.0	27	7	25.9
2006	3	6	4	66.7	26	3	11.5
2006	4	11	4	36.4	22	1	4.5
2007	1	8	3	37.5	25	3	12.0
2007	2	7	1	14.3	26	5	19.2
2007	3	4	1	25.0	26	1	3.8
2007	4	9	2	22.2	21	4	19.0
2008	1	17	5	29.4	22	2	9.1
2008	2	9	1	11.1	21	3	14.3
2008	3	3	0	0.0	23	4	17.4
2008	4	8	2	25.0	25	3	12.0
2009	1	22	3	13.6	24	3	12.5
2009	2	7	2	28.6	25	1	4.0
2009	3	2	0	0.0	30	4	13.3
2009	4	1	0	0.0	20	1	5.0
2010	1	3	2	66.7	40	1	2.5
2010	2	1	0	0.0	36	1	2.8
Total (2002/Q1-2010/Q2)		251			882		
Total (2004/Q1-2010/Q2)		191	52	27.2	702	79	11.3

This table reports the distribution of our sample by calendar year-quarters. Stoppers are firms that issue quarterly earnings guidance for at least three out of four pre-event quarters, but give no quarterly earnings guidance for the event quarter and three post-event quarters. Maintainers are firms that provide quarterly earnings guidance for at least three out of the four quarters in both the pre- and post-event periods.

Table 2 Summary statistics

Panel A: Full sample descriptive statistics

Variables	N	MEAN	MEDIAN	STD	P25	P75
Stopper	893	0.214	0.000	0.410	0.000	0.000
Interlock	893	0.147	0.000	0.354	0.000	0.000
BHRET	893	-0.025	-0.074	0.410	-0.299	0.156
ΔEPS	889	0.000	0.001	0.021	-0.004	0.004
FutureEPS	887	0.000	0.001	0.022	-0.005	0.005
LOSS	891	0.149	0.000	0.272	0.000	0.250
ΔPMBAF	893	0.008	0.000	0.299	-0.250	0.250
ΔSTDret	893	0.009	-0.080	1.127	-0.617	0.501
ΔDISP	893	0.015	0.000	0.103	0.000	0.037
ΔAF	893	0.826	1.000	3.320	-1.000	3.000
ΔPINST	893	5.037	3.112	17.283	-3.140	10.893
ΔLTPINST	893	0.029	0.025	0.140	-0.030	0.088
LITIGATION	893	0.021	0.013	0.024	0.007	0.026
MV	893	5,033	1,308	11,808	516	3,597
MB	893	3.257	2.433	2.807	1.593	3.851
LNCT	893	2.889	2.890	0.618	2.485	3.332
REGFD	893	0.469	0.000	0.499	0.000	1.000
CEO turnover	893	0.031	0.000	0.174	0.000	0.000
CFO turnover	893	0.041	0.000	0.199	0.000	0.000
Board size	893	9.038	9.000	1.878	8.000	9.000
Average board tenure	893	8.954	8.700	2.702	7.667	9.667
Average board age	893	59.525	59.696	3.156	58.500	60.700
% of independent directors	893	73.384	75.000	11.439	71.429	80.000
CEO=Chairman	893	0.701	1.000	0.458	0.000	1.000
CEO ownership (%)	893	2.246	1.188	4.125	0.844	1.736
Δ(forecast dispersion) of interlock stoppers	131	-0.013	0.014	0.446	-0.023	0.082
Δ(forecast error) of interlock stoppers	131	-0.025	0.010	1.013	-0.040	0.107
Δ(analyst following) of interlock stoppers	131	-0.194	-0.250	1.887	-1.500	1.000
Δ(return volatility) of interlock stoppers	131	-0.001	-0.002	0.008	-0.005	0.002

Table 2 continued

Panel B: Stoppers versus maintainers

Variables	(1) Stopper (N=191)	(2) Maintainer (N=702)	(1)-(2)	*p*-value	
Interlock	0.272	0.113	0.160	<.0001	***
BHRET	-0.112	-0.001	-0.111	<.0001	***
ΔEPS	-0.003	0.001	-0.003	0.013	**
FutureEPS	-0.005	0.002	-0.006	0.000	***
LOSS	0.109	0.159	-0.050	0.007	***
ΔPMBAF	-0.076	0.031	-0.107	<.0001	***
ΔSTDret	0.308	-0.073	0.381	<.0001	***
ΔDISP	0.034	0.010	0.025	0.003	***
ΔAF	0.325	0.963	-0.638	0.018	**
ΔPINST	3.114	5.560	-2.446	0.059	*
ΔLTPINST	0.036	0.027	0.008	0.483	
LITIGATION	0.029	0.019	0.010	<.0001	***
MV	7,440	4,378	3,061	0.005	***
MB	3.385	3.222	0.163	0.516	
LNCT	3.101	2.831	0.270	<.0001	***
REGFD	0.361	0.499	-0.137	0.001	***
CEO turnover	0.047	0.027	0.020	0.227	
CFO turnover	0.052	0.038	0.014	0.434	
Board size	9.565	8.895	0.671	0.000	***
Average board tenure	9.223	8.880	0.343	0.195	
Average board age	59.855	59.435	0.420	0.158	
% of independent directors	73.922	73.238	0.684	0.521	
CEO=Chairman	0.581	0.734	-0.152	0.000	***
CEO ownership (%)	2.222	2.252	-0.030	0.930	
Δ(forecast dispersion) of interlock stoppers	-0.047	0.009	-0.056	0.488	
Δ(forecast error) of interlock stoppers	-0.054	-0.005	-0.050	0.785	
Δ(analyst following) of interlock stoppers	-0.183	-0.201	0.019	0.956	
Δ(return volatility) of interlock stoppers	-0.001	-0.001	0.000	0.961	

The table presents summary statistics of our sample. We report the full sample statistics in Panel A, and the means of stopper and maintainer subsamples in Panel B. *Stopper* is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that has stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. Among 191 stoppers, 52 are interlocked with previous stoppers. Among 702 maintainers, 79 are interlocked with previous stoppers. All other variables are defined in Appendix. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 3 Effect of board interlocks on the decision to stop quarterly earnings guidance

	(1)	(2)	(3)	(4)	(5)
Interlock		0.209***	0.125***	0.117***	0.132***
		(0.000)	(0.002)	(0.003)	(0.003)
BHRET	-0.171***		-0.169***	-0.159***	
	(0.000)		(0.000)	(0.000)	
ΔEPS				-1.269	
				(0.151)	
FutureEPS				-1.650**	
				(0.015)	
LOSS				-0.038	
				(0.509)	
Interlock* Low BHRET					-0.072
					(0.278)
Low BHRET					0.112***
					(0.006)
ΔPMBAF	-0.068		-0.072	-0.057	-0.086*
	(0.154)		(0.114)	(0.223)	(0.062)
ΔSTDret	-0.018		-0.027	-0.028	-0.026
	(0.444)		(0.222)	(0.210)	(0.251)
ΔDISP	0.312**		0.313**	0.395***	0.300**
	(0.027)		(0.022)	(0.006)	(0.029)
ΔAF	-0.007*		-0.006	-0.006	-0.006
	(0.091)		(0.146)	(0.144)	(0.115)
ΔPINST	-0.001		-0.001	-0.001	-0.001
	(0.178)		(0.251)	(0.264)	(0.155)
ΔLTPINST	0.107		0.109	0.088	0.132
	(0.315)		(0.276)	(0.368)	(0.197)
LITIGATION	0.638		0.752	0.740	1.251**
	(0.321)		(0.225)	(0.223)	(0.049)
LNMV	0.044***		0.036***	0.034***	0.039***
	(0.000)		(0.001)	(0.003)	(0.000)
LNMB	0.008		0.005	0.015	-0.012
	(0.730)		(0.805)	(0.494)	(0.575)
LNCT	0.053**		0.043*	0.045*	0.037
	(0.041)		(0.090)	(0.074)	(0.127)
REGFD	-0.002		0.010	0.006	-0.004
	(0.957)		(0.717)	(0.820)	(0.892)
CEO turnover			0.158*	0.154*	0.094
			(0.062)	(0.063)	(0.241)
CFO turnover			0.040	0.030	0.065
			(0.538)	(0.633)	(0.353)
Board size			-0.068	-0.062	-0.049
			(0.328)	(0.376)	(0.481)
Average board tenure			0.005	0.004	0.007
			(0.291)	(0.376)	(0.156)
Average director age			-0.000	0.001	-0.001
			(0.975)	(0.893)	(0.853)

% of independent directors			0.001	0.001	0.001
			(0.351)	(0.359)	(0.346)
CEO=Chairman			-0.127***	-0.115***	-0.125***
			(0.000)	(0.000)	(0.000)
CEO ownership			0.002	0.003	0.002
			(0.449)	(0.358)	(0.545)
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Observations	893	893	893	885	893
Pseudo R-squared	0.199	0.134	0.234	0.244	0.204

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. We have 191 stoppers and 702 maintainers in our sample. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. In our sample, 131 firms are interlocked with previous stoppers, and the remaining 762 firms are not interlocked with previous stoppers. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 4 Director-specific experience and board interlock effect

	(1)	(2)	(3)	(4)
Interlock	0.198***	0.234***	0.128**	0.102**
	(0.001)	(0.000)	(0.015)	(0.029)
Interlock*positive Δ(forecast dispersion) (N=79)	-0.091**			
	(0.046)			
Interlock*positive Δ(forecast error) (N=73)		-0.118***		
		(0.004)		
Interlock*negative Δ(analyst following) (N=74)			-0.029	
			(0.591)	
Interlock*positive Δ(return volatility) (N=44)				0.005
				(0.929)
BHRET	-0.154***	-0.157***	-0.149***	-0.151***
	(0.000)	(0.000)	(0.001)	(0.001)
ΔPMBAF	-0.067	-0.069	-0.069	-0.069
	(0.139)	(0.128)	(0.129)	(0.129)
ΔSTDret	-0.025	-0.025	-0.026	-0.026
	(0.272)	(0.286)	(0.262)	(0.261)
ΔDISP	0.315**	0.314**	0.328**	0.324**
	(0.020)	(0.020)	(0.017)	(0.018)
ΔAF	-0.007*	-0.007*	-0.007*	-0.007*
	(0.099)	(0.064)	(0.090)	(0.090)
ΔPINST	-0.001	-0.001	-0.001	-0.001
	(0.190)	(0.266)	(0.205)	(0.206)
ΔLTPINST	0.135	0.111	0.132	0.130
	(0.177)	(0.272)	(0.191)	(0.199)
LITIGATION	1.125*	1.063*	1.049*	1.019
	(0.074)	(0.093)	(0.099)	(0.107)
LNMV	0.041***	0.041***	0.041***	0.041***
	(0.000)	(0.000)	(0.000)	(0.000)
LNMB	-0.007	-0.005	-0.008	-0.008
	(0.706)	(0.785)	(0.706)	(0.691)
LNCT	0.033	0.029	0.031	0.030
	(0.156)	(0.224)	(0.188)	(0.199)
REGFD	0.002	0.002	-0.000	-0.001
	(0.945)	(0.952)	(0.991)	(0.960)
CEO turnover	0.115	0.113	0.120	0.120
	(0.153)	(0.162)	(0.129)	(0.132)
CFO turnover	0.043	0.052	0.047	0.048
	(0.512)	(0.431)	(0.477)	(0.470)
Board size	-0.058	-0.056	-0.065	-0.067
	(0.389)	(0.400)	(0.334)	(0.316)
Average board tenure	0.006	0.006	0.006	0.006
	(0.185)	(0.215)	(0.212)	(0.224)
Average director age	-0.001	0.000	-0.000	-0.000
	(0.888)	(0.991)	(0.983)	(0.989)
% of independent directors	0.001	0.001	0.001	0.001
	(0.221)	(0.228)	(0.296)	(0.306)

CEO=Chairman	-0.118***	-0.119***	-0.118***	-0.117***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO ownership	0.002	0.002	0.002	0.002
	(0.424)	(0.391)	(0.445)	(0.453)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Observations	893	893	893	893
Pseudo R-squared	0.213	0.219	0.209	0.209

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 5 Effect of interlocks through different types of directors on the decision to stop quarterly earnings guidance

	(1)	(2)	(3)	(4)
Interlock through focal firm's audit committee members (N=51)	0.155**			
	(0.012)			
Interlock through focal firm's non-audit committee members (N=80)	0.113**			
	(0.028)			
Interlock through focal firm's audit committee chair (N=13)		0.276**		
		(0.027)		
Interlock through focal firm's non-audit committee chair (N=118)		0.110***		
		(0.009)		
Interlock through previous stopper firm's audit committee members (N=61)			0.149***	
			(0.009)	
Interlock through previous stopper firm's non-audit committee members (N=70)			0.110**	
			(0.036)	
Interlock through previous stopper firm's audit committee chair (N=21)				0.204**
				(0.036)
Interlock through previous stopper firm's non-audit committee chair (N=110)				0.112**
				(0.010)
BHRET	-0.169***	-0.172***	-0.169***	-0.167***
	(0.000)	(0.000)	(0.000)	(0.000)
ΔPMBAF	-0.070	-0.069	-0.072	-0.072
	(0.127)	(0.133)	(0.116)	(0.116)
ΔSTDret	-0.027	-0.028	-0.027	-0.026
	(0.225)	(0.212)	(0.235)	(0.254)
ΔDISP	0.313**	0.312**	0.312**	0.313**
	(0.022)	(0.021)	(0.022)	(0.021)
ΔAF	-0.006	-0.006	-0.006	-0.006
	(0.138)	(0.129)	(0.148)	(0.131)
ΔPINST	-0.001	-0.001	-0.001	-0.001
	(0.258)	(0.256)	(0.258)	(0.244)
ΔLTPINST	0.106	0.103	0.108	0.112
	(0.290)	(0.302)	(0.281)	(0.262)
LITIGATION	0.778	0.775	0.758	0.764
	(0.209)	(0.211)	(0.218)	(0.216)
LNMV	0.036***	0.036***	0.036***	0.036***
	(0.001)	(0.001)	(0.001)	(0.001)
LNMB	0.005	0.006	0.005	0.005
	(0.834)	(0.765)	(0.804)	(0.807)
LNCT	0.043*	0.043*	0.043*	0.044*

	(0.090)	(0.088)	(0.088)	(0.085)
REGFD	0.011	0.012	0.010	0.012
	(0.678)	(0.667)	(0.704)	(0.671)
CEO turnover	0.156*	0.154*	0.157*	0.161*
	(0.064)	(0.068)	(0.063)	(0.057)
CFO turnover	0.038	0.040	0.038	0.040
	(0.555)	(0.537)	(0.552)	(0.531)
Board size	-0.064	-0.062	-0.068	-0.064
	(0.361)	(0.373)	(0.329)	(0.357)
Average board tenure	0.005	0.005	0.005	0.005
	(0.278)	(0.264)	(0.290)	(0.274)
Average director age	-0.000	-0.000	-0.000	-0.000
	(0.968)	(0.989)	(0.966)	(0.972)
% of independent directors	0.001	0.001	0.001	0.001
	(0.333)	(0.318)	(0.341)	(0.328)
CEO=Chairman	-0.126***	-0.127***	-0.128***	-0.127***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO ownership	0.002	0.002	0.002	0.002
	(0.440)	(0.427)	(0.454)	(0.438)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
Observations	893	893	893	893
Pseudo R-squared	0.235	0.236	0.235	0.235
Chi-square	0.221	1.213	0.222	0.535
p-value	0.638	0.271	0.638	0.464

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock through focal firm's audit committee members* is an indicator variable that equals one if any stopper-interlocked director is an audit committee member of the firm, and zero otherwise, where a stopper interlocked-director is a director who served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years (previous stopper). *Interlock through focal firm's non- audit committee members* is an indicator variable that equals one if the firm has a stopper-interlocked director but no stopper-interlocked director is an audit committee member of the firm, and zero otherwise. *Interlock through focal firm's audit committee chair* is an indicator variable that equals one if any stopper interlocked director is the audit committee chair of the firm, and zero otherwise. *Interlock through focal firm's non-audit committee chair* is an indicator variable that equals one if the firm has a stopper-interlocked director but no stopper-interlocked director is the audit committee chair of the firm, and zero otherwise. *Interlock through previous stopper firm's audit committee members* is an indicator variable that equals one if any any stopper-interlocked director was an audit committee member of previous stoppers, and zero otherwise. *Interlock through previous stopper firm's non-audit committee members* is an indicator variable that equals one if the firm has a stopper-interlocked director but no stopper-interlocked director was an audit committee member of previous stoppers, and zero otherwise. *Interlock through previous stopper firm's audit committee chair* is an indicator variable that equals one if any stopper-interlocked director was an audit committee chair of previous stoppers, and zero otherwise. *Interlock through previous stopper firm's non-audit committee chair* is an indicator variable that equals one if the firm has a stopper-interlocked director but no stopper-interlocked director is an audit committee chair of previous stoppers, and zero otherwise. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 6 Interaction with motivations for guidance

	(1)	(2)	(3)
Interlock	0.788***	0.112***	0.177***
	(0.001)	(0.004)	(0.002)
Interlock*LNMV	-0.059***		
	(0.006)		
Interlock*BHRET		0.165*	
		(0.093)	
Interlock*LITIGATION			-2.215*
			(0.091)
BHRET	-0.161***	-0.192***	-0.156***
	(0.000)	(0.000)	(0.001)
ΔPMBAF	-0.062	-0.070	-0.068
	(0.168)	(0.121)	(0.143)
ΔSTDret	-0.028	-0.024	-0.028
	(0.243)	(0.301)	(0.240)
ΔDISP	0.339**	0.300**	0.377***
	(0.013)	(0.023)	(0.006)
ΔAF	-0.007*	-0.006	-0.007*
	(0.071)	(0.134)	(0.099)
ΔPINST	-0.001	-0.001	-0.001
	(0.179)	(0.193)	(0.252)
ΔLTPINST	0.112	0.120	0.120
	(0.255)	(0.229)	(0.232)
LITIGATION	0.875	0.899	1.358**
	(0.162)	(0.140)	(0.039)
LNMV	0.053***	0.042***	0.042***
	(0.000)	(0.000)	(0.000)
LNMB	-0.009	-0.004	-0.003
	(0.633)	(0.827)	(0.870)
LNCT	0.025	0.032	0.026
	(0.280)	(0.163)	(0.260)
REGFD	0.000	-0.002	0.008
	(0.999)	(0.944)	(0.751)
CEO turnover	0.119	0.117	0.118
	(0.126)	(0.147)	(0.132)
CFO turnover	0.047	0.047	0.044
	(0.472)	(0.466)	(0.498)
Board size	-0.054	-0.069	-0.049
	(0.416)	(0.294)	(0.469)
Average board tenure	0.006	0.006	0.005
	(0.180)	(0.207)	(0.308)
Average director age	-0.000	-0.000	0.000

	(0.988)	(0.954)	(0.927)
% of independent directors	0.001	0.001	0.001
	(0.239)	(0.294)	(0.310)
CEO=Chairman	-0.104***	-0.115***	-0.105***
	(0.000)	(0.000)	(0.000)
CEO ownership	0.002	0.002	0.002
	(0.545)	(0.440)	(0.448)
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
Observations	893	893	893
Pseudo R-squared	0.216	0.212	0.201

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 7 Board interlock effect and timing of link activation

	(1)	(2)
Interlock	0.154***	0.115***
	(0.000)	(0.007)
Director-firm matching (N=582)	-0.081***	
	(0.003)	
Left director (N=113)		0.034
		(0.366)
BHRET	-0.160***	-0.168***
	(0.000)	(0.000)
ΔPMBAF	-0.070	-0.072
	(0.120)	(0.113)
ΔSTDret	-0.027	-0.028
	(0.228)	(0.217)
ΔDISP	0.307**	0.314**
	(0.026)	(0.020)
ΔAF	-0.005	-0.006
	(0.174)	(0.162)
ΔPINST	-0.001	-0.001
	(0.215)	(0.266)
ΔLTPINST	0.094	0.107
	(0.337)	(0.282)
LITIGATION	0.757	0.722
	(0.221)	(0.245)
LNMV	0.035***	0.035***
	(0.001)	(0.001)
LNMB	0.002	0.004
	(0.915)	(0.842)
LNCT	0.043*	0.041
	(0.075)	(0.104)
REGFD	0.009	0.011
	(0.736)	(0.696)
CEO turnover	0.135*	0.161*
	(0.097)	(0.056)
CFO turnover	0.031	0.035
	(0.616)	(0.587)
Board size	-0.021	-0.071
	(0.769)	(0.311)
Average board tenure	0.004	0.005
	(0.457)	(0.294)
Average director age	0.000	-0.000
	(0.976)	(0.925)
% of independent directors	0.002	0.001
	(0.209)	(0.347)
CEO=Chairman	-0.119***	-0.129***
	(0.000)	(0.000)
CEO ownership	0.002	0.002
	(0.529)	(0.450)

Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Observations	893	893
Pseudo R-squared	0.241	0.235

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.

Table 8 Board interlock effect and director tenure: test of board stacking

	(1)	(2)
Interlock	0.104**	0.118***
	(0.016)	(0.004)
Interlock*Tenure <=2yrs (N=23)	0.095	
	(0.290)	
Interlock*Migrated (N=3)		0.330
		(0.129)
BHRET	-0.174***	-0.168***
	(0.000)	(0.000)
ΔPMBAF	-0.073	-0.072
	(0.112)	(0.117)
ΔSTDret	-0.027	-0.028
	(0.222)	(0.220)
ΔDISP	0.308**	0.312**
	(0.023)	(0.022)
ΔAF	-0.006	-0.006
	(0.149)	(0.137)
ΔPINST	-0.001	-0.001
	(0.232)	(0.249)
ΔLTPINST	0.114	0.111
	(0.256)	(0.268)
LITIGATION	0.722	0.758
	(0.242)	(0.221)
LNMV	0.036***	0.036***
	(0.001)	(0.001)
LNMB	0.007	0.006
	(0.752)	(0.775)
LNCT	0.044*	0.044*
	(0.080)	(0.082)
REGFD	0.011	0.011
	(0.681)	(0.683)
CEO turnover	0.163*	0.160*
	(0.053)	(0.058)
CFO turnover	0.039	0.038
	(0.544)	(0.556)
Board size	-0.064	-0.067
	(0.364)	(0.341)
Average board tenure	0.005	0.005
	(0.283)	(0.277)
Average director age	-0.000	-0.000
	(0.932)	(0.936)
% of independent directors	0.001	0.001
	(0.317)	(0.337)
CEO=Chairman	-0.126***	-0.129***
	(0.000)	(0.000)
CEO ownership	0.002	0.002
	(0.430)	(0.430)

Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Observations	893	893
Pseudo R-squared	0.236	0.236

The table reports marginal effects of probit regressions. The dependent variable, *Stopper*, is an indicator variable that equals one for firm-quarters if the firm stops providing quarterly earnings guidance in that calendar quarter, and zero otherwise. *Interlock* is an indicator variable that equals one if any director of the firm served on the board of another company that stopped providing quarterly earnings guidance at any point in the previous two years, and zero otherwise. All other variables are defined in Appendix. *p*-values are reported in parenthesis. ***, **, and * denote 1%, 5%, and 10% statistical significance levels, respectively.