Restrictions on Managers' Outside Employment Opportunities and Asymmetric Disclosure of Bad versus Good News

Ashiq Ali
Naveen Jindal School of Management
University of Texas at Dallas
Email: ashiq.ali@utdallas.edu

Ningzhong Li
Naveen Jindal School of Management
University of Texas at Dallas
Email: ningzhong.li@utdallas.edu

Weining Zhang
Cheung Kong Graduate School of Business
Email: wnzhang@ckgsb.edu.cn

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ABSTRACT

This study examines the effect of restrictions on managers' outside employment opportunities on voluntary corporate disclosure. The recognition of the Inevitable Disclosure Doctrine (IDD) by courts in the U.S. states in which the firms are headquartered place greater restrictions on the managers from joining or forming a rival company upon their dismissal. We show that asymmetric withholding of bad news relative to good news is greater in states that recognize the IDD than in other states, and that this effect is weaker in firms with greater institutional ownership, analyst following, and board independence. These results suggest that restrictions on managers' outside employment opportunities have a significant unintended effect on corporate disclosure behavior. We further validate this conclusion by showing that the asymmetric withholding of bad news relative to good news is greater in states with stricter enforcement of noncompetition agreements, employment contracts that prohibit employees from joining or forming a competing firm. We also document that the effects of the IDD and noncompetition agreements on disclosure are incremental to each other.

JEL Classification: D82; M4

Keywords: Managers' outside employment opportunities; Inevitable Disclosure Doctrine; Withholding of bad news relative to good news; Voluntary corporate disclosure; Noncompetition employment contracts

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1. Introduction

Firms can impose significant restrictions on their managers' outside employment opportunities. Recent studies in economics and finance address the consequences of such restrictions by examining the effect of the Inevitable Disclosure Doctrine (hereafter, IDD) (see e.g., Png and Samila, 2013; Klasa, Ortiz-Molina, Serfling, and Srinivasan, 2015). The IDD is a legal doctrine through which an employee may be enjoined from a new job when the former employer can demonstrate that the employee's new duties will "inevitably" require the employee to disclose, use, or rely upon knowledge of the former employer's trade secrets (Kahnke, Bundy, and Daniels, 2013). As a firm's top management generally has access to the firm's trade secrets, the IDD will restrict their outside employment opportunities. Restrictions imposed by the IDD differ across firms depending on whether they are headquartered in states that recognize the IDD (Klasa et al., 2015). In this study, we examine the effect of restrictions on outside employment opportunities due to the IDD on corporate voluntary disclosure policies.

If terminated from their current job, the managers' outside employment opportunities are likely to be more restricted in case their firms are in states that recognize the IDD than if they are in states that do not recognize the IDD.[1] When restrictions on managers' outside employment opportunities are greater, they would be more concerned about getting dismissed from their current job and therefore they would be more motivated to favorably influence their employers' assessment of their ability (Gibbons and Murphy, 1992). These managers are therefore likely to work harder to generate good firm performance (Holmstrom, 1982). In addition, they are likely to engage in asymmetric voluntary disclosure. Specifically, they are

[1] We thank attorneys Randall Kahnke, Michael Stick, and Cameron Shilling for valuable discussions on legal issues associated with the IDD.

likely to withhold bad corporate news, and gamble that subsequent corporate events will turn in their favor, enabling them to bury the bad news (e.g., Graham, Harvey and Rajgopal, 2005; Kothari, Shu, and Wysocki, 2009). Accordingly, we predict that firms are more likely to delay the disclosure of bad news relative to good news if they are in states where the courts recognize the IDD.

Following Kothari et al. (2009, KSW hereafter), we estimate managers' tendency to withhold bad news relative to good news by examining stock price behavior around two types of discretionary corporate disclosures: announcements of dividend changes and management earnings forecasts. KSW argues that if managers accumulate and withhold bad news up to a certain threshold before formally disclosing it, but leak or more quickly publicly disclose the good news, then stock market reactions to the public release of bad versus good news are expected to be asymmetric. They predict that the stock price reaction to public disclosure would be greater for bad news than for good news. They also predict that a greater fraction of news would be impounded in stock prices prior to the formal disclosure of good news than of bad news. Their empirical results suggest that management on average withholds bad news relative to good news, and that this asymmetry is larger when certain managerial incentives to withhold bad news are greater.

We modify KSW's methodology to examine whether firms in states that recognize the IDD are more likely to delay the disclosure of bad news relative to good news using a difference-in-difference design. The staggered adoption/rejection of the IDD across states allows us to draw a causal inference on the effect of restrictions on managers' outside employment opportunities on their asymmetric withholding of bad news relative to good news. For the sample period 1977-2013, we find strong results consistent with our prediction. Specifically, we find that the difference in five-day cumulative abnormal stock returns for announcements of dividend cuts versus dividend increases is greater for firms headquartered in states that recognize the IDD.

Also, the difference in the fraction of news impounded in stock prices prior to announcements of dividend increases versus dividend cuts is larger in these states. These associations are weaker for firms with greater institutional ownership, analyst following, and board of directors' independence. These results support our predictions that managers have greater incentive to withhold bad news when their firms' states recognize the IDD and that this opportunistic disclosure behavior is less pronounced in firms with stronger monitoring of disclosure policy.

Following KSW, we repeat all our empirical analyses using a sample of management earnings forecasts for the period 1995-2010. We find consistent results, providing additional confidence in our conclusions. To address the concern associated with bundled forecasts (Rogers and Van Buskirk, 2013), we repeat our analyses using only unbundled forecasts. Our results are robust to using this subsample.[2]

We further explore the *ex post* settlement of withheld information to support our argument that managers are more likely to withhold bad news relative to good news after the states their firms operate in recognize the IDD. If things are not turning around as managers expect after they withhold bad news, we expect the news will be at least partially released in earnings announcement (Roychowdhury and Sletten, 2012) and the stock price crash risk will increase when the news cannot be withheld further (e.g., Piotroski, Wong, and Zhang, 2015; Jin and Myers, 2006). Consistent with these predictions, we find that the recognition of the IDD leads to greater earnings informativeness during bad news quarters relative to good news ones and a significant increase in firms' stock price crash risk, and as expected these effects are less pronounced in firms with stronger monitoring of disclosure policy.[3]

[2] We do not consider comparing the frequencies of public disclosures of good news and bad news for examining the asymmetric disclosure behavior in our main analyses. As KSW (page 246) note, "public disclosures do not capture other disclosure channels including the informal leaking of good news information to investors. Managers may prefer private channels to communicate good news in certain cases…." As an example they note, "making an early public disclosure of good news can be risky if the news does not materialize and can expose the firm to greater litigation risk." That said, the evidence based on the frequency of management earnings forecasts is also consistent with our prediction (see Section 8.2).

[3] Although higher stock price cash risk may hurt the manager's career, it does not conflict with our prediction that

Finally, we consider for our analyses another institutional arrangement that restricts managers outside employment opportunities, namely, noncompetition agreements. These agreements restrict managers from joining or forming a rival company for a pre-specified period of time, and is commonly used in the employment contracts of top executives (Schwab and Thomas, 2006; Garmaise, 2011; Bishara, Martin, and Thomas, 2013). The enforceability of these agreements differs across firms depending on the U.S. states they are headquartered in (Garmaise, 2011). Managers of firms headquartered in states with higher enforceability of noncompetition agreements would have more restricted outside employment opportunities if their current employment is terminated. We argue (in Section 2) that the IDD is likely to be more effective than noncompetition agreements in restricting top management's outside employment opportunities, and hence use the IDD setting for our primary analysis. Nevertheless, we conduct additional analysis using both the measures simultaneously and find that both the recognition of the IDD and the enforceability of noncompetition agreements exhibit a significant incremental effect, relative to each other, on firms' asymmetric bad news withholding.

Our study makes the following contributions to the literature. It adds to the recent work on the economic impact of the IDD and the noncompetition agreements. Prior studies show that the adoption of the IDD is associated with lower employee mobility and higher firm leverage (Png and Samila, 2013; Klasa et al., 2015). Prior studies also show that stricter enforcement of noncompetition agreements decreases employee mobility, discourages managers from investing in their own human capital, and impedes innovation and capital expenditure (Marx, Strumsky, and Fleming, 2009; Garmaise, 2011; Samila and Sorenson, 2011). Our study

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managers are more likely to withhold bad news relative to good news when their states recognize the IDD. Our central argument is that managers have greater incentives to withhold bad news *ex ante* due to career concerns if the expected benefits of doing so (inflated human capital evaluation) are greater than the expected costs (e.g., large negative stock market reaction when things do not turn around as expected). This argument implies that the market reaction to formal bad news announcement is stronger than that to formal good news announcement, and it is likely that things are not turning around *ex post* as managers expected and the stock price crash risk increases.

documents a novel, unintended consequence of the recognition of the IDD and the enforcement of noncompetition agreements. Specifically, firms withhold bad news relative to good news to a greater extent when their states recognize the IDD or when their states' enforcement of noncompetition agreements is stricter.

Our study also sheds light on whether management's career concerns affect corporate disclosures. Although career concerns have been argued in the literature to be an important economic driver of corporate disclosure (e.g., KSW; Hermalin and Weisbach, 2012), there is little empirical evidence on this issue. KSW examine this issue by using financial distress as a proxy for managers' career concerns, but do not find consistent results across the different tests in their paper. Accordingly, Beyer, Cohen, Lys, and Walther (2010, page 306) note, "our understanding of how management's career concerns affect their disclosure strategies is still limited, a fact previously noted in the survey by Healy and Palepu (2001)." Our study contributes to this issue, because restrictions on outside employment opportunities can be an important component of career concern. Our strong finding that firms are more likely to withhold bad news relative to good news if they are in U.S. states that recognize the IDD or have stricter enforceability of noncompetition agreements suggest that managers' career concern does affect voluntary corporate disclosure.

The rest of the paper is organized as follows. Section 2 provides institutional background of the IDD. Section 3 develops the hypotheses. Section 4 presents our research methodology. Section 5 presents our main empirical analysis. Section 6 provides analyses of how the withheld information is settled *ex post*. Section 7 presents additional analyses based on noncompetition agreements. Section 8 provides other additional analyses and Section 9 concludes.

2. Institutional background

2.1 Inevitable Disclosure Doctrine

The IDD is a legal doctrine through which an employee may be enjoined from a new job or certain activities at a new job when the former employer can demonstrate that the employee's new duties will "inevitably" require the employee to disclose, use, or rely upon knowledge of the former employer's trade secrets (Kahnke et al., 2013). Trade secrets include a wide, abstract area of subject matter, and the law of trade secrets did not have universally applicable principles until 1979. That year, the National Conference of Commissioners on Uniform State Laws issued the Uniform Trade Secrets Act (UTSA). This Act, along with its amendment in 1985, codified the existing common law and sought to promote uniformity of the legal treatment of trade secrets cases across states. Section 2(a) of the UTSA (1985) allows courts to provide injunctive relief for "actual or threatened misappropriation" of trade secrets. The term "threatened misappropriation" is considered the origin of the Inevitable Disclosure Doctrine (IDD).

Threatened misappropriation occurs when an employee with knowledge of a firm's trade secrets assumes a similar position at a direct competitor. "To obtain an injunction under the IDD, the firm must only establish that (i) the employee had access to its trade secrets; (ii) the employee's duties at the new job would be so similar to those she had at the firm that she will inevitably use or disclose the trade secrets; and (iii) the disclosure of the trade secrets would produce irreparable economic harm to its business." (Klasa et al., 2015, page 9)

The flagship case on the IDD is PepsiCo, Inc. v. Redmond in 1995. Redmond was employed at PepsiCo for ten years. He had access to the company's strategic plans for the coming year, when he left the company for a similar job at Quaker. PepsiCo sought to enjoin him from accepting the new job. The district court ruled that Redmond cannot work for Quaker for a period of five months, and can never use or disclose PepsiCo's trade secrets. The Seventh Circuit Court affirmed the ruling and concluded "a plaintiff may prove a claim of trade secret

misappropriation by demonstrating that the defendant's new employment will inevitably lead him to rely on the plaintiff's trade secrets." (PepsiCo, 54 F.3d)

Though IDD gained popularity after this case, courts' recognition of the IDD continue to differ across states. A precedent-setting case recognizing the IDD becomes common law and courts in the state subsequently follow the ruling on the applicability of the IDD. Similarly, if a subsequent ruling rejects the IDD, courts in the state start following the new ruling. Klasa et al. (2015) provide the dates of the precedent-setting cases. Eighteen U.S. state courts recognized the IDD at different points in time. These states include Arkansas, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Massachusetts, Minnesota, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Utah, and Washington. Three states, namely Florida, Michigan, and Texas, adopted and subsequently rejected the IDD. Table A1 in the Appendix, which is reproduced from Table 1 of Klasa et al. (2015), summarizes the years of adoption and rejection of IDD for these states.

A state's recognition of the IDD is plausibly exogenous with respect to economic factors related to managers' asymmetric withholding of bad versus good news for the following reasons. First, the adoption/rejection of the IDD is based on judicial decisions that are typically driven by only the merits of the specific legal case. It is not based on state laws whose passage could be influenced by the lobbying of affected parties with clout in the state, such as organizations representing workers or companies (Klasa et al., 2015). Second, the judicial decisions in the precedent-setting cases are mainly driven by the courts' striking a balance between two conflicting principles of law: freedom of employment and commercial morality (Harris, 2000). Thus, the courts' decisions in these precedent-setting cases are arguably exogenous with respect to managers' disclosure decisions.

2.2 Relation to noncompetition agreements

Like the IDD, noncompetition agreements also restrict employee mobility. Noncompetition agreements are employment contracts that prohibit employees from joining or forming a competing firm. The purpose of these agreements is typically to prevent employees from using trade secrets, business relationships, and customer data when they join or form a rival company. These agreements usually specify a time period and a geographic region within which the employee cannot compete with the current employer. Usual time restrictions are one to three years (Bishara et al., 2013). The geographical region is often a state or part of a state (Malsberger 2004).

The IDD has a much broader scope in restricting the mobility of executives than noncompetition agreements. First, not all executives sign noncompetition agreements. Garmaise (2011) shows that 30% of their sample firms do not use noncompetition agreements with their top executives. In contrast, the IDD is applicable even if the employee did not sign a noncompetition or nondisclosure agreement with the firm and even if there is no evidence of bad faith or actual wrongdoing. The IDD allows courts to grant an injunction solely on the basis that the disclosure of trade secrets is inevitable. Second, as noted above, the geographical scope of noncompetition agreements is usually limited to a state or part of a state (Malsberger, 2004), and in addition, it is considerably more difficult to enforce a noncompetition agreement across state boundaries than within a state (Cheskin and Lerner, 2003; Garmaise, 2011).[4] Thus, if a firm's major competitors are located in other states, noncompetition agreements imposes very limited restrictions on the firm's executives. In contrast, the IDD does not entail specific geographic restrictions and there is no evidence that it is more difficult to implement the IDD

[4] For instance, managers from states with strict noncompetition agreement enforceability can accept a job offer from firms in California, which has loose enforcement, and then ask California courts to void their noncompetition agreements. Even when an employee of a firm in a state with relatively strict enforcement moves to another state with similar noncompetition agreement enforceability, the enforcement of noncompetition agreement could be difficult (Cheskin and Lerner, 2003).

across state than within a state.

The IDD and noncompetition agreements could reinforce each other. On one hand, the IDD increases the enforceability of noncompetition agreements. The IDD is a powerful means of establishing a key element in any legal action to enforce a noncompetition agreement, namely, the existence of a significant likelihood of irreparable harm to the firm if the employee is allowed to work for the rival (Klasa et al., 2015). The IDD could also make noncompetition agreements enforceable even without bad faith, that is, when trade secrets will be disclosed inadvertently (Wiesner, 2012). On the other hand, although not required, courts seem to be more willing to grant an injunction based on the IDD in cases where the former employee has also signed a noncompetition agreement (Kahnke et al, 2008). In consideration of an inevitable disclosure claim of trade secret misappropriation, some courts have shown a willingness to impose a higher expectation of loyalty on employees who agreed at the outset of their employment to safeguard their employer's secrets (Kahnke et al, 2008).

Given that the IDD seems to be more effective than noncompetition agreements in restricting the outside employment opportunities of top management, we use the IDD setting for our primary analyses. Nevertheless, we conduct additional analysis to examine the incremental effects of the IDD and noncompetition agreements on the withholding of bad news by firms.

3. Hypotheses development

Prior studies suggest that when there is uncertainty about top management's ability, the labor market assesses it based on corporate performance (e.g., Gibbons and Murphy, 1992; Hermalin and Weisbach, 1998). An unfavorable assessment of their ability can have significant adverse effects, including termination. Greater restrictions on managers' outside employment opportunities are likely to make managers more concerned about getting dismissed from their

current job. This concern is likely to motivate these managers to work harder to generate good firm performance (Holmstrom, 1982). We argue that this concern is also likely to motivate these managers to strategically withhold from investors some of the information about their firms' performance in order to influence the market's assessment of their ability (Verrecchia, 2001; KSW). Whereas disclosure of good news would favorably affect the market's assessment of these managers' ability, the disclosure of bad news may lead to quick termination. Thus, managers with more restricted outside employment opportunities are more likely to withhold bad corporate news and gamble that subsequent corporate events will turn in their favor, enabling them to bury the bad news. Graham et al.'s (2005) survey evidence supports this idea.

We propose that managers of firms headquartered in states that recognize the IDD would have greater motivation to delay the disclosure of bad news relative to good news, because they would be more concerned about being terminated. Prior studies have shown that the IDD effectively prevents a firm's employees who know its trade secrets from working for a rival firm (e.g., Png and Samila, 2013; Klasa et al., 2015). According to our reading of legal cases and discussion with several lawyers, the IDD applies to employer initiated termination as well. As a firm's top management generally has access to the firm's trade secrets, the IDD will restrict their outside employment opportunities. Therefore, managers of firms in states that recognize the IDD will be more concerned about getting terminated from their job and are more likely to withhold bad news relative to good news. Based on the above discussion, we propose the following hypothesis:

H1: Firms in states that recognize the IDD are more likely than firms in other states to withhold bad news relative to good news.

Prior research contends that institutional investors and financial analysts desire and demand greater transparency and they penalize firms whose managers have a reputation of withholding bad news by choosing not to hold/follow their stocks (Skinner, 1994; Ajinkya, Bhojraj, and

Sengupta, 2005). Prior studies also argue that greater board independence leads to better monitoring of disclosure policy and fosters an environment that encourages greater transparency (Ajinkya et al., 2005). If our prediction of the greater likelihood of withholding of bad news relative to good news in firms headquartered in states that recognize the IDD is due to managerial opportunism, we expect this effect to be weaker in firms with stronger monitoring of their disclosure policy. Accordingly, we propose the following hypothesis:

H2: The proposed positive association between the recognition of the IDD by the state to which the firm belongs and the likelihood of withholding bad news relative to good news is less pronounced for firms with stronger monitoring of disclosure policy.

4. Methodology

4.1 Stock market reaction to announcements of dividend changes and management earnings forecasts

We follow KSW's methodology to test for firms' tendency to withhold bad news relative to good news. Specifically, we examine the difference in abnormal returns around the announcement dates of dividend cuts and dividend increases. We conduct a similar analysis for the announcements of good news versus bad news management earnings forecasts. We extend KSW's models to examine how the asymmetric withholding of bad news versus good news differs across firms headquartered in states with and without the recognition of the IDD using a difference-in-difference (DID) design.

We follow Klasa et al. (2015) and use the dates of precedent-setting cases to construct an indicator variable *IDD* for whether state courts are likely to protect firms' trade secrets by invoking the IDD in any given year. For the 21 states whose courts adopted the IDD, the indicator variable *IDD* equals zero for the years before the precedent setting case, and equal to one for the subsequent years. However, the variable *IDD* reverts to zero if a subsequent court

decision reverses a state's position and rejects the IDD, as is the case with Florida, Michigan, and Texas. For the 29 states where case law did not consider or considered but rejected IDD, *IDD* equals zero in every year. For a firm-year observation, the value assigned to *IDD* is based on the state in which the firm's headquarters is located.

We estimate the following model to test whether the difference in the magnitude of stock market reaction to announcements of dividend cuts versus dividend increases is greater for firms headquartered in states with recognition of the IDD than in states without the recognition of the IDD.

$$Ret = \alpha + \beta_0 Bad + \beta_1 IDD + \beta_2 IDD \times Bad + \beta_3 RegFD + \beta_4 RegFD \times Bad + \beta_5 HiLitRisk + \beta_6 HiLitRisk \times Bad + \beta_7 HiAsymm + \beta_8 HiAsymm \times Bad + \beta_9 HiDistress + \beta_{10} HiDistress \times Bad + \beta_{11} StateDummy + \beta_{12} StateDummy \times Bad + \beta_{13} YearDummy + \beta_{14} YearDummy \times Bad + \varepsilon. \quad (1)$$

Equation (1) without the variable *IDD, StateDummy, YearDummy* and their interactions with *Bad* is the model used by KSW.[5] *Ret* is the five-day cumulative abnormal returns around the announcement date of dividend changes. *Bad* is an indicator variable that equals one if *Divchg* is negative, and zero otherwise, where *Divchg* is the percentage change in dividends.[6] We apply the following data filters, as in KSW, to ensure that our sample consists of economically meaningful dividend changes. First, the absolute value of the percentage of dividend change is greater than 1%. Second, the dividend change occurs after one year of a stable dividend pattern, that is, there is no dividend change in the year immediately preceding the current dividend change. Third, we exclude the most extreme 1% of *Divchg* observations in order to eliminate the effects of large special one-time dividends and/or potential data errors.

The baseline stock market reaction to the announcement of dividend increases is α, the

[5]In an alternative model, KSW also control for the equity ownership of insiders (top executives). Since insider equity ownership data is from ExecuComp, which covers only large firms, we do not control for this variable in the models reported in the tables. Our results, however, are robust to controlling for this variable.

[6] Following KSW, we also estimate equation (1) after adding *Divchg* as an explanatory variables. Our results are robust to using this alternative model.

intercept, and it is expected to be positive. The baseline stock price reaction to the announcement of dividend cuts is $\alpha + \beta_0$, where β_0 is the coefficient on *Bad*, and this sum is expected to be negative. The magnitude of stock price reaction is greater for announcement of dividend cuts than for announcement of dividend increases, if $|\alpha + \beta_0| - \alpha$ (= $-\beta_0 - 2\alpha$) is greater than zero, and this result would be consistent with managers' general tendency to withhold bad news relative to good news.

The difference in the magnitude of stock market reaction to the announcements of dividend cuts versus dividend increases in states that recognize the IDD is given by $| \alpha + \beta_0 + \beta_1 + \beta_2 | - (\alpha + \beta_1)$, where β_1 and β_2 are the coefficients on *IDD* and *IDD* × *Bad*, respectively; this expression reduces to $-\beta_2 - 2\beta_1 - \beta_0 - 2\alpha$. Thus, $-\beta_2 - 2\beta_1$ (= $-\beta_2 - 2\beta_1 - \beta_0 - 2\alpha - (-\beta_0 - 2\alpha)$) represents the amount by which the difference in the magnitude of stock market reaction to announcement of dividend cuts relative to dividend increases is greater in states that recognize the IDD than in other states. A positive value of $-\beta_2 - 2\beta_1$ is consistent with firms withholding bad news relative to good news to a greater extent in states that recognize the IDD than in other states. [9]

We include state and year dummies (*StateDummy* and *YearDummy*) and their interactions with *Bad* to control for state and year fixed effects. As the adoption/rejection of the IDD is staggered across states, adding these variables to equation (1) allows us to identify the effect of the IDD adoption of the asymmetric market reactions to announcements of dividend cuts versus dividend increases using a DID design.[10] The state fixed effects will control for time-invariant state characteristics and the year fixed effects account for change in economy-wide factors, such as macroeconomic conditions. For a state that adopt or reject the IDD in certain year, all other states that do not experience the same change serve as its control group (e.g.,

[9] KSW (in their Section 6) explore and analyze in detail various competing explanations for the larger stock price reaction to bad news versus good news public disclosures. They conclude that their results "provide support for the withholding story and is less consistent with the competing explanations."

[10] As our variable of interest is the asymmetric market reactions to dividend cuts versus dividend increases, not the market reaction itself, to implement a DID design, we need to control for these interaction terms.

Bertrand and Mullainathan, 2003). As the variable *IDD* is measured at the state level, the regression errors may be correlated within state groupings. Thus, we follow Klasa et al. (2015) and cluster standard errors by states.[11]

The remaining variables in equation (1) are defined as in KSW. *RegFD* is an indicator variable that equals one if the forecast occurs after the passage of Regulation FD in October 2000, and zero otherwise. *HiLitRisk* is an indicator variable that equals one if the firm's estimated litigation risk is above the sample median, and zero otherwise. We estimate litigation risk using the coefficient estimates and explanatory variables from the models in Rogers and Stocken (2005). Their explanatory variables are primarily market-based such as market value, stock turnover, market beta, and return volatility (Rogers and Stocken, 2005, Appendix B).

HiAsymm is an indicator variable for high information asymmetry (above the sample median), which is measured with a single factor obtained from a factor analysis of the following information asymmetry proxies: market-to-book ratio, stock return volatility, high-tech firms, financial leverage, and regulatory status. The market-to-book ratio is calculated as the market value of equity scaled by the book value of equity. Stock return volatility is measured as the standard deviation of daily stock returns of a one-year period ending two months prior to the event date. We classify firms with the following Standard Industrial Classification (SIC) codes as high-tech firms: 2833-2836, 3570-3577, 3600-3674, 7371-7379, and 8731-8734. Financial leverage is defined as long-term debt scaled by total assets. Regulated industries are the ones with SIC codes 4812-4813, 4833, 4841, 4811-4899, 4922-4924, 4931, 4941, 6021-6023, 6035-6036, 6141, 6311, 6321, and 6331. *HiDistress* is an indicator variable that equals one if the firm's Z-score (Zmijewski, 1984) is in the top decile of all firms in a given year, and zero otherwise. KSW predict that managers are less likely to

[11] As Klasa et al. (2015) note, clustering at the state level accounts for the fact that firms headquartered in the same state are all simultaneously affected by the same shock, i.e., the adoption or rejection of the IDD by a state court.

withhold bad news relative to good news in the post-Reg FD period and when litigation risk is higher, information asymmetry is lower, and firms are further away from financial distress.

To test the effect of the monitoring of corporate disclosure policy on the amount by which the difference between the magnitude of stock market reaction to the announcements of dividend cuts and dividend increases is greater for firms in states that recognize the IDD, we estimate the following model:

$$Ret = \alpha + \beta_0 Bad + \beta_1 IDD + \beta_2 IDD \times Bad + \beta_3 IDD \times Monitoring + \beta_4 IDD \times Bad \times Monitoring + \beta_5 Monitoring + \beta_6 Bad \times Monitoring + Other\ Control\ Variables + \varepsilon, \quad (2)$$

where *Monitoring* is a measure of the strength of monitoring of disclosure policy. We use three alternative measures: *Institutional Ownership* is an indicator variable for above the sample median percentage of stocks held by institutional investors, *Analyst Following* is an indicator variable for above the sample median analyst following, and *Board Independence* is an indicator variable for above the sample median percentage of outside directors on the board. *Other Control Variables* are the same as in equation (1). A negative value of $-\beta_4 - 2\beta_3$ would suggest that stronger monitoring of corporate disclosure policy mitigates the greater asymmetric withholding of bad news by firms in states that recognize the IDD.[12]

The above tests of stock price reaction to the announcements of dividend changes are repeated for management forecasts by modifying equations (1) and (2) accordingly. We define *Ret* as the five-day cumulative abnormal returns around each management forecast date, and

[12] When *Monitoring* equals 0, equation (2) reduces to equation (1), in which, as discussed earlier, the effect of IDD recognition on the difference in the magnitude of stock market reaction to the announcements of dividend cuts versus dividend increases is $-\beta_2 - 2\beta_1$. When *Monitoring* equals 1, in states that recognize the IDD, the stock market reaction to the announcement of dividend cuts is $\alpha + \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6$, and to the announcement of dividend increases is $\alpha + \beta_1 + \beta_3 + \beta_5$. The difference in the magnitude of these two reactions is $|\alpha + \beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6| - (\alpha + \beta_1 + \beta_3 + \beta_5) = -2\alpha - \beta_0 - 2\beta_1 - \beta_2 - 2\beta_3 - \beta_4 - 2\beta_5 - \beta_6$. When *Monitoring* equals 1, in states that do not recognize the IDD, the stock market reaction to the announcement of dividend cuts is $|\alpha + \beta_0 + \beta_5 + \beta_6|$, and to the announcement of dividend increases is $\alpha + \beta_5$. The difference in the magnitude of these two reactions is $|\alpha + \beta_0 + \beta_5 + \beta_6| - (\alpha + \beta_5) = -2\alpha - \beta_0 - 2\beta_5 - \beta_6$. Thus, when *Monitoring* equals 1, the effect of IDD recognition on the difference in the magnitude of stock market reaction to the announcements of dividend cuts versus dividend increases is $(-2\alpha - \beta_0 - 2\beta_1 - \beta_2 - 2\beta_3 - \beta_4 - 2\beta_5 - \beta_6) - (-2\alpha - \beta_0 - 2\beta_5 - \beta_6) = -2\beta_1 - \beta_2 - 2\beta_3 - \beta_4$. Hence, the impact of monitoring on the effect of IDD recognition on the difference in stock market reaction to the announcements of dividend cuts versus dividend increases is $(-2\beta_1 - \beta_2 - 2\beta_3 - \beta_4) - (-\beta_2 - 2\beta_1) = -\beta_4 - 2\beta_3$.

Bad equals one if *ForecastRevision* is negative and zero otherwise, where *ForecastRevision* is the difference between the management's forecast of quarterly earnings per share (EPS) and the most recent consensus analyst forecast scaled by the absolute value of the consensus analyst forecast.[13] As in KSW, we consider economically meaningful forecast events by requiring that the absolute value of *ForecastRevision* is greater than 1%, address the problem of small denominator by dropping observations with absolute value of consensus analyst forecast less than five cents per share, and minimize the effect of miscoded earnings and analyst forecasts by excluding the most extreme 1% of *ForecastRevision* observations.

Our sample period of 1995-2010 for management forecasts is characterized by a significant occurrence of "bundled" management forecasts, that is, forecasts issued together with earnings announcements (e.g., Anilowski, Feng, and Skinner, 2007; Rogers and Van Buskirk, 2013). For a bundled forecast, the classification of news contained in the management forecast as good or bad as well as stock price reaction to the news are confounded by the concurrent earnings announcement (Rogers and Van Buskirk 2013).[14] To address the concern associated with bundled forecasts, we repeat our analyses using only unbundled forecasts.

4.2 Fraction of news released prior to announcements of dividend changes and management forecasts

We also examine the difference in the fraction of total news impounded in stock price prior to the announcement dates of dividend increases and prior to the announcement dates of dividend cuts. To test whether this difference is greater for firms headquartered in states that recognize the IDD, we estimate the following model:

[13] We follow Anilowski et al. (2007) and take the midpoint for a range forecast and the value of the closed end for an open-end forecast to calculate *ForecastRevision*. Open-end forecasts account for less than 5% of our sample.
[14] Rogers and Van Buskirk (2013) suggest an approach to properly classify as good or bad the news contained in a management forecast that is bundled with earnings announcement. However, our analysis also requires stock price reaction to the forecast related news, but only the combined stock price reaction to the forecast and the earnings announcement is observable in the case of a bundled forecast.

$$FracNews = \alpha + \beta_0 Bad + \beta_1 IDD + \beta_2 IDD \times Bad + \beta_3 RegFD + \beta_4 RegFD \times Bad$$
$$+ \beta_5 HiLitRisk + \beta_6 HiLitRisk \times Bad + \beta_7 HiAsymm + \beta_8 HiAsymm \times Bad + \beta_9 HiDistress$$
$$+ \beta_{10} HiDistress \times Bad + \beta_{11} StateDummy + \beta_{12} StateDummy \times Bad$$
$$+ \beta_{13} YearDummy + \beta_{14} YearDummy \times Bad + \varepsilon. \quad (3)$$

FracNews is defined as the cumulative abnormal returns for firm *i* from day -60 though day -10 scaled by the cumulative abnormal returns over day -60 through day +2, where day 0 is the announcement date of dividend changes. Following KSW, we require both the numerator and denominator of *FracNews* to be nonnegative (nonpositive) for dividend increases (cuts). We also winsorize *FracNews* at the top and bottom 1% to mitigate the effect of outliers due to small denominators. A negative value of β_2 is consistent with the asymmetric disclosure being greater for firms headquartered in states that recognize the IDD than in other states.

We estimate the following model to test the effect of the monitoring of corporate disclosure policy:

$$FracNews = \alpha + \beta_0 Bad + \beta_1 IDD + \beta_2 IDD \times Bad + \beta_3 IDD \times Monitoring +$$
$$\beta_4 IDD \times Bad \times Monitoring + \beta_5 Monitoring + \beta_6 Bad \times Monitoring +$$
$$Other\ Control\ Variables + \varepsilon. \quad (4)$$

A positive value of β_4 in equation (4) is consistent with the effect of the IDD recognition on the asymmetric withholding of bad news relative to good news being less pronounced for firms with stronger monitoring of corporate disclosure policy. We use models similar to equations (3) and (4) to test for the asymmetric disclosure behavior in the context of management forecasts.

5. Empirical Analysis

5.1 Data

The sample period for the analyses of dividend changes announcements and stock price crash risk is from 1977 to 2013. We follow Klasa et al. (2015) and start the sample in 1977. An

important reason why they select this year is that the trade secrets law surrounding the application of the IDD did not follow the same principles in all states until the issuance of the Uniform Trade Secrets Act in 1979. We restrict our analyses of management earnings forecasts to the period 1995 to 2010 as First Call CIG, the source of our management forecasts, has incomplete forecast data prior to 1995 and stopped providing forecast data in 2010. Our dividend and stock market data are from CRSP, financial statement data are from Compustat, institutional holding data are from Thomson Reuters 13f File, analyst following data are from I/B/E/S Summary, analysts forecast data are from First Call Summary, and board independence data are from RiskMetrics.

The dividend changes sample consists of 9,791 dividend changes, representing 4,108 firms. The sample of management forecasts contains 32,447 quarterly forecast observations, representing 3,362 firms. In this sample, 13,692 forecasts are not bundled with earnings announcements; we classify forecasts not issued in the 5-day window surrounding an earnings announcement as unbundled forecasts (Rogers and Van Buskirk, 2013). The crash risk sample consists of 111,294 firm-year observations for 13,388 firms.

5.2 Univariate results

Table 1 reports summary statistics of the stock price reactions to dividend change announcements and management earnings forecasts (*Ret*), the amount of news released prior to the dividend change announcements and management forecasts (*FracNews*), Panels A, B, and C present results for dividend change announcements, management forecasts, and unbundled management forecasts, respectively. The first row of Panel A indicates that the difference in the magnitude of stock market reaction to the announcement of dividend cuts (-2.9%) and dividend increases (1.3%) is 1.6%, which is statistically significant. The difference in the fraction of news released prior to the announcement of dividend increases (58.9%) versus

dividend cuts (49.5%) is 9.3%. This difference is statistically significant, consistent with managers' leaking out more good news relative to bad news prior to making a formal dividend change announcement.

The second and third rows of Panel A provide results for firms in states with and without the recognition of the IDD, respectively. The difference in the magnitude of stock market reaction to the announcement of dividend cuts versus dividend increases in states that recognize the IDD is 1.9% and for states that do not recognize the IDD is 1.2%. The difference for states that recognize the IDD is greater than that for other states by 0.7%, and it is significant. Also, the difference in the fraction of news released prior to a formal announcement of dividend increases versus dividend cuts is 12.3% for states that recognize the IDD and 7.2% for states that do not. Once again the difference for states that recognize the IDD is significantly greater than that for states that do not.

Panel B presents results for the sample of all management forecasts. The difference in the magnitude of market reaction to bad (-6.2%) and good news forecasts (4.3%) is significant. The difference in the fraction of news released prior to good (54.3%) and bad news forecasts (49.4%) is also significant. These results further suggest that managers have a tendency to withhold bad news. Furthermore, the difference in the magnitude of market reaction to bad and good news forecasts is 3.1% for states that recognize the IDD and 0.8% for other states and these two amounts are significantly different. The difference in the fraction of news released prior to good and bad news forecasts is 5.9% for states that recognize the IDD and 4.0% for other states and these two amounts are also significantly different. The results based on the unbundled management forecasts, reported in Panel C, are qualitatively similar to those in Panel B.

5.3 Stock market reaction to announcements of dividend changes and management forecasts

Table 2 presents the regression results of estimating the model of stock market reaction to the announcements of dividend changes and management forecasts. The results for the dividend change sample, the all management forecast sample, and the unbundled management forecast sample are in columns 1, 2, and 3, respectively. As discussed in Section 4.1, in the dividend change sample in column 1, $-\beta_2 - 2\beta_1$ represents the amount by which the difference in the magnitude of stock price reaction to announcements of dividend cuts relative to dividend increases is greater for states that recognize the IDD, where β_1 and β_2 are the coefficients on *IDD* and *IDD* × *Bad*, respectively. Our estimate of $-\beta_2 - 2\beta_1$ is 1.3% (p-value = 0.0142), which is both statistically and economically significant. This result is consistent with our prediction that the withholding of bad news relative to good news is greater in states that recognize the IDD.

Column 2 of Table 2 presents results for the sample of all management forecasts. The estimate of $-\beta_2 - 2\beta_1$ is 4.7% (p-value < 0.0003). This result further suggests that the asymmetric disclosure of bad news relative to good news is greater in states that recognize the IDD. Column 3 of Table 2 presents results for the sample of unbundled management forecasts. The sample size is around 42% of that for the sample of all management forecasts, 13,692 as against 32,447. The results are fairly consistent with those for the sample of all management forecasts. The estimate of $-\beta_2 - 2\beta_1$ is 6.0% (p-value < 0.0001). Overall, the results in Table 2 suggest that as predicted the asymmetric disclosure of bad news relative to good news is greater in states that recognize the IDD.[18]

Table 3 presents results of estimating equation (2), which examines the effect of monitoring of disclosure policy on the asymmetric disclosure behavior in states with and without the recognition of the IDD. Panels A, B and C report the results for the dividend change sample, the all management forecast sample, and the unbundled management forecast

[18] The effects of control variables in Table 2 are broadly consistent with those reported in KSW, especially when *Stat Dummy*, *Yea Dummy*, and their interactions with *Bad* are not included, as in KSW.

sample, respectively. To conserve space in the table, we do not report results for the control variables. As explained in Section 4.1, the effect of stronger monitoring of disclosure policy on the difference in the asymmetric withholding of bad news relative to good news between states with and without the recognition of the IDD is given by $-\beta_4 - 2\beta_3$, where β_3 and β_4 are the coefficients on *IDD* × *Monitoring* and *IDD* × *Monitoring* × *Bad*, respectively. For dividend changes (Panel A), the estimates of $-\beta_4 - 2\beta_3$ are negative and significant for all our monitoring measures, namely, *Institutional Ownership*, *Analyst Following*, and *Board Independence* (-2.2%, -2.3%, and -4.8%, respectively). We obtain similar results for all management forecasts and for unbundled management forecasts (Panels B and C, respectively). These results suggest that stronger monitoring of corporate disclosure policy reduces the difference in the asymmetric withholding of bad news across states with and without the recognition of the IDD, supporting the notion that the greater asymmetric withholding of bad news in states that recognize the IDD is likely to be due to managerial opportunism.

5.4 Fraction of news released prior to announcements of dividend changes and management forecasts

Table 4 presents the regression estimates of the model of *FracNews,* fraction of news impounded in stock prices prior to the announcements of dividend changes and management forecasts. The results for the dividend change sample, the all management forecast sample, and the unbundled management forecast sample are in columns 1, 2, and 3, respectively. The sample sizes are significantly smaller than those used for the returns models in Table 2, primarily due to the requirement that both the numerator and denominator of *FracNews* should be nonnegative for good news disclosures and nonpositive for bad news disclosures.

For dividend changes, the coefficient on *IDD* × *Bad* represents the amount by which the difference between the fraction of news impounded in stock prices prior to the announcement

of dividend increases and dividend cuts is greater for firms in states that recognize the IDD than in other states. This coefficient is significantly negative, -8.2% (t-statistic = -2.70), consistent with our prediction that the withholding of bad news relative to good news is greater in states that recognize the IDD. The results for all management forecasts (column 2) and unbundled management forecasts (column 3) are very similar to those for dividend changes and lead to the same conclusions. [19]

Table 5 presents the results of estimating equation (4), which examines the effect of monitoring of disclosure policy on the asymmetric disclosure behavior in states with and without the recognition of the IDD. The results for the dividend change sample, the all management forecast sample, and the unbundled management forecast sample are in Panels A, B and C, respectively. As before, to conserve space in the table, we do not report results for the control variables. The effect of stronger monitoring on the difference in the asymmetric withholding of bad news between states with and without the recognition of the IDD is given by the coefficient on *IDD* × *Monitoring* × *Bad*. For the announcement of dividend changes (Panel A), the coefficient on this variable is positive and significant, for all our monitoring measures, namely, *Institutional Ownership*, *Analyst Following*, and *Board Independence*. We obtain consistent results for all management forecasts and for unbundled management forecasts (Panels B and C). Overall, these results suggest that stronger monitoring of corporate disclosure policy reduces the difference in the asymmetric withholding of bad news across states with and without the recognition of the IDD. Thus, the greater withholding of bad news relative to good news in states that recognize the IDD is likely to be due to managerial opportunism.

[19] The effects of control variables in Table 4 are broadly consistent with those reported in KSW, especially when *StateDummy*, *YearDummy*, and their interactions with *Bad* are not included, as in KSW. The coefficient on *Bad* becomes insignificant in columns 2 and 3 due to the inclusion of state dummies, year dummies, and their interactions with *Bad.* With the state and year fixed effects controlled for, the coefficient on *Bad* captures the asymmetry in fraction of news released prior to bad news versus good news disclosures for the default state-year, which might not have enough power for estimating the asymmetry. The coefficient becomes significantly positive when we drop state dummies, year dummies, and their interactions with *Bad.*

6. Ex Post Settlement of Withheld Information

We further explore the *ex post* settlement of withheld information to support our argument that managers are more likely to withhold bad news relative to good news when the states their firms operate in recognize the IDD. If things are not turning around as managers expect after they withhold bad news, it will be revealed to the market when it cannot be withheld further. First, we employ an approach similar to the one used in Roychowdhury and Sletten (2012) to examine the informativeness of earnings announcement. They argue that the earnings reporting process limits delays in the release of bad news. To the extent that bad news remains undisclosed, the news is released at the time of the earnings announcement. They show that earnings informativeness is higher when the overall news reaching the market during a quarter is negative than when it is positive. Thus, if firms in states that recognize the IDD are more likely than firms in other states to withhold bad news relative to good news, it will possibly lead to greater earnings informativeness during bad news quarters relative to bad news ones in states that recognize the IDD.

Second, we follow prior studies to employ a stock price crash methodology specifically designed to capture the suppression and subsequent release of value-relevant negative information (e.g., Piotroski, Wong, and Zhang, 2015; Chen, Hong, and Stein, 2001; Jin and Myers, 2006; Kim, Li, and Zhang, 2011a, b). These studies suggest that the release of bad news previously withheld by managers is a primary reason for stock price crash. If managers with more restricted outside employment opportunities are more likely to withhold bad news relative to good news, then crash risk for firms that these managers work for is likely to be higher.[20]

[20] While withholding of bad news is one primary reason for stock price crash, it could also be due to suboptimal real business decisions. For instance, Benmelech, Kandel, and Veronesi (2010) show that the suboptimal investment policy after a slowdown in growth rate could lead to a stock price crash. Thus, we view our crash risk tests as providing confirmatory evidence for our analyses based on KSW's approach, not direct tests of our

6.1 Informativeness of Earnings Announcement

We follow Roychowdhury and Sletten (2012) and measure earnings informativeness with the variable *Ln(NEWS_RATIO),* which is the natural logarithm of *NEWS_RATIO*. *NEWS_RATIO* is defined as the ratio of earnings announcement return (*EAR*) divided by non-earnings-announcement return (*NEAR*), multiplied by 100, for each fiscal quarter. *EAR* is the market-adjusted buy-and-hold return over the three days around earnings announcement. *NEAR* is calculated as (1+*Q_RET*)/(1+*EAR*)-1, where *Q_RET* is the market adjusted buy-and-hold return starting two days after the earnings announcement date of the previous quarter and ending one day after the earnings announcement date of the current quarter. *NEWS_RATIO* captures the amount of news arriving during the earnings announcement period relative to that during the non-earnings announcement period.

We estimate an OLS regression modified from Roychowdhury and Sletten (2012):

$$\begin{aligned} Ln(NEWS\_RATIO_t) = {} & \alpha + \beta_0 BNEWS_t + \beta_1 IDD_t + \beta_2 IDD_t \times BNEWS_t + \beta_3 BIAS\_ADJ_t \\ & + \beta_4 RInforAsymm_{t-1} + \beta_5 INSALE_t + \beta_6 TRADE\_DAYS_t + \beta_7 RBTM_{t-1} + \beta_8 RLEV_t \\ & + \beta_9 HITECH_{t-1} + \beta_{10} StateDummy_t + \beta_{11} StateDummy_t \times BNEWS_t + \beta_{12} YearDummy_t \\ & + \beta_{13} YearDummy_t \times BNEWS_t + \varepsilon. \end{aligned} \quad (5)$$

Equation (5) without *IDD, StateDummy, YearDummy*, and their interactions with *BNEWS* is the model used by Roychowdhury and Sletten (2012).[21] *BNEWS* is an indicator variable that equals one if *Q_RET* is negative and zero otherwise. *IDD* is defined as before. *BIAS_ADJ* is the natural logarithm of the ratio of cumulative market-adjusted returns during a random three-day window in the quarter relative to the cumulative market-adjusted return during that quarter outside the window. *TRADE_DAYS* is the number of trading days in the announcement quarter.

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hypotheses.

[21] Roychowdhury and Sletten (2012) also present a model with firm fixed effects (with the dummy *HITECH* dropped). We find similar results by replacing *StateDummy, YearDummy*, and their interactions with *BNEWS* with firm fixed effects.

INSALE is an indicator variable equal to one for firm-quarters with net insider sales and zero otherwise. *RInfoAsym* is the decile rank of *InfoAsymm*, which is extracted from a principal component analysis of firm size, analyst following, institutional ownership, idiosyncratic volatility and the adverse selection component of the bid-ask spread. *RBTM* is the decile rank of beginning-of-period book-to-market ratio. *RLEV* is the decile rank of beginning-of-period financial leverage. *HITECH* is an indicator variable that equals to one if the firm belongs to any of the following four-digit SIC industry codes: 2833-2836, 3570-3577, 3600-3674, 7371-7379, or 8731-8734.

In the baseline model, a significantly positive value of β_0 is consistent with earnings informativeness being higher when the overall news reaching the market during the quarter is negative than when it is positive. We predict β_2 to be significantly positive if firms in states that recognize the IDD are more likely than firms in other states to withhold bad news relative to good news. As in equation (1), we include *StateDummy, YearDummy*, and their interactions with *BNEWS* to control for state and year fixed effects to implement a DID design. As before, we cluster standard errors for each state.[22]

We present the results of estimating equation (5) in column 1 of Table 6. The sample period is from 1984 to 2013.[23] Consistent with our prediction, the coefficient on *IDD* × *BNEWS* is positive and statistically significant (0.085, *t*-statistic = 4.14).[24] The effect of the recognition of the IDD is also economically significant. The recognition of the IDD increases the asymmetry in earnings informativeness during good-news relative to bad news quarters by

[22]Roychowdhury and Sletten (2012) cluster standard errors by both firms and year-quarter. We obtain qualitatively similar results using this alternative clustering choice.

[23] The sample period starts from 1984 because the insider trading data was unavailable prior to that year.

[24] The coefficient on *BNEWS* becomes insignificant due to the inclusion of state dummies, year dummies, and their interactions with *BNEWS.* With the state and year fixed effects controlled for, the coefficient on *BNEWS* captures the asymmetry in earnings informativeness during bad news versus good news quarters for the default state-year, which might not have enough power for estimating the asymmetry. The coefficient becomes significantly positive when we drop state dummies, year dummies, and their interactions with *BNEWS.*

0.085, which is almost equal to the average asymmetry in our sample.[25]

In columns 2 to 4, we further explore whether the effect of the recognition of the IDD on the asymmetric earnings informativeness during bad news versus good news quarters is mitigated by strict monitoring of disclosure policy. We augment equation (5) by adding each of our monitoring measures (*Institutional Ownership*, *Analyst Following*, and *Board Independence*) and its interactions with *IDD*, *BNEWS*, and *IDD* × *BNEWS*. The estimated coefficient on the interaction of the monitoring measure with *IDD* × *BNEWS* is significantly negative for each monitoring measure (-0.073, -0.051, and -0.123 for *Institutional Ownership*, *Analyst Following*, and *Board Independence*, respectively), suggesting that the effect of the recognition of the IDD on the asymmetric earnings informativeness during bad news versus good news quarters is stronger for firms with weaker monitoring of disclosure policy.

Overall, the results in Table 6 are consistent with our prediction that firms in states that recognize the IDD are more likely than firms in other states to withhold bad news relative to good news and the effect is stronger for firms with weaker monitoring of disclosure policy.

6.2 Stock price crash risk

We follow prior studies (e.g., Kim et al., 2011a, b; Chen, Hong, and Stein, 2001; Piotroski et al., 2015) and measure crash risk with two variables: *NCSKEW* and *DUVOL*. *NCSKEW* is the negative conditional skewness of firm-specific weekly returns over the fiscal-year period. Firm-specific weekly return $W_{i,\tau}$ is defined as the natural logarithm of one plus the residual from the following expanded market model regression:

$$r_{i,\tau} = \alpha_i + \beta_{1i} r_{m,\tau-2} + \beta_{2i} r_{m,\tau-1} + \beta_{3i} r_{m,\tau} + \beta_{4i} r_{m,\tau+1} + \beta_{5i} r_{m,\tau+2} + \varepsilon_{i,\tau}, \qquad (6)$$

where $r_{i,\tau}$ is the return on stock *i* in week τ, and $r_{m,\tau}$ is the return on the CRSP value-weighted

[25] The effects of control variables are consistent with those in Roychowdhury and Sletten (2012): *RInforAsymm*, *TRADE_DAYS*, and *RLEV* load significantly and negatively, while the effects of *INSALE* and *HITECH* are significantly positive.

market index in week τ. For each firm *i* in year *t*, we calculate *NCSKEW* as

$$NCSKEW_{i,t} = -\left[n(n-1)^{3/2}\sum W_{i,\tau}^{3}\right]/\left[(n-1)(n-2)(\sum W_{i,\tau}^{2})^{3/2}\right], \quad (7)$$

where n is the number of weeks in the fiscal year. *DUVOL* is the natural logarithm of the ratio of the standard deviations of "down" week to "up" week firm-specific returns in a fiscal year, where "down" ("up") weeks are weeks with firm-specific weekly returns below (above) the annual mean.

We estimate the following OLS model:

$$\textit{Crash Risk} = \alpha + \beta_0 IDD + \beta_1 DTURN + \beta_2 LNSCSKW + \beta_3 SIGMA + \beta_4 RET + \beta_5 SIZE +$$
$$\beta_6 MB + \beta_7 LEV + \beta_8 ROA + \beta_9 ABACC + \textit{Firm fixed effects} + \textit{Year fixed effects} + \varepsilon \quad (8)$$

where *IDD* is as defined in Section 4.1 and the control variables are the same as those in Kim et al (2011a, b). The firm fixed effects control for time-invariant firm characteristics and ensure that the estimate of β_0 reflects the effect of change in the IDD indicator on crash risk. The year fixed effects account for change in economy-wide factors, such as macroeconomic conditions. This methodology is essentially a DID design, in which for a firm that experiences a change in *IDD* in a given year, all sample firms that do not experience a change in *IDD* in that year serve as control firms (e.g., Bertrand and Mullainathan, 2003). A positive estimated value of β_0 is consistent with our prediction that firms headquartered in states that recognize the IDD withhold more bad news relative to good news. As before, we follow Klasa et al. (2015) and cluster standard errors by states.[28]

The control variables are defined following Kim et al. (2011a, b). *DTURN* is the average monthly share turnover over the current fiscal year minus that over the previous fiscal year, where monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month. *LNCSKEW* is *NCSKEW* of the previous fiscal year. *SIGMA* is the standard deviation of firm-specific weekly returns of the prior fiscal year.

[28] Kim et al. (2011a, b) cluster the stander errors by both firm and year. All of our results are qualitatively similar using this alternative way of clustering.

RET is the mean of firm-specific weekly returns over the prior fiscal year, multiplied by 100. *SIZE* is the natural logarithm of the market value of equity at the beginning of the fiscal year. *MB* is the market value of equity divided by the book value of equity at the beginning of the fiscal year. *LEV* is total long-term debts divided by total assets at the beginning of the fiscal year. *ROA* is income before extraordinary items divided by lagged total assets, calculated for the prior fiscal year. *ABACC* is the absolute value of discretionary accruals of the prior fiscal year, where discretionary accruals are estimated using the modified Jones model (Dechow, Sloan, and Sweeney, 1995).

Table 7, Panel A presents results for estimating equation (8). Columns 1 and 2 present results for the two measures of crash risk, *NCSKEW* and *DUVOL*, respectively. The coefficients on *IDD* are positive and significant for both measures of crash risk, suggesting that recognition of the IDD increases firms' stock price crash risk. These effects are also economically significant. The effect of the IDD recognition on *NCSKEW* is 0.082 (column 1), which accounts for around 10% of the standard deviation of *NCSKEW*. The effect of the recognition of the IDD on *DUVOL* is 0.029 (column 2), which accounts for around 8% of the standard deviation of *DUVOL*.[29] These results are consistent with our prediction that the withholding of bad news relative to good news is greater in states that recognize the IDD.

To examine the effect of stronger monitoring of disclosure policy, we augment equation (8) by adding each of our monitoring measures (*Institutional Ownership*, *Analyst Following*, and *Board Independence*) and its interaction with *IDD*. A negative estimated coefficient on the interaction term is consistent with our prediction that the proposed positive association between recognition of the IDD by the state to which the firm belongs and firms' stock price crash risk is less pronounced for firms with stronger monitoring of disclosure policy. We

[29] The effects of control variables are broadly consistent with those in Kim et al. (2011a, b). For variables for which they obtain significant coefficients, when we obtain significant coefficients, the signs of the coefficients are the same as what they report.

present the estimation results for *NCSKEW* and *DUVOL* in Panels B and C of Table 7, respectively. For both measures of crash risk, the coefficient on *IDD* × *Monitoring* is negative and significant for all monitoring measures, namely, *Institutional Ownership*, *Analyst Following*, and *Board Independence*. These results suggest that stronger monitoring of corporate disclosure policy reduces the effect of the IDD recognition on firms' stock price crash risk. Thus, the higher crash risk for firms in states that recognize the IDD is likely to be due to managers opportunistically withholding bad news relative to good news.

7. Analysis Based on Noncompetition Agreements

We consider for our analyses another institutional arrangement that restricts managers outside employment opportunities, namely, noncompetition agreements. As discussed in Section 2.2, these agreements restrict managers from joining or forming a rival company for a pre-specified period of time. Although noncompetition agreements are not included in all top executives' employment contracts, the majority of these contracts contain them (Schwab and Thomas, 2006; Garmaise, 2011; Bishara, Martin, and Thomas, 2013). The enforceability of these agreements differs across firms depending on the U.S. states they are headquartered in (Garmaise, 2011). Upon termination, managers of firms headquartered in states with higher enforceability of noncompetition agreements would have more restricted outside employment opportunities.

Garmaise (2011) constructs the noncompetition agreement enforceability index for U.S. states for the period 1992 to 2004. He considers 12 questions analyzed by Malsberger (2004) for each jurisdiction and assigns 1 point for each question if the jurisdiction's enforcement of that dimension of noncompetition law exceeds a given threshold (see Appendix A.6 of Garmaise (2011) for details). Table A2 in our Appendix reproduces the noncompetition enforceability index from Garmaise (2011). Three states, namely, Florida, Louisiana, and

Texas, experience a change in the index during the period 1992 to 2004 (see Table A2 in Appendix), which allows us to perform a DID analysis using the same approach as in the analysis of the IDD. We use the enforceability index as a measure of the extent of enforceability of noncompetition agreements of managers of firms in a given state. For our sample, the index ranges from 0 to 9, with the mean of 3.9 and the median of 4. We scale the enforceability index by its maximal value 9 (labeled as *Enforce*) and use it for our empirical tests. For a firm-year, the value assigned to this variable is based on the state in which its headquarters is located. By construction, *Enforce* ranges between 0 and 1 and its marginal effect can be interpreted as the difference between states with the highest and lowest enforceability.

To investigate the incremental effects of the IDD recognition and noncompetition agreement enforceability on the asymmetric stock market reaction to the announcements of dividend cuts and dividend increases, we add the variable *Enforce* and its interaction with *Bad* to equation (1). The results are presented in column 1 of Table 8, Panel A. We do not report the results of control variables for brevity. Similar to the reasoning provided in Section 4.1, $-\beta_2 - 2\beta_1$ and $-\beta_4 - 2\beta_3$ represent the amount by which the difference in the magnitude of stock price reaction to bad news relative to good news disclosure is greater for states that recognize the IDD relative to other states and for states with strictest enforceability of noncompetition agreements relative to states with the lowest enforceability, respectively; where β_1 and β_2 are coefficients on *IDD* and *IDD* × *Bad* and β_3 and β_4 are coefficients on *Enforce* and *Enforce* × *Bad*, respectively. Our estimates of $-\beta_2 - 2\beta_1$ and $-\beta_4 - 2\beta_3$ are both positive and statistically significant. These results suggest that both the IDD recognition and enforceability of noncompetition agreements incrementally affect the withholding of bad news relative to good news. The results based on all management forecasts (column 2) and unbundled management forecasts (column 3) are qualitatively similar and lead to the same conclusion.

Garmaise (2011) proposes the interaction of the noncompetition agreement enforcement index and the level of in-state competition as a better measure of enforceability. He argues that it is the employment opportunities at in-state competitors that is most affected by noncompetition agreements, because the geographic scope of these agreements typically is a state or part of a state (Malsberger, 2004) and additionally it is considerably more difficult to enforce a noncompetition agreement across state boundaries than within a state (Cheskin and Lerner, 2003; Garmaise, 2011). Thus, the outside employment opportunities of a firm's managers would be more sensitive to the state's enforceability index if the firm has high in-state competition. On the other hand, for a firm with low in-state competition, the outside employment opportunities of its managers would not be as sensitive to the state's enforceability index, because there would be many rival companies outside the state at which these managers could seek work, and enforcement of noncompetition agreement would be difficult when the managers move to another state.

To use the interaction between the state's enforceability index and in-state competition as a measure of noncompetition agreement enforceability, we modify the model in Panel A of Table 8 as follows:

$$Ret = \alpha + \beta_0 Bad + \beta_1 IDD + \beta_2 IDD \times Bad + \beta_3 Enforce + \beta_4 Enforce \times Bad + \beta_5 Enforce \times HiInState + \beta_6 Enforce \times Bad \times HiInState + \beta_7 HiInState + \beta_8 Bad \times HiInState + Other\ Control\ Variables + \varepsilon, \quad (9)$$

where *HiInState* is an indicator variable for high (above the sample median) values of the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors. We use the full universe of Compustat firms and four-digit NAICS industry code to compute total industry sales and total in-state sales (Garmaise, 2011). A positive value of $-\beta_6 - 2\beta_5$ would suggest that stricter enforcement of noncompetition agreements leads to greater asymmetric withholding of bad news by firms.

Column 1 of Table 8, Panel B presents results of estimating equation (9) for announcements of dividend changes. The results once again suggest that both the IDD recognition and the enforceability of noncompetition agreements incrementally affect the withholding of bad news disclosure. As expected, the effect of enforceability of noncompetition agreements is significant only when in-state competition is high (see the last row of Panel B). Columns 2 and 3 of Panel B report results for all management forecasts and unbundled management forecasts. These results provide the same conclusions as those based on the results in column 1.

The analyses in Table 9 is the same as that in Table 8, except that the asymmetric withholding of bad news relative to good news is estimated using *FracNews*, the fraction of news released prior to the announcement of dividend changes and management forecasts. Specifically, we estimate equation (3) after adding *Enforce* and *Enforce* × *Bad* to the model. The estimated coefficients on *IDD* × *Bad* and on *Enforce* × *Bad* are negative and statistically significant in all three cases: announcements of dividend changes, all management forecasts, and unbundled management forecasts. These results again suggest that both the IDD recognition and the enforceability of non-competition agreements incrementally affect the withholding of bad news disclosure. In Panel B, we use the interaction between the state's enforceability index and in-state competition as a measure of noncompetition agreement enforceability. The estimated coefficients on *IDD* × *Bad* and on *Enforce* × *HiInState* × *Bad* are negative and significant in all three cases: announcements of dividend changes, all management forecasts, and unbundled management forecasts. The results once again suggest that both the IDD recognition and the enforceability of non-competition agreements incrementally affect the withholding of bad news disclosure.

Next, we investigate the incremental effects of the IDD recognition and noncompetition agreement enforceability on earnings informativeness. We add the variable *Enforce* and its

interaction with *BNEWS* to equation (5). The estimation results are reported in column 1 of Table 10. The estimated coefficients on *IDD* × *BNEWS* and on *Enforce* × *BNEWS* are both negative and statistically significant. In column 2, we further we use the interaction between the state's enforceability index and in-state competition as a measure of noncompetition agreement enforceability. The estimated coefficients on *IDD* × *Bad* and on *Enforce* × *HiInState* × *Bad* are both negative and significant. These results suggesting that both the IDD recognition and the enforceability of noncompetition agreements incrementally affect the asymmetric earnings informativeness during bad news versus good news quarters.

Finally, we investigate the incremental effects of the IDD recognition and noncompetition agreement enforceability on the withholding of bad news disclosure using stock price crash risk. Columns 1 and 3 of Table 11 reports the estimation results of a model that is same as equation (8) but adds the variable *Enforce*. For the sake of brevity, we do not report the effects of control variables. The coefficients on *IDD* and on *Enforce* are both positive and significant for both measures of crash risk. In columns 2 and 4, we use the interaction between the state's enforceability index and in-state competition as a measure of noncompetition agreement enforceability. The coefficients on *IDD* and on *EnforceIndex* × *HiInState* are both positive and significant. These results suggest that both the IDD recognition and the enforceability of non-competition agreements incrementally increase stock price crash risk.

In sum, our findings based on noncompetition agreement enforceability as an additional measure of restrictions on managers' outside employment opportunities are consistent with those based on state courts' recognition of the IDD. We also find that the effects of the IDD and noncompetition agreements are incremental to each other.

8. Additional Analysis

8.1 Effects of financial distress and firm performance

Restrictions on managers' outside employment opportunities are likely to have a greater effect on managers' incentives to withhold bad news relative to good news when the threat of a job loss is more imminent or firm performance is poor. In either case, the manager is more concerned about the employer's evaluation of her human capital. Thus, we further examine how the effect of the IDD recognition on managers' asymmetric withholding of bad versus good news varies with financial distress and firm performance. We replace the monitoring measure in equations (2) and (4) with an indicator for financial distress (*HiDistress*) or poor performance (*LowRoa*). As defined in Section 4.1, *HiDistress* is an indicator variable that equals one if the firm's Z-score (Zmijewski, 1984) is in the top decile of all firms in a given year, and zero otherwise. *LowROA* is an indicator variable of whether a firm's ROA (income before extraordinary items scaled by total assets) is in the bottom quartile of its two-digit SIC industry in the same fiscal year.

Table 12 presents results for the effect of financial distress. Panels A reports results for the market reaction to announcements of dividend changes and management earnings forecasts. The estimated values of $-\beta_2 - 2\beta_1$ and $-\beta_4 - 2\beta_3$ are both positive and statistically and economically significant in all three samples, suggesting that the effect of the IDD recognition on managers' asymmetric withholding of bad news relative to good news is stronger when a firm is closer to financial distress, while the effect is also statistically and economically significant in firms that are not close to financial distress. The results based on the fraction of news released prior to announcements of dividend changes and management earnings forecast in Panel B are qualitatively similar and lead to the same conclusion: the coefficients on *IDD* × *Bad* and *IDD* × *HiDistress* × *Bad* are both negative and statically and economically significant.

Table 13 presents results for the effect of firm performance. Panels A and B reports results for the market reaction to the fraction of news released prior to announcements of dividend changes and management earnings forecasts, respectively. The estimated values of $-\beta_2 - 2\beta_1$

and $-\beta_4 - 2\beta_3$ in Panel A are both positive and statistically and economically significant in all three samples. Further, the coefficients on *IDD* × *Bad* and *IDD* × *LowROA* × *Bad* are both negative and statically and economically significant in Panel B. These results suggest that the effect of the IDD recognition on managers' asymmetric withholding of bad news relative to good news is stronger when firm performance is worse, while the effect is also statistically and economically significant in firms with relatively good performance.

8.2 Evidence from the frequency of management earnings forecasts

Shaikh (2015) argues that career concerns increase managers' risk aversion and empirically document that managers are more likely to issue earnings forecast in periods of stricter noncompetition agreement enforcement. Our paper is different from Shaikh (2015) in that we focus on managers' *general tendency to accumulate and withhold bad news relative to good news*, whereas Shaikh specifically examines the frequency of management earnings forecasts. As KSW note, while "alternatively, one can compare the frequencies of *public* disclosures of good news and bad news" (emphasis original), "public disclosures do not capture other disclosure channels including the informal leaking of good news information to investors", and "managers may prefer private channels to communicate good news in certain cases" because "making an early public disclosure of good news can be risky if the news does not materialize and can expose the firm to greater litigation risk" (see their footnotes 8 and 9). In other words, the economic forces underling formal management earnings forecast could be quite different from those behind the general tendency to accumulate and withhold news that we (and KSW) intend to capture.

Shaikh's (2015) findings, however, raise one potential concern for our analyses based on

management earnings forecasts. If the increased risk aversion associated with the greater career concerns induce managers to withhold good news until earnings announcement and reduce good news forecasts, our analysis based on KSW's approach will not capture this withholding of good news. While our results based on KSW's and Roychowdhury and Sletten's (2012) approaches suggest that this is unlikely, we direct investigate the effect of the IDD recognition on the frequency of management earnings forecasts. Using a similar DID design as in the analysis of stock price crash risk, we find that consistent with Shaikh (2015), the frequency of management earnings forecasts decreases after a state adopts the IDD (untabulated). However, this result is primarily driven by bad news forecasts: the frequency of bad news forecasts drops after a state adopts the IDD, whereas the frequency of good news forecasts does not change. This finding is consistent with our prediction that managers are more likely to withhold bad news relative to good news when their outside employment opportunities are more restricted, but is inconsistent with the conjecture that good news forecasts might decrease after the IDD recognition.

8.3 Endogeneity of the IDD adoption

In untabulated analyses, we follow Klasa et al. (2015) to control for two state level variables to address possible residual endogeneity related to the adoption/rejection of the IDD. The first variable, *State GDP Growth*, is the one-year growth rate of the GDP in the firm's state, which captures business conditions in the state. The second variable, *Political Balance*, is the fraction of a state's congress members representing their state in the U.S. House of Representatives that belong to the Democratic Party, which captures the political leaning in the

state. All our results are robust to these two additional control variables.

9. Conclusion

This study examines the effect of restrictions on managers' outside employment opportunities on voluntary corporate disclosure. We argue that when such restrictions are greater, managers are likely to be more concerned about dismissal from their current job, and would therefore be more motivated to favorably influence their employers' assessment of their ability. These managers are more likely to withhold bad news relative to good news, with the hope that future events will turn out favorably, enabling them to bury the bad news. Our measure of restrictions on a manager's outside employment opportunities is the recognition of the Inevitable Disclosure Doctrine (IDD) in the state in which his/her firm is headquartered. The IDD is a legal doctrine through which an employee may be restricted from taking a new job if the former employer can demonstrate that the job would lead to revelation of trade secrets to the new employer.

We estimate firms' asymmetric disclosure of bad news relative to good news by examining stock price behavior around the announcements of dividend changes and management earnings forecasts. We obtain strong evidence suggesting that managers withhold bad news relative to good news to a greater extent when their firms are headquartered in states that recognize the IDD. We further show that the above association is significantly less pronounced in firms with greater institutional ownership, greater analyst following, and greater board independence. These findings suggest that as expected the managers' opportunistic disclosure behavior is mitigated in firms with stronger monitoring of disclosure policy. Consistent with managers withholding more bad news relative to good news, we find that the recognition of the IDD leads to greater earnings informativeness during bad news quarters relative to good news ones and a significant increase in firms' stock price crash risk, and these effects are less pronounced

in firms with stronger monitoring of disclosure policy. We find supporting results on using another measure of restrictions on managers' outside employment opportunities, namely, the enforceability of noncompetition agreements, which prohibit employees from joining or forming a competing firm.

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Appendix A: Adoption/Rejection of the Inevitable Disclosure Doctrine and Enforceability of Noncompetition Agreements

TABLE A1

Precedent-Setting Legal Cases Adopting or Rejecting the Inevitable Disclosure Doctrine from Klasa et al. (2015)

State	Precedent-Setting Case(s)	Date	Decision
AR	*Southwester Energy Co v. Eickenhorst*, 955 F. Supp. 1078 (W.D. Ark. 1997)	3/18/1997	Adopt
CT	*Branson Ultrasonics Corp. v. Stratman*, 921 F. Supp. 909 (D. Conn. 1996)	3/28/1996	Adopt
DE	*E.I. du Pont de Nemours & Co. v. American Potash & Chem. Corp.,* 200 A.2d 428 (Del. Ch. 1964)	5/5/1964	Adopt
FL	*Fountain v. Hudson Cush-N-Foam Corp.*, 122 So. 2d 232 (Fla. Dist. Ct. App. 1960)	7/11/1960	Adopt
	Del Monte Fresh Produce Co. v. Dole Food Co. Inc., 148 F. Supp. 2d 1326 (S.D. Fla. 2001	5/21/2001	Reject
GA	*Essex Group Inc. v. Southwire Co.*, 501 S.E.2d 501 (Ga. 1998)	6/29/1998	Adopt
IL	*Teradyne Inc. v. Clear Communications Corp*., 707 F. Supp. 353 (N.D. 111. 1989)	2/9/1989	Adopt
IN	*Ackerman v. Kimball Int'l Inc.*, 652 N.E.2d 507 (Ind. 1995)	7/12/1995	Adopt
IA	*Uncle B's Bakery v. O'Rourke*, 920 F. Supp. 1405 (N.D. Iowa 1996)	4/1/1996	Adopt
KS	*Bradbury Co. v. Teissier-du*Cros, 413 F. Supp. 2d 1203 (D. Kan. 2006)	2/2/2006	Adopt
MA	*Bard v. Intoccia*, 1994 U.S. Dist LEXIS 15368 (D. Mass. 1994)	10/13/1994	Adopt
MI	*Allis-Chalmers Manuf. Co. v. Continental Aviation & Eng. Corp*., 255 F. Supp. 645 (E.D. Mich. 1966)	2/17/1966	Adopt
	CMI Int'l Inc. v. Internet Int'l Corp., 649 N.W.2d 808 (Mich. Ct. App. 2002)	4/30/2002	Reject
MN	*Surgidev Corp. v. Eye Technology Inc*., 648 F. Supp. 661 (D. Minn. 1986)	10/10/1986	Adopt
MO	*H&R Block Eastern Tax Servs. Inc. v. Enchura*, 122 F. Supp. 2d 1067 (W.D. Mo. 2000)	11/2/2000	Adopt
NJ	*Nat'l Starch & Chem. Corp. v. Parker Chem. Corp.*, 530 A.2d 31 (N.J. Super. Ct. 1987)	4/27/1987	Adopt
NY	*Eastman Kodak Co. v. Powers Film Prod*., 189 A.D. 556 (N.Y.A.D. 1919)	12/5/1919	Adopt
NC	*Travenol Laboratories Inc. v. Turner*, 228 S.E.2d 478 (N.C. Ct. App. 1976)	6/17/1976	Adopt
OH	*Procter & Gamble Co. v. Stoneham*, 747 N.E.2d 268 (Ohio Ct. App. 2000)	9/29/2000	Adopt
PA	*Air Products & Chemical Inc. v. Johnson*, 442 A.2d 1114 (Pa. Super. Ct. 1982)	2/19/1982	Adopt
TX	*Rugen v. Interactive Business Systems Inc.*, 864 S.W.2d 548 (Tex. App. 1993)	5/28/1993	Adopt
	Cardinal Health Staffing Network Inc. v. Bowen, 106 S.W.3d 230 (Tex. App. 2003)	4/3/2003	Reject
UT	*Novell Inc. v. Timpanogos Research Group Inc*., 46 U.S.P.Q.2d 1197 (Utah D.C. 1998)	1/30/1998	Adopt
WA	*Solutec Corp. Inc. v. Agnew*, 88 Wash. App. 1067 (Wash. Ct. App. 1997)	12/30/1997	Adopt

This table, reproduced from Table 1 of Klasa et al. (2015), lists the precedent-setting legal cases in which state courts adopted the Inevitable Disclosure Doctrine (IDD) or rejected it after adopting it. The states omitted from the table did not consider or considered but rejected the IDD.

TABLE A2
Noncompetition Agreement Enforceability Index from Garmaise (2011)

State	Index	State	Index	State	Index
Alabama	5	Kentucky	6	North Dakota	0
Alaska	3	Louisiana 1992-2001, 2004	4	Ohio	5
Arizona	3	Louisiana 2002-2003	0	Oklahoma	1
Arkansas	5	Maine	4	Oregon	6
California	0	Maryland	5	Pennsylvania	6
Colorado	2	Massachusetts	6	Rhode Island	3
Connecticut	3	Michigan	5	South Carolina	5
Delaware	6	Minnesota	5	South Dakota	5
DC	7	Mississippi	4	Tennessee	7
Florida 1992-96	7	Missouri	7	Texas 1992-94	5
Florida 1997-2004	9	Montana	2	Texas 1995-2004	3
Georgia	5	Nebraska	4	Utah	6
Hawaii	3	Nevada	5	Vermont	5
Idaho	6	New Hampshire	2	Virginia	3
Illinois	5	New Jersey	4	Washington	5
Indiana	5	New Mexico	2	West Virginia	2
Iowa	6	New York	3	Wisconsin	3
Kansas	6	North Carolina	4	Wyoming	4

This table reproduces Table A1 of Garmaise (2011), who creates a noncompetition agreement enforceability index for each state and the District of Columbia of United States for the period 1992 to 2004. The index can take values ranging from 0 to 12. A higher value means higher enforceability of noncompetition agreements.

Appendix B: Variable Definitions

Variable	Definition
ABACC	The absolute value of discretionary accruals of the prior fiscal year, where discretionary accruals are estimated from the modified Jones model (Dechow, Sloan, and Sweeney, 1995).
Analyst Following	An indicator variable that equals one if the 12-month average number of analysts following the firm is above the sample median, and zero otherwise.
Bad	An indicator variable that equals one if *Divchg* (*ForecastRevision*) is negative, and zero otherwise.
BIAS_ADJ	The natural logarithm of the ratio of cumulative market-adjusted returns during a random three-day window in the quarter relative to the cumulative market-adjusted return during that quarter outside the window.
BNEWS	An indicator variable that equals one if *Q_RET* is negative and zero otherwise, where *Q_RET* is the market adjusted buy-and-hold return starting two days after the earnings announcement date of the previous quarter and ending one day after the earnings announcement date of the current quarter.
Board Independence	An indicator variable that equals one if the percentage of board directors being outsiders is above the sample median at the beginning of the year, and zero otherwise.
Divchg	The percentage change in dividends.
DTURN	The average monthly share turnover over the current fiscal year minus that over the previous fiscal year, where monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month.
DUVOL	The natural logarithm of the ratio of the standard deviations of "down" week to "up" week firm-specific returns, where "down" ("up") weeks are weeks with firm-specific weekly returns below (above) the annual mean. Firm-specific weekly return is defined as the natural logarithm of one plus the residual from the following expanded market model regression: $r_{i,\tau} = \alpha_i + \beta_{1i} r_{m,\tau-2} + \beta_{2i} r_{m,\tau-1} + \tau_{3i} r_{m,\tau} + \beta_{4i} r_{m,\tau+1} + \beta_{5i} r_{m,\tau+2} + \varepsilon_{i,\tau}$, where $r_{i,\tau}$ is the return on stock i in week τ, and $r_{m,n}$ is the return on the CRSP value-weighted market index in week τ.
Enforce	The noncompetition agreement enforceability index from Garmaise (2011) scaled by 9 for the state that a firm's headquarters is located in.
ForecastRevision	The difference between the management's forecast of quarterly EPS and analysts' most recent consensus forecast, scaled by the absolute value of the analysts' consensus forecast.
FracNews	The fraction of total news impounded in a firm's stock price prior to the dividend change announcement date (management forecast announcement date). It is calculated as the CAR for firm *i* from day -60 though day -10 scaled by the CAR over the entire three-month window through day +2, where day 0 is the dividend

change announcement date (forecast announcement date).

Variable	Definition
IDD	An indicator variable that equals one firms whose headquarters are located in a state that recognizes the Inevitable Disclosure Doctrine (IDD), and zero otherwise.
HiAsymm	An indicator variable that equals one if the firm's information asymmetry is above the sample median, and zero otherwise. Information asymmetry is measured with a single factor derived from a factor analysis on the following information asymmetry proxies: market-to-book ratio, stock volatility, high-tech firms, financial leverage, and regulatory status.
HiDistress	An indicator variable that equals one if the firm's Z-score (Zmijewski, 1984) is in the top decile in a given year, and zero otherwise.
HiInState	An indicator variable that equals to one if the fraction of total industry sales (excluding those of the firm itself) generated by in-state competitors is greater than the sample median, and zero otherwise. Industry sales are calculated using the full universe of Compustat firms and four-digit NAICS industry code, and in-state sales are those of firms with headquarters in the state.
HiLitRisk	An indicator variable that equals one if the firm's estimated litigation risk is above the sample median, and zero otherwise. Litigation risk is estimated based on Rogers and Stocken's (2005) litigation risk prediction model, which is based on firm market value, stock turnover, beta, and return volatility.
HITECH	An indicator variable that equals to one if the firm belongs to any of the following four-digit SIC industry codes: 2833-2836, 3570-3577, 3600-3674, 7371-7379, or 8731-8734.
LowROA	An indicator variable of whether a firm's ROA (income before extraordinary items scaled by total assets) is in the bottom quartile of its two-digit SIC industry in the same fiscal year.
INSALE	An indicator variable equal to one for firm-quarters with net insider sales and zero otherwise.
Institutional Ownership	An indicator variable that equals one if the percentage of stocks held by institutional investors at the beginning of year is above the sample median, and zero otherwise
LEV	Total long-term debt divided by total assets at the beginning of the fiscal year.
LNCSKEW	Lagged *NCSKEW*.
Ln(NEWS_RATIO)	The natural logarithm of *NEWS_RATIO*, defined as the ratio of earnings announcement return (*EAR*) divided by non-earnings-announcement return (*NEAR*), multiplied by 100, for each fiscal quarter. *EAR* is the market-adjusted buy-and-hold return over the three days around earnings announcement. *NEAR* is calculated as (1+*Q_RET*)/(1+*EAR*)-1, where *Q_RET* is the market adjusted buy-and-hold return starting two days after the earnings announcement date of the previous quarter and ending one day after the earnings announcement date of the current quarter.
MB	The market value of equity divided by the book value of equity at the beginning

	of the fiscal year.
Variable	**Definition**
NCSKEW	The negative conditional skewness of firm-specific weekly returns over the fiscal year. Firm-specific weekly return is defined as the natural logarithm of one plus the residual from the following expanded market model regression: $r_{i,\tau} = \alpha_i + \beta_{1i} r_{m,\tau-2} + \beta_{2i} r_{m,\tau-1} + \tau_{3i} r_{m,\tau} + \beta_{4i} r_{m,\tau+1} + \beta_{5i} r_{m,\tau+2} + \varepsilon_{i,\tau}$, where $r_{i,\tau}$ is the return on stock i in week τ, and $r_{m,n}$ is the return on the CRSP value-weighted market index in week τ.
RBTM	The decile rank of beginning-of-period book-to-market ratio (book value of equity scaled by market value of equity).
RegFD	An indicator variable that equals one if the announcement date of management forecast or dividend change is after the passage of Regulation FD in October 2000, and zero otherwise.
Ret	The cumulative abnormal return for the five trading days surrounding the dividend change (management forecast) announcement date.
RET	The mean of firm-specific weekly returns over the prior fiscal year, multiplied by 100.
RInfoAsym	The decile rank of *InfoAsymm*, which is extracted from a principal component analysis of firm size, analyst following, institutional ownership, idiosyncratic volatility and the adverse selection component of the bid-ask spread.
RLEV	The decile rank of beginning-of-period financial leverage (long-term debt scaled by total assets).
ROA	Income before extraordinary items divided by lagged total assets, calculated for the prior fiscal year.
SIGMA	The standard deviation of firm-specific weekly returns over the prior fiscal year.
SIZE	The natural logarithm of the market value of equity at the beginning of the fiscal year.
TRADE_DAYS	The number of trading days in the announcement quarter.

TABLE 1
Univariate Tests

Panel A: Stock price reaction to the announcements of dividend changes

	Good News Sample (*DivChg*> 0)			Bad News Sample (*DivChg* < 0)			Difference	
	# Obs.	*Ret* Mean	*FracNews* Mean	# Obs.	*Ret* Mean	*FracNews* Mean	|*Ret*| Bad - Good	*FracNews* Good - Bad
Full Sample (N = 9,791)	8,336	0.013	0.589	1,455	-0.029	0.495	0.016***	0.093***
IDD = 1 (N = 4,342)	3,624	0.012	0.581	718	-0.031	0.459	0.019***	0.123***
IDD = 0 (N = 5,449)	4,712	0.014	0.595	737	-0.026	0.523	0.012***	0.072***
Difference between *IDD* = 1 and *IDD* = 0							0.007***	0.051***

Panel B: Stock price reaction to management earnings forecasts

	Good News Sample (*ForecastRevision* > 0)			Bad News Sample (*ForecastRevision* < 0)			Difference	
	# Obs.	*Ret* Mean	*FracNews* Mean	# Obs.	*Ret* Mean	*FracNews* Mean	|*Ret*| Bad - Good	*FracNews* Good - Bad
Full Sample (N = 32,447)	10,031	0.043	0.543	22,416	-0.062	0.494	0.019***	0.049***
IDD = 1 (N = 15,847)	4,743	0.040	0.541	11,104	-0.071	0.483	0.031***	0.059***
IDD = 0 (N = 16,600)	5,288	0.046	0.545	11,312	-0.054	0.505	0.008***	0.040***
Difference between *IDD* = 1 and *IDD* = 0							0.024***	0.018***

Panel C: Stock price reaction to unbundled management earnings forecasts

	Good News Sample (*ForecastRevision* > 0)			Bad News Sample (*ForecastRevision* < 0)			Difference	
	# Obs.	*Ret* Mean	*FracNews* Mean	# Obs.	*Ret* Mean	*FracNews* Mean	|*Ret*| Bad - Good	*FracNews* Good - Bad
Full Sample (N = 13,692)	4,145	0.044	0.543	9,547	-0.079	0.505	0.034***	0.038***
IDD = 1 (N = 7,161)	2,068	0.045	0.541	5,093	-0.092	0.490	0.047***	0.051***
IDD = 0 (N = 6,531)	2,077	0.044	0.546	4,454	-0.063	0.521	0.019***	0.025***
Difference between *IDD* = 1 and *IDD* = 0							0.028**	0.026***

The sample period is from 1977 to 2013 for Panel A, and from 1995 to 2010 for Panels B and C. *Divchg* is the percentage change in dividend payout. *ForecastRevision* is calculated as the difference between the management's forecast of quarterly EPS and analysts' most recent consensus forecast, scaled by the absolute value of the analysts' consensus forecast. Other variables are defined in Appendix B. The last row of each panel reports the difference in the asymmetric withholding of bad news (the difference in the magnitude of *Ret* between bad and good news samples and the difference in *FracNews* between good and bad news samples) across the subsamples with *IDD* equal to 1 and 0. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

TABLE 2
Recognition of the IDD and Stock Price Reaction to Announcements of Dividend Changes and Management Earnings Forecasts

Dependent Variable: *Ret*

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.003**	2.22	0.129**	2.41	0.033	0.40
Bad	-0.041**	-5.00	-0.151**	-2.76	-0.114	-1.41
IDD (β_1)	0.000	-0.06	-0.014**	-2.51	-0.018**	-2.46
IDD × *Bad* (β_2)	-0.013**	-2.06	-0.018**	-2.18	-0.025***	-2.57
RegFD	0.002	1.17	0.004	0.23	0.010	0.42
RegFD × *Bad*	0.006	0.96	0.042***	2.58	0.049**	2.09
HiLitRisk	0.000	-0.38	-0.014***	-2.82	-0.018***	-3.07
HiLitRisk × *Bad*	0.003	0.57	0.017***	3.95	0.024***	4.12
HiAsymm	0.000	-0.36	0.004	0.98	0.003	0.68
HiAsymm × *Bad*	0.003	0.59	-0.022***	-4.68	-0.031***	-5.45
HiDistress	-0.004**	-2.42	0.026	1.32	0.006	0.64
HiDistress × *Bad*	0.020**	4.35	-0.018	-1.15	0.004	0.43
State Dummy	Yes		Yes		Yes	
State Dummy × *Bad*	Yes		Yes		Yes	
Year Dummy	Yes		Yes		Yes	
Year Dummy × *Bad*	Yes		Yes		Yes	
Adj. R^2	0.0947		0.0800		0.1860	
# of observations	9,791		32,447		13,692	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD						
$-\beta_2 - 2\beta_1$	0.013	0.0142	0.047	<.0001	0.060	<.0001

The table reports results for the effect of the recognition of the IDD on stock price reaction to announcements of dividend changes and management earnings forecasts. The sample period is from 1977-2013 for dividend changes and from 1995 to 2010 for the management earnings forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. We report at the bottom of the table estimates of $-\beta_2 - 2\beta_1$ and the *p*-values of *F*-tests for testing whether they are equal to zero. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 3
Recognition of the IDD and Stock Price Reaction to Announcements of Dividend Changes and Management Earnings Forecasts: Effect of Monitoring

Panel A: Announcements of dividend changes (Dependent variable: *Ret*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.004**	2.29	0.005***	2.97	0.005	0.92
Bad	-0.039***	-4.50	-0.048***	-6.28	-0.049***	-2.79
IDD (β_1)	-0.002	-1.13	0.000	0.01	0.006	1.58
IDD × Bad ($\beta 2$)	-0.016**	-2.02	-0.015**	-2.16	-0.060***	-3.72
IDD × Monitoring (β_3)	0.003	1.23	0.002	1.05	0.002	0.40
IDD × Monitoring × Bad ($\beta 4$)	0.016***	2.75	0.018**	2.38	0.045**	2.23
Monitoring	-0.003**	-2.32	-0.003*	-1.85	-0.001	-0.51
Monitoring × Bad	0.003	0.57	0.007	1.13	-0.001	-0.08
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0662		0.0948		0.1146	
# of observations	8,788		8,788		1,713	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD, low monitoring						
$-\beta_2 - 2\beta_1$	0.019	0.0045	0.015	0.0127	0.048	0.0453
IDD vs. no IDD, high vs. low monitoring						
$-\beta_4 - 2\beta_3$	-0.022	0.0012	-0.023	0.0003	-0.048	0.0003

Panel B: Management earnings forecasts (Dependent variable: *Ret*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.135**	2.55	0.141***	2.75	0.236***	3.03
Bad	-0.149***	-2.61	-0.153***	-2.74	-0.239***	-3.13
IDD (β_1)	-0.010	-1.28	-0.014*	-1.89	-0.011**	-2.19
IDD × *Bad* (β_2)	-0.028***	-3.35	-0.026***	-3.30	-0.017**	-2.06
IDD × *Monitoring* (β_3)	0.008	0.86	0.015*	1.95	0.012*	1.66
IDD × *Monitoring* × *Bad* (β4)	0.023**	2.39	0.026***	3.85	0.016**	1.97
Monitoring	-0.013**	-2.01	-0.019***	-3.55	-0.014**	-2.20
Monitoring × *Bad*	0.012*	1.82	0.019***	4.13	0.002	0.29
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0912		0.0841		0.1240	
# of observations	32,447		32,447		17,998	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD, low monitoring $-\beta_2 - 2\beta_1$	0.047	<.0001	0.053	<.0001	0.040	<.0001
IDD vs. no IDD, high vs. low monitoring $-\beta_4 - 2\beta_3$	-0.039	<.0001	-0.056	<.0001	-0.040	<.0001

Panel C: Unbundled management earnings forecasts (Dependent variable: *Ret*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.036	0.43	0.034	0.40	0.120	1.31
Bad	-0.107	-1.29	-0.107	-1.28	-0.141	-1.58
IDD (β_1)	-0.018*	-1.91	-0.021***	-2.80	-0.006	-1.09
IDD × Bad ($\beta 2$)	-0.032***	-2.91	-0.033***	-3.68	-0.023***	-3.22
IDD × Monitoring (β_3)	0.008	0.72	0.006	0.53	0.008	1.03
IDD × Monitoring × Bad ($\beta 4$)	0.029**	2.55	0.044***	3.95	0.018**	2.52
Monitoring	-0.019**	-2.38	-0.011	-1.34	-0.010	-1.43
Monitoring × Bad	0.020**	2.25	0.014	1.61	-0.003	-0.42
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.1972		0.1935		0.1796	
# of observations	13,692		13,692		7,269	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD, low monitoring $-\beta_2 - 2\beta_1$	0.067	<.0001	0.074	<.0001	0.034	0.0132
IDD vs. no IDD, high vs. low monitoring $-\beta_4 - 2\beta_3$	-0.044	<.0001	-0.056	<.0001	-0.035	0.0015

This table reports results for how the effect of the recognition of the IDD on stock price reaction to announcements of dividend changes and management earnings forecasts varies with monitoring of disclosure policy, measured with institutional ownership, analyst following, and board independence. The sample period is from 1980 to 2013 for columns (1) and (2) of Panel A, from 1996 to 2013 for column (3) of Panel A, from 1995 to 2010 for columns (1) and (2) of Panels B and C, and from 1996 to 2010 for column (3) of Panels B and C. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. We report at the bottom of each panel the estimates of $-\beta_2 - 2\beta_1$ and $-\beta_4 - 2\beta_3$ and the *p*-values of *F*-tests for testing whether they are equal to zero. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 4
Recognition of the IDD and Fraction of News Released Prior to Announcements of Dividend Changes and Management Earnings Forecasts

Dependent variable: *FracNews*

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.615***	27.55	0.803***	8.78	0.814***	8.97
Bad	-0.177***	-3.65	-0.072	-0.51	-0.210	-0.83
IDD	-0.035**	-2.39	-0.002	-0.08	0.038	1.33
IDD × *Bad*	-0.082***	-2.70	-0.052**	-2.32	-0.069**	-2.18
RegFD	-0.006	-0.39	0.017	0.48	0.008	0.16
RegFD × *Bad*	0.039	1.51	0.034	0.94	0.051	1.12
HiLitRisk	0.008	1.09	0.003	0.47	0.002	0.15
HiLitRisk × *Bad*	-0.026	-1.02	0.016**	2.40	0.014	1.04
HiAsymm	-0.009	-0.94	0.009	1.46	-0.010	-1.00
HiAsymm × *Bad*	0.038*	1.67	-0.004	-0.46	0.009	0.70
HiDistress	0.021	1.36	0.012	1.07	-0.008	-0.52
HiDistress × *Bad*	-0.011	-0.34	-0.006	-0.46	0.019	1.09
State Dummy	Yes		Yes		Yes	
State Dummy × *Bad*	Yes		Yes		Yes	
Year Dummy	Yes		Yes		Yes	
Year Dummy × *Bad*	Yes		Yes		Yes	
Adj. R^2	0.0374		0.0259		0.0282	
# of observations	4,916		17,336		7,504	

This table reports results for the recognition of the IDD on the fraction of news released prior to announcements of dividend changes and management earnings forecasts. The sample period is from 1977-2013 for the announcements of dividend changes, and from 1995 to 2010 for management forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 5
Recognition of the IDD and Fraction of News Released Prior to Announcements of Dividend Changes and Management Earnings Forecasts: Effect of Monitoring

Panel A: Announcements of dividend changes (Dependent variable: *FracNews*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.561***	24.73	0.586***	27.78	0.778***	15.43
Bad	-0.116*	-1.79	-0.132**	-2.12	-0.317***	-2.81
IDD	0.042**	2.34	0.012	0.61	-0.018	-0.51
IDD × *Bad*	-0.117***	-2.63	-0.100**	-2.53	-0.628**	-2.18
IDD × *Monitoring*	-0.066**	-2.42	-0.046**	-2.53	-0.035	-1.00
IDD × *Monitoring* × *Bad*	0.187**	2.11	0.166***	3.61	0.797**	2.44
Monitoring	-0.018	-0.99	0.003	0.25	0.028	1.22
Monitoring × *Bad*	-0.022	-0.37	-0.040	-1.17	-0.153	-1.59
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0387		0.0337		0.1155	
# of observations	4,398		4,398		1,086	

Panel B: Management earnings forecasts (Dependent variable: *FracNews*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.798***	9.57	0.803***	10.02	0.914***	8.97
Bad	-0.165*	-1.67	-0.074	-0.87	-0.151	-1.39
IDD	-0.002	-0.09	0.000	0.02	0.068*	1.70
IDD × *Bad*	-0.052**	-2.08	-0.048**	-2.04	-0.101**	-2.10
IDD × *Monitoring*	-0.005	-0.34	-0.005	-0.33	-0.038**	-2.02
IDD × *Monitoring* × *Bad*	0.042**	2.18	0.051***	3.04	0.072***	2.87
Monitoring	-0.026***	-2.58	0.005	0.44	0.011	0.77
Monitoring × *Bad*	-0.017	-1.34	0.005	0.40	-0.002	-0.11
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0255		0.0265		0.0314	
# of observations	17,336		17,336		9,373	

Panel C: Unbundled management earnings forecasts (Dependent variable: *FracNews*)

	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.836***	8.68	0.845***	8.94	0.767***	6.71
Bad	-0.347	-1.37	-0.339	-1.34	-0.284	-1.05
IDD	0.023	0.69	0.011	0.41	0.088*	1.72
IDD × *Bad*	-0.115***	-2.99	-0.101***	-3.42	-0.165***	-2.86
IDD × *Monitoring*	-0.003	-0.17	0.020	0.87	-0.046*	-1.86
IDD × *Monitoring* × *Bad*	0.090***	3.79	0.065***	2.87	0.092**	2.47
Monitoring	0.015	0.95	-0.009	-0.52	0.019	1.17
Monitoring × *Bad*	-0.001	-0.03	0.021	1.22	0.015	0.73
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0634		0.0571		0.0708	
# of observations	7,504		7,504		3,727	

This table reports results for how the effect of the recognition of the IDD on the fraction of news released prior to announcements of dividend changes and management earnings forecasts varies with monitoring of disclosure policy, measured with institutional ownership, analyst following, and board independence. The sample period is from 1980 to 2013 for columns (1) and (2) of Panel A, from 1996 to 2013 for column (3) of Panel A, from 1995 to 2010 for columns (1) and (2) of Panels B and C, and from 1996 to 2010 for column (3) of Panels B and C. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 6
Recognition of the IDD and Informativeness of Earnings Announcement

Dependent variable: *Ln(NEWS_RATIO)*

	(1)		(2)		(3)		(4)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	3.764***	50.71	3.690***	50.95	3.699***	49.02	4.623***	42.60
BNEWS	0.072	0.83	0.048	0.56	0.018	0.20	0.148	0.84
IDD	-0.019	-0.87	-0.015	-0.51	-0.015	-0.55	-0.172**	-2.52
IDD × BNEWS	0.085***	4.14	0.082***	3.91	0.073***	3.74	0.161**	2.24
IDD × Monitoring			-0.009	-0.32	-0.010	-0.40	0.126***	3.38
IDD × Monitoring × Bnews			-0.073***	-2.70	-0.051**	-2.26	-0.122**	-2.18
Monitoring			0.079***	5.09	0.053***	3.23	-0.002	-0.06
Monitoring × Bnews			0.023	1.07	0.038**	2.41	0.005	0.15
BIAS_ADJ	0.210****	123.07	0.210***	124.48	0.210***	125.64	0.173***	35.33
RInfoAsym	-0.022***	-13.09	-0.014***	-7.07	-0.013***	-5.61	-0.005***	-7.58
INSALE	0.061***	10.88	0.052***	9.09	0.055***	10.27	0.032**	2.45
TRADE_DAYS	-0.006***	-24.06	-0.006***	-23.12	-0.007**	-23.95	-0.013***	-3.44
RBTM	0.002	1.48	0.002	1.18	0.003**	2.23	-0.019***	-6.14
RLEV	-0.009***	-6.30	-0.009***	-6.38	-0.009***	-6.29	-0.025***	-8.64
HITECH	0.050***	3.17	0.047***	2.96	0.044***	2.87	0.046**	2.19
Year Dummy	Yes		Yes		Yes		Yes	
Year Dummy ×BNEWS	Yes		Yes		Yes		Yes	
State Dummy	Yes		Yes		Yes		Yes	
State Dummy × BNEWS	Yes		Yes		Yes		Yes	
Monitoring measure	--		*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Adj. R^2	0.0633		0.0634		0.0632		0.0758	
# of observations	397,133		397,133		397,133		73,415	

This table reports results for the effect of the recognition of the IDD on earnings informativeness and how it varies with monitoring of disclosure policy, measured with institutional ownership, analyst following, and board independence. The sample period is from 1984-2013. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 7
Recognition of the IDD and Stock Price Crash Risk

Panel A: Main Results

	NCSKEW (1)		*DUVOL* (2)	
	Coefficient	t-statistic	Coefficient	t-statistic
IDD	0.082***	4.41	0.029***	2.86
DTURN	0.231	1.49	0.084	1.11
LNCSKEW	-0.056***	-18.03	-0.022***	-13.80
SIGMA	2.379***	7.40	0.936***	9.61
RET	0.071***	3.40	0.039***	4.54
SIZE	0.182***	27.84	0.090***	27.79
MB	0.010***	6.83	0.005***	9.11
LEV	0.007	0.21	-0.005	-0.32
ROA	0.243***	10.78	0.115***	9.76
ABACC	-0.011	-0.32	-0.005	-0.27
Firm fixed effects	Yes		Yes	
Year fixed effects	Yes		Yes	
Pseudo/Adj. R^2	0.1264		0.1254	
# of observations	111,294		111,294	

Panel B: Effect of Monitoring for *NCSKEW*

	(1)		(2)		(3)	
	Coefficient	z-statistic	Coefficient	t-statistic	Coefficient	t-statistic
IDD	0.072***	2.96	0.105***	4.82	0.152***	3.50
IDD × *Monitoring*	-0.044**	-2.35	-0.075***	-4.30	-0.132***	-5.15
Monitoring	0.046***	3.28	0.053***	4.79	0.025	1.11
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Firm fixed effects	Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes	
Pseudo/Adj. R^2	0.1164		0.1225		0.0886	
# of observations	105,457		111,294		18,856	

Panel C: Effect of Monitoring for *DUVOL*

	(1)		(2)		(3)	
	Coefficient	z-statistic	Coefficient	t-statistic	Coefficient	t-statistic
IDD	0.031**	2.48	0.045***	3.88	0.062***	2.65
IDD × *Monitoring*	-0.021**	-2.19	-0.039***	-4.26	-0.044***	-3.29
Monitoring	0.029***	3.88	0.026***	4.41	0.006	0.49
Control variables	Yes		Yes		Yes	
Monitoring measure	*Institutional Ownership*		*Analyst Following*		*Board Independence*	
Firm fixed effects	Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes	
Pseudo/Adj. R^2	0.1142		0.1226		0.0859	
# of observations	105,457		111,294		18,856	

This table reports results for the effect of the recognition of the IDD on stock price crash risk and how it varies with monitoring of disclosure policy, measured with institutional ownership, analyst following, and board independence. The sample period is from 1977 to 2013 for Panel A, from 1981 to 2013 for column 1 of Panels B and C, from 1984 to 2013 for column 2 of Panels B and C, and from 1996 to 2013 for column 3 of Panels B and C. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 8
Incremental effect of recognition of the IDD and Noncompetition Agreement Enforceability on Stock Price Reaction to Announcements of Dividend Changes and Management Earnings Forecasts

Panel A: Noncompetition agreement enforceability index (Dependent variable: *Ret*)

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	-0.009	-1.02	0.125***	2.81	0.035	0.95
Bad	-0.012	-0.92	-0.092***	-3.62	-0.076***	-2.83
IDD (β_1)	0.001	0.40	-0.020**	-2.35	-0.018***	-3.13
IDD × Bad (β_2)	-0.013***	-3.07	-0.023**	-2.25	-0.033***	-4.61
Enforce (β3)	0.011	1.54	-0.067*	-1.78	0.022	0.34
Enforce × Bad (β4)	-0.029**	-2.09	-0.059**	-2.54	-0.071***	-3.15
Control variables	Yes		Yes		Yes	
Adj. R^2	0.0471		0.0691		0.1846	
# of observations	3,776		16,943		9,844	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD						
$-\beta_2 - 2\beta_1$	0.012	0.0340	0.064	<.0001	0.068	<.0001
Highest vs. lowest enforceability index						
$-\beta_4 - 2\beta_3$	0.007	0.0400	0.192	0.0437	0.027	0.0446

Panel B: Noncompetition agreement enforceability index interacted with in-state competition
(Dependent variable: *Ret*)

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	-0.018**	-2.04	-0.007	-0.23	0.018	0.62
Bad	-0.028**	-2.05	-0.075***	-3.13	-0.105***	-4.69
IDD (β_1)	0.001	0.69	-0.014**	-2.16	-0.018**	-2.51
IDD × *Bad* (β_2)	-0.015***	-2.79	-0.017**	-2.16	-0.019**	-2.55
Enforce (β_3)	0.021***	4.18	0.023	0.42	0.035	0.77
Enforce × *Bad* (β_4)	0.002	0.11	0.022	0.65	-0.012	-0.27
Enforce × *HiInState* (β_5)	-0.004	-0.78	-0.022	-0.86	-0.007	-0.23
Enforce × *HiInState* × *Bad* (β_6)	-0.047***	-2.65	-0.075**	-2.13	-0.091**	-2.31
HiInState	0.009***	2.82	0.074***	5.14	0.063***	3.62
HiInState × *Bad*	0.022**	2.58	-0.031*	-1.79	-0.017	-0.82
Control variables	Yes		Yes		Yes	
Adj. R^2	0.0693		0.1676		0.1809	
# of observations	3,776		16,943		9,844	

F-tests for asymmetric withholding of bad news

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD						
$-\beta_2 - 2\beta_1$	0.012	0.0247	0.044	<.0001	0.054	<.0001
Highest vs. lowest enforceability index, low in-state competition						
$-\beta_4 - 2\beta_3$	-0.044	0.2304	-0.068	0.5693	-0.058	0.6593
Highest vs. lowest enforceability index, high vs. low in-state competition						
$-\beta_6 - 2\beta_5$	0.056	0.0236	0.120	<.0001	0.105	0.0017

This table reports results for the incremental effects of the recognition of the IDD and enforceability of noncompetition agreements on stock price reaction to announcements of dividend changes and management earnings forecasts. The sample period is from 1992-2013 for dividend changes, and from 1995 to 2004 for the management earnings forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. We report at the bottom of the table estimates of $-\beta_2 - 2\beta_1$, $-\beta_4 - 2\beta_3$, $-\beta_6 - 2\beta_5$, and the *p*-values of *F*-tests for testing whether they are equal to zero. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 9
Incremental Effect of the Recognition of the IDD and Noncompetition Agreement Enforceability on Fraction of News Released Prior to Announcements of Dividend Changes and Management Earnings Forecasts

Panel A: Noncompetition agreement enforceability index (Dependent variable: *FracNews*)

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.578***	8.98	0.572***	8.44	0.574***	5.99
Bad	-0.044	-0.60	-0.075*	-1.75	-0.076	-1.58
IDD	-0.031*	-1.95	-0.002	-0.10	0.029	1.02
IDD × Bad	-0.170**	-1.99	-0.051**	-2.08	-0.054**	-2.03
Enforce	0.031	0.29	-0.011	-0.07	-0.004	-0.02
Enforce × Bad	-0.258**	-2.59	-0.089**	-2.16	-0.084**	-2.39
Control variables	Yes		Yes		Yes	
Adj. R^2	0.0791		0.0386		0.0515	
# of observations	2,220		9,345		6,320	

Panel B: Noncompetition agreement enforceability index interacted with in-state competition (Dependent variable: *FracNews*)

	Announcements of Dividend Changes (1)		Management Earnings Forecasts (2)		Unbundled Management Earnings Forecasts (3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.509***	7.06	0.583***	8.69	0.595***	6.41
Bad	-0.146*	-1.73	-0.123**	-2.55	-0.125**	-2.57
IDD	-0.006	-0.34	-0.006	-0.29	0.019	0.78
IDD × Bad	-0.158**	-1.98	-0.052**	-2.11	-0.081***	-3.00
Enforce	0.023	0.20	-0.055	-0.37	-0.038	-0.16
Enforce × Bad	-0.047	-0.43	0.037	0.64	0.035	0.66
Enforce × HiInState	0.129	1.44	0.012	0.26	-0.062*	-1.88
Enforce × HiInState × Bad	-0.307**	-2.01	-0.155**	-2.40	-0.126**	-2.11
HiInState	0.071	1.51	-0.020	-0.81	0.011	0.54
HiInState × Bad	0.063	0.76	0.067**	2.17	0.048*	1.74
Control variables	Yes		Yes		Yes	
Adj. R^2	0.1279		0.0445		0.0639	
# of observations	2,220		9,345		6,320	

This table reports results for the incremental effects of the recognition of the IDD and enforceability of noncompetition agreements on the fraction of news released prior to announcements of dividend changes and management earnings forecasts. The sample period is from 1992-2004 for dividend changes, and from 1995 to 2004 for the management earnings forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 10
Incremental Effect of the Recognition of the IDD and Noncompetition Agreement Enforceability on Informativeness of Earnings Announcement

Dependent variable: *Ln(NEWS_RATIO)*

	(1)		(2)	
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	3.257***	36.65	3.496***	51.20
BNEWS	0.478***	4.74	0.632***	4.37
IDD	-0.062***	-4.08	-0.075***	-4.02
IDD × *BNEWS*	0.073**	2.57	0.076***	2.98
Enforce	-0.355***	-4.46	-0.389***	-6.22
Enforce × *BNEWS*	0.219***	6.40	-0.130	-0.73
Enforce × *HiInState*			0.179***	3.76
Enforce × *HiInState* × *BNEWS*			0.244**	2.47
HiInState			-0.201***	-6.39
HiInState × *BNEWS*			0.035	0.58
Control variables	Yes		Yes	
Adj. R^2	0.0662		0.0695	
# of observations	206,104		206,104	

This table reports results for the incremental effects of the recognition of the IDD and enforceability of noncompetition agreements on earnings informativeness. The sample period is from 1984 to 2013. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 11
Incremental Effect of the Recognition of the IDD and Noncompetition Agreement Enforceability on Stock Price Crash Risk

	NCSKEW				*DUVOL*			
	(1)		(2)		(3)		(4)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
IDD	0.055**	2.22	0.050***	2.72	0.022**	2.23	0.019***	2.63
Enforce	0.171***	3.04	0.018	0.36	0.090***	3.16	0.036*	1.70
Enforce× *HiInState*			0.216***	5.44			0.090***	3.64
HiInState			-0.041*	-1.78			-0.017	-1.29
Control variables	Yes		Yes		Yes		Yes	
Firm fixed effects	Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes	
Pseudo/Adj. R^2	0.1445		0.1397		0.1429		0.1374	
# of observations	49,613		49,613		49,613		49,613	

This table reports results for the incremental effects of the recognition of the IDD and enforceability of noncompetition agreements on stock price crash risk. The sample period is from 1992 to 2004. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables and intercepts are not reported. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 12
Recognition of the IDD and Managers' Asymmetric Withholding of Bad versus Good News: Effect of Financial Distress

Panel A: Stock price reaction to announcements of dividend changes and management earnings forecasts (Dependent variable: *Ret*)

	Announcements of Dividend Changes		Management Earnings Forecasts		Unbundled Management Earnings Forecasts	
	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.005***	2.83	-0.013	-0.50	-0.040***	-2.22
Bad	-0.039***	-5.24	-0.071***	-2.72	-0.031*	-1.93
IDD (β_1)	0.001	0.53	-0.008	-1.52	-0.009	-1.39
IDD × *Bad* ($\beta 2$)	-0.014**	-1.98	-0.016**	-2.14	-0.023***	-3.11
IDD × *HiDistress* (β_3)	-0.001	-0.45	-0.049	-1.30	-0.011	-0.56
IDD × *HiDistress* × *Bad* (β_4)	-0.016**	-2.06	-0.062**	-2.09	-0.038**	-2.09
HiDistress	0.002	1.21	0.108***	3.03	0.053***	2.83
HiDistress × *Bad*	0.033***	4.80	-0.021	-0.80	0.003	0.17
Control variables	Yes		Yes		Yes	
Adj. R^2	0.1158		0.0850		0.1146	
# of observations	9,791		32,447		1,713	

F-tests for asymmetric withholding of bad

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD, low financial distress $-\beta_2 - 2\beta_1$	0.013	0.0127	0.032	0.0032	0.042	<.0001
IDD vs. no IDD, high vs. low financial $-\beta_4 - 2\beta_3$	0.019	0.0363	0.159	<.0001	0.059	0.0002

Panel B: Fraction of news released prior to announcements of dividend changes and management earnings forecasts
(Dependent variable: *FracNews*)

	Announcements of Dividend Changes		Management Earnings Forecasts		Unbundled Management Earnings Forecasts	
	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.504 ***	31.67	0.715***	9.03	0.820***	10.43
Bad	-0.129***	-2.91	-0.045	-0.39	-0.447***	-5.39
IDD	0.018	1.55	0.002	0.07	0.032	0.99
IDD × *Bad*	-0.067**	-2.24	-0.055**	-2.15	-0.077**	-2.07
IDD × *HiDistress*	0.098***	3.22	0.056**	2.28	0.049	1.51
IDD × *HiDistress* × *Bad*	-0.150**	-2.14	-0.066**	-2.10	-0.076**	-2.21
HiDistress	0.005	0.27	0.007	0.44	0.000	-0.02
HiDistress × *Bad*	0.072	1.54	0.021	1.18	0.046***	2.74
Control variables	Yes		Yes		Yes	
Adj. R^2	0.0562		0.0251		0.0649	
# of observations	4,916		17,336		7,504	

This table reports results for how the effects of the recognition of the IDD on stock price reaction to and the fraction of news released prior to announcements of dividend changes and management earnings forecasts vary with financial distress. The sample period is from 1977-2013 for dividend changes and from 1995 to 2010 for the management earnings forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. We report at the bottom of Panel A the estimates of $-\beta_0-2\alpha$, $-\beta_2-2\beta_1$ and $-\beta_4-2\beta_3$ and the *p*-values of *F*-tests for testing whether they are equal to zero. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.

TABLE 13
Recognition of the IDD and Managers' Asymmetric Withholding of Bad versus Good News: Effect of Firm Performance

Panel A: Stock price reaction to announcements of dividend changes and management earnings forecasts (Dependent variable: *Ret*)

	Announcements of Dividend Changes		Management Earnings Forecasts		Unbundled Management Earnings Forecasts	
	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.003	1.48	0.011	0.55	-0.058**	-2.50
Bad	-0.027***	-2.85	-0.040*	-1.86	0.027	1.31
IDD (β_1)	0.001	0.40	-0.013***	-2.95	-0.013*	-1.69
IDD × *Bad* ($\beta 2$)	-0.013**	-2.13	-0.012**	-2.15	-0.018**	-2.25
IDD × *LowROA* (β_3)	-0.005	-1.57	0.012	0.70	-0.002	-0.09
IDD × *LowROA* × *Bad* (β_4)	-0.016**	-2.02	-0.047**	-2.39	-0.039**	-2.09
LowROA	0.003	1.11	-0.002	-0.30	-0.005	-0.41
LowROA × *Bad*	0.006	1.01	-0.009	-0.74	-0.004	-0.27
Control variables	Yes		Yes		Yes	
Adj. R^2	0.1119		0.1440		0.1935	
# of observations	9,791		32,447		13,692	

F-tests for asymmetric withholding of bad

	Estimate	p-value	Estimate	p-value	Estimate	p-value
IDD vs. no IDD, low financial distress $-\beta_2 - 2\beta_1$	0.012	0.0258	0.038	<.0001	0.045	<.0001
IDD vs. no IDD, high vs. low financial $-\beta_4 - 2\beta_3$	0.027	0.0005	0.022	0.0489	0.043	0.0184

Panel B: Fraction of news released prior to announcements of dividend changes and management earnings forecasts
(Dependent variable: *FracNews*)

	Announcements of Dividend Changes		Management Earnings Forecasts		Unbundled Management Earnings Forecasts	
	(1)		(2)		(3)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.510***	26.19	0.787***	9.54	0.806***	9.08
Bad	-0.104**	-2.21	-0.037	-0.29	-0.192	-0.74
IDD	0.034***	2.60	0.010	0.52	0.046	1.56
IDD × *Bad*	-0.060**	-1.98	-0.047**	-2.03	-0.071**	-2.08
IDD × *LowROA*	0.032	0.92	0.027	0.68	-0.017	-0.47
IDD × *LowROA* × *Bad*	-0.110**	-2.06	-0.094**	-2.19	-0.091**	-2.04
LowROA	0.017	0.70	0.027	0.92	0.084***	3.87
LowROA × *Bad*	0.039	1.00	0.041	1.36	0.013	0.53
Control variables	Yes		Yes		Yes	
Adj. R^2	0.0606		0.0225		0.0607	
# of observations	4,916		17,336		7,504	

This table reports results for how the effects of the recognition of the IDD on stock price reaction to and the fraction of news released prior to announcements of dividend changes and management earnings forecasts vary with firm performance. The sample period is from 1977-2013 for dividend changes and from 1995 to 2010 for the management earnings forecasts. The models are estimated with pooled time series and cross sectional data, with robust standard errors clustered by states. For the sake of brevity, the effects of control variables are not reported. We report at the bottom of Panel A the estimates of $-\beta_2-2\beta_1$ and $-\beta_4-2\beta_3$ and the *p*-values of *F*-tests for testing whether they are equal to zero. ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively. Variable definitions are in Appendix B.