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Does the Firm Information Environment Influence Financing Decisions? A Test Using Disclosure Regulation

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Extant theory claims a firm's information environment impacts the choice between debt and equity financing. However, empirical evidence supporting this contention is limited. We evaluate this relation within the context of Regulation Fair Disclosure (Reg FD), which prohibited the use of selective disclosure. We find that firms with high proprietary costs of public disclosure are more likely to resort to debt financing following the passage of Reg FD. This relation is not sensitive to whether a firm has relied on selective disclosure in the pre-Reg FD regime. We also evaluate changes in firm disclosure policy and find that firms that adopted an expansive public disclosure policy are more likely to turn to equity financing. Overall, our evidence is consistent with the pecking order theory: firms with deteriorated firm information environments increase their use of less information-sensitive debt, whereas firms with improved information environments favor the use of equity financing.

Keywords: information environment; financing decisions; disclosure; capital structure; Reg FD

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1. Introduction

This study aims to shed light on the relation between a firm's information environment and its financing decisions. Theoretically, Myers and Majluf (1984) consider a setting where information asymmetry exists between a firm and its outside investors. They posit equity is a more information-sensitive security than debt, and hence more prone to mispricing, particularly in the presence of information asymmetry. Thus, information asymmetry leads to a financing pecking order where information problematic firms resort to debt financing before equity financing (Myers 1984).¹ Although intuitively appealing, there is limited empirical support of this relation between the

information environment and firm financing choices. Garmaise and Natividad (2010, p. 2560) explain this shortcoming as follows:

Asymmetric information plays a prominent role in modern theories of corporate finance, but empirically analyzing and assessing the impact of informational frictions has proven to be difficult. Credible exogenous information proxies are hard to find, and there are relatively few natural experiments that result in significant shifts in the information environment. As a result, in contrast to the significant and well-established stream of theoretical work on asymmetric information and financial contracting, empirical research in this area is still in a somewhat early stage of development.

We contribute to this inquiry by taking advantage of a natural experiment involving a change in the disclosure regime. Specifically, we focus on the enactment

¹ The information environment also plays a role in asset pricing (Lambert et al. 2007, Easley and O'Hara 2004). For example, Easley and O'Hara (2004) contend that information risk is not a diversifiable risk and, in fact, contributes to a higher cost of equity capital. The authors define information risk to include information dissemination, the fraction of investors who receive private signals, and information asymmetry, the fraction of signals that are available

only to informed investors. Although important, this stream of literature does not directly speak to the issue of firm financing choice, which is the focus of this study.

of Regulation Fair Disclosure (Reg FD) by the Securities and Exchange Commission (SEC) on October 23, 2000. The intent of the regulation was to improve both the form and flow of firm-specific information. Specifically, Reg FD prohibits selective disclosure of firm-specific information to parties outside a firm, such as analysts and institutional investors, with the intent to increase the flow of firm-specific information in the form of public disclosure. Early research focused on assessing the mean effect of Regulation FD on the firm information environment (e.g., Heflin et al. 2003, Agrawal et al. 2006).² The evidence is mixed because some studies found Regulation FD improved the information environment, whereas others found Reg FD had a detrimental effect on the firm information environment. Subsequent research, in particular Wang (2007), argues that these findings are not altogether surprising since the effects of Reg FD need not be uniform across the affected firms. She notes that if a firm faces low proprietary costs of public disclosure, it will replace selective disclosure with public disclosure. However, if proprietary costs of public disclosure are substantial, then a firm will replace selective disclosure with nondisclosure, causing deterioration in its information environment. Wang (2007) finds empirical evidence consistent with these predictions. In particular, she finds that high-(low)-proprietary-cost firms replaced selective disclosure with nondisclosure (public disclosure).

We use Wang (2007) as a point of departure in this study. Principally, we recognize that the effects of Reg FD are not uniform across firms. Given the impact of Reg FD on the firm information environment, we examine whether and how the regulation induced changes in firm environment impact a manager's preference for debt or equity financing. The benefit of this setting is twofold. First, the change in disclosure regulation represents an exogenous shock to the information environment of firms. Hence, Reg FD provides a useful setting to empirically evaluate models, such as the pecking order theory, which assume a firm's information environment is exogenously determined. Second, the safe harbor provisions of Reg FD allow firms to continue to make selective disclosures to credit rating agencies, and this is an important feature to firms facing considerable costs of public disclosure. To the extent that Reg FD induces greater public disclosure, the reduction in a firm's information asymmetry reduces the cost of and increases the firm's preference for equity financing. On the contrary, for the subset of firms for which the regulation functions as an impediment to the flow of

firm-specific information, managers may prefer debt financing over equity financing.

Extant literature provides several reasons as to why the choice between debt and equity is related to the firm information environment (e.g., Myers 1984). First, debt is a less information-sensitive security than equity (Myers and Majluf 1984). Second, in the presence of information asymmetry, debt financing can signal positive information about a firm's expected stream of cash flows (Ross 1977). Third, within the context of Reg FD, the regulation provides a safe harbor exemption, which allows continued private disclosure to debt related intermediaries such as credit rating agencies of firm specific nonpublic information such as "budgets and forecasts, as well as advance notification of major corporate events such as a merger," information not privately available to a firm's equity analysts (Joynt 2002). Furthermore, this Reg FD exemption serves to "promote an uninhibited response to requests for information" from credit rating agencies (Joynt 2002). Thus, firms that find public disclosure costly can benefit from debt markets that do not prohibit selective disclosure of firm-specific information.

Our empirical analysis evaluates the impact of Reg FD on the choice between debt and equity financing. To the extent that Reg FD impacted a firm's information environment, theory anticipates the regulation to have a bearing on firm financing decisions. Our analysis follows prior research in that we start with the recognition that Reg FD does not impose uniform information effects on all firms. As such, we consider the differential information effects of Reg FD across firms. Whether Reg FD positively or negatively impacts a firm's information environment depends on a firm's proprietary costs of public disclosure (Wang 2007). Hence, we account for the differential impact of Reg FD by considering these proprietary costs. Principally, we examine whether high-proprietary-cost firms are more likely to turn to less information-sensitive debt financing in the post-Reg FD regime. Separately, Wang (2007) notes that Reg FD largely targets firms that rely on selective disclosure. To the extent that this is true, one could argue that Reg FD will have a distinct impact on the financing choices of firms that relied on selective disclosure in the pre-Reg FD regime. However, it is not clear, *ex ante*, as to the direction in which the financing choices of the selective disclosure firms are affected by Reg FD. The reason is that firms can resort to selective disclosure in the face of high public disclosure costs. Hence, there can be an overlap between proprietary costs and the use of selective disclosure. However, low-proprietary-cost firms can also take advantage of the available option for selective disclosure. For example, Hermalin and Weisbach (2012) suggest that public disclosure is problematic for managers and hence

² To evaluate the effects of Reg FD, prior research focused on both stock market (e.g., Chen et al. 2009) and financial analyst-based measures of the information environment (e.g., Heflin et al. 2003).

they may forgo public disclosure even in the absence of proprietary costs of public disclosure.³ Hence, the use of selective disclosure may not be entirely reflective of proprietary costs of public disclosure. Given the conflicting reasons as to why firms resort to selective disclosure, it is not obvious as to the impact of Reg FD on the financing choice of selective disclosure firms. We also assess the three-way interaction involving selective disclosure, proprietary costs of public disclosure, and Reg FD. This interaction allows us to evaluate whether the differential impact of Reg FD on the financing choices of firms with high proprietary costs of public disclosure is more pronounced among firms that relied on selective disclosure. Following prior research, we initially identify selective disclosure firms as those having analyst coverage. Firms provide information to analysts that is relevant to their formation of earnings expectations. In fact, the “majority of sell-side analysts say they regularly requested and received earnings guidance prior to Reg FD,” (Wang 2007, p. 1303). Furthermore, the earnings guidance was considered to be either similarly or more important than other sources of information (Wang 2007). Nonetheless, it should be noted that such selective disclosure does not necessarily imply high public disclosure costs.

Our next set of analysis identifies the changes in the firm disclosure policy due to Reg FD and relates these changes to firm financing choices. To be specific, we use a subset of data for which we are able to identify a shift either from selective disclosure to public disclosure or a shift from selective disclosure to nondisclosure. The identified changes in disclosure policy are obtained from Wang (2007). The benefit of this analysis is that it allows us to distinguish between Reg FD induced improvements and deteriorations in the firm information environment and directly relate these changes in a firm’s information environment to firm financing choices. In particular, we examine whether a switch from private disclosure to public disclosure reduces (increases) the likelihood of issuing debt (equity) and whether a switch from private disclosure to nondisclosure increases (reduces) the likelihood of issuing debt (equity).

Our initial analysis involves a sample consisting of 4,353 annual observations wherein 2,532 firms issue debt or equity between 1997 and 2003. We estimate a discrete choice model (logit) where the dependent variable is an indicator variable (0 = equity and 1 = debt). To capture the differential effect of Reg FD on the firm information environment, we interact it with

firm measures of proprietary costs of public disclosure. A positive coefficient on this interaction variable implies that firms that face a high level of proprietary costs of public disclosure are more likely to turn to debt financing in the post-Reg FD regime. We also examine the interaction between firms’ use of selective disclosure in the pre-Reg FD regime and the enactment of Reg FD. This interaction allows us to examine whether the regulation had a distinct and detectable effect on this subset of firms. However, as noted earlier, it is not *ex ante* clear as to the impact of Reg FD on the financing choice of these firms. We also include a three-way interaction to examine the joint effect of selective disclosure, proprietary costs of public disclosure, and Reg FD.

Our results are as follows. We find that the interaction between Reg FD ($RegFD = 1$ for the post-Reg FD period) and proprietary costs of public disclosure is positively associated with the issuance of debt. This evidence suggests that high-proprietary-cost firms are more likely to resort to debt financing in the post-Reg FD regime. Given that Reg FD shut down the selective disclosure channel, the evidence suggests that high-proprietary-cost firms find it advantageous to use less information-sensitive debt financing. Also, it is indicative that the safe harbor provisions of Reg FD, which allow selective disclosure of firm-specific information to debt market participants, may be valuable to high-proprietary-cost firms. We find that Reg FD has no differential impact on firms that had previously relied on selective disclosure. This is consistent with the argument that the option to use selective disclosure previously was taken advantage of by both high- and low-proprietary-cost firms. Probing further, we find the three-way interaction involving selective disclosure, proprietary costs of public disclosure, and $RegFD$ is not statistically significant. This evidence rules out support for the contention that Reg FD has an incrementally more detrimental impact on the information environment of selective disclosure firms with high public disclosure costs so much so that it induces greater debt financing. Taken together, we find Reg FD positively influences the use of debt financing by high-proprietary-cost firms, and this relation is not sensitive to whether a firm relied on selective disclosure in the pre-Reg FD regime. This finding holds across multiple measures of proprietary costs of public disclosure.

Our next set of analysis involves the subgroup of our sample firms for which we have measures of Reg FD induced changes in disclosure policy. When we examine firms that change their disclosure policies, we do find, as expected, that firms with high proprietary costs of public disclosure are more likely to switch from selective disclosure to nondisclosure in the post-Reg FD regime. We directly relate the

³ The argument here is that public disclosure can be costly to managers in so far as it facilitates better monitoring of managers by outside investors. Public disclosure also enables better evaluation of managerial ability, which can adversely impact their career.

changes in firm disclosure policy to firms' financing choices. We find the switch from selective disclosure to public disclosure reduces (increases) the likelihood of debt (equity) financing. This is consistent with the contention that improvements in the firm information environment favor equity financing. In contrast, we find the switch from selective disclosure to nondisclosure increases (reduces) the likelihood of debt (equity) financing. This finding is consistent with the argument that deterioration in the firm information environment favors the use of less information-sensitive debt financing. Taken together, our results support the contention that changes in the information environment impact a firm's financing decisions.

We contribute to the extant literature in several ways. We contribute to the capital structure literature, which aims to understand firm financing choices. As noted earlier, theoretical models such as Myers and Majluf (1984) take the information environment as given (i.e., exogenously determined) and explore whether information asymmetry influences firm financing decisions. They contend that firm financing decisions are *conditional* on the firm information environment and that information asymmetry favors the use of a less information-sensitive security, such as debt, as opposed to equity. This theory provides no guidance on whether a firm should alter its information environment, a decision that involves consideration of costs and benefits of adopting policies such as expanded voluntary disclosure (Verrecchia 1983). Since considerations of changes to the information environment are absent in the analysis of Myers and Majluf (1984) and Myers (1984), merely relating the firm information environment (or changes to the firm information environment) to firm financing choices is empirically problematic since a firm's transparency (or opacity) is endogenously determined in the real world setting. Garmaise and Natividad (2010) attribute the lack of empirical support for the role of information asymmetry in firm financing decisions to these endogeneity issues. Our use of a change in disclosure regime helps us limit these endogeneity concerns in prior studies and better identify the relation between the information environment and the choice between debt and equity.⁴

We also contribute to the research related to Reg FD. As noted earlier, prior research focused on

assessing the mean effect of this regulation on the information environment. For example, Hefflin et al. (2003) examine the impact of Reg FD on analyst coverage and analyst forecast properties (see also Gomes et al. 2007). Chen et al. (2009) focus on the impact of Reg FD on a firm's ex ante cost of equity capital and find that the cost of equity capital decreases post-Reg FD. In contrast, Gomes et al. (2007) find Reg FD had an adverse effect on the information environment, especially for firms with high proprietary costs of disclosure. Wang (2007) documents similar findings and notes that the effects of Reg FD do not appear uniform across firms. Our evidence supports this contention because we find that Reg FD positively impacts the preference of debt (equity) financing by high- (low-)proprietary-cost firms.

Our study is mindful of the Healy (2007) concern that merely examining changes around Reg FD is problematic given the presence of confounding events such as the Global Research Analyst Settlement (2001).⁵ Our study does not make broad claims about the impact of Reg FD per se, because of the noted confounding macroeconomic events. Rather, we carefully examine the differential impact of Reg FD as it relates to its interaction with firm attributes. In particular, we evaluate finer predictions where we identify the affected firms and take into consideration their proprietary costs of public disclosure. Also, we directly evaluate changes in firm disclosure environment around Reg FD and relate these improvements or deteriorations in the firm information environment to the debt–equity choice.

We also contribute to the disclosure literature. Prior studies examine the relationship between disclosure and external financing (Frankel et al. 1995, Lang and Lundholm 2000) and whether disclosure affects the cost of external financing (Botosan 1997, Sengupta 1998). Specifically, Sengupta (1998) and Botosan (1997) examine whether disclosure contributes to a lower cost of debt and equity financing, respectively. However, few studies, if any, examine the impact of disclosure on the choice between debt and equity financing. In part, this paper fills this void and examines external financing decisions in a setting where regulation has altered firm disclosure policy.

In a concurrent paper, Petacchi (2015) also examines the impact of Reg FD on firm capital structure. We differ from her study in two important ways. First,

⁴ Bharath et al. (2009) take a different approach but reach similar conclusions as our study. They decile rank firms based on an information asymmetry index composed of several proxies of adverse selection used in prior literature. The authors find that the greater a firm's information asymmetry, the greater the portion of a firm's financing deficit is financed through debt funding. This evidence suggests that because of progressively higher costs, information problematic firms avoid information-sensitive equity in favor of less expensive information-sensitive debt financing.

⁵ The Global Research Analyst Settlement stemmed from an investigation of the effect of investment banking practices on equity research. The intent of the Global Settlement was to improve the reliability of analyst research in part by regulating the use of investment banking to support sell-side research and requiring banks to provide independent research to clients. Other confounding events include the devaluation of technology stocks, decimalization of the stock exchanges, disclosure of fraud at Enron and Worldcom, and the economic recession that followed 9/11.

we focus on the differential public disclosure costs faced by firms and distinguish between firms unlikely to experience an improved information environment after Reg FD from those more likely to improve or increase their information flows. In doing so, we recognize that the impact of Reg FD is not uniform across firms. Second, we depart from Petacchi (2015) in that the PIN metric plays a central role in her analysis. Recently, studies have questioned the extent to which the PIN metric represents a measure of information risk related to a firm (Mohanram and Rajgopal 2009). Our analysis focuses directly on changes in firm disclosure policy and previously documented measures of public disclosure costs.

2. Related Literature

To evaluate the impact of the information environment on firm financing decisions, we take advantage of a change in disclosure regime, Reg FD. The SEC enacted Reg FD in 2000 to prohibit selective disclosure of firm-specific information “to a subset of market participants such as analysts and institutional investors without simultaneously disclosing the same information to the investing public” (Chen et al. 2009, p. 107).⁶ As a result, Reg FD should impact the firm information environment. There are several views on the impact of Reg FD on the information environment. One view is that Reg FD did not disrupt the flow of firm-specific information but simply altered the communication channel from selective to public disclosure. This view anticipates wider dissemination of firm-specific information and an overall decline in information asymmetry. A contrary view is that Reg FD did not improve the information environment because it eliminated an important channel for the transmission of firm-specific information. These two views are not mutually exclusive. An intermediate view reconciles both of these arguments by suggesting the impact of Reg FD on the information environment is not uniform across firms and

depends on the firm’s public disclosure costs. Wang (2007) notes firms may replace selective disclosure with either greater public disclosure or nondisclosure. Prior research argues that public disclosure of firm-specific information is costly to firms since disclosed information is observed not only by a firm’s investors but also by its competitors (Yosha 1995). Selective disclosure represents an important channel to strategically release firm-specific information, particularly for firms in competitive industries, high-technology firms, firms with high research and development expenditures, firms with high litigation risk, or firms where public disclosure can most adversely impact a firm’s competitive position or increase the likelihood of litigation. When the selective disclosure channel is blocked, these firms replace selective disclosure with nondisclosure.

Prior research examines the effect of Reg FD on firm disclosure policy, analyst forecast attributes, and measures of the overall information environment. For instance, Heflin et al. (2003) and Bailey et al. (2003) find that voluntary disclosure improved in the post-Reg FD regime, consistent with Reg FD inducing greater public disclosure. In a similar vein, Agrawal et al. (2006) and Mohanram and Sunder (2006) find improvements in both analyst forecast accuracy and dispersion.⁷ Mohanram and Sunder (2006) also analyze whether analysts increase idiosyncratic information discovery post-Reg FD, and find that analysts decrease coverage for well-followed firms and increase coverage for firms less-followed before Reg FD. Jorion et al. (2005) evaluate whether the informativeness of credit rating upgrades and downgrades changes after Reg FD. They find that the stock price impact of credit rating changes increases post-Reg FD, suggesting credit rating agencies “remain the main conduits of selective disclosures” after the enactment of Reg FD (Jorion et al. 2005, p. 313). Reg FD provides an exception, wherein firms can still selectively disclose firm-specific information to credit rating agencies. Whereas prior studies focus on the mean effects of Reg FD, Wang (2007), as noted earlier, contends that the effects of Reg FD need not be uniform across firms. She finds that firms are more likely to switch from private disclosure to public disclosure (nondisclosure) when the proprietary cost of public disclosure is low (high). The Wang (2007) study is important for two reasons. First, she sheds light on the earlier mixed results on the information effects of Reg FD. Her study shows that Reg FD can have differing effects across firms. Second and relatedly, she highlights the importance of taking into consideration

⁶ The SEC provides three reasons as to why they support the enactment of Reg FD (Gomes et al. 2007). First, selective disclosure provides an informational advantage to investors who have access to firm-specific disclosures “at the expense of those kept in the dark” (SEC 2000). Second, firms can use selective disclosure to influence external monitors, such as analysts, by offering access to firm-specific information in exchange for positive reviews and recommendations. This contention is supported by prior research, which finds that analysts make optimistic earnings forecasts to obtain access to firm-specific information (Hong 2004). Third, the SEC claims selective disclosure is no longer necessary to achieve stock market efficiency. With improvements in technology, analysts and institutional investors are no longer viewed as necessary agents to achieve market efficiency. In enacting Reg FD, the SEC’s underlying assumption is that information previously selectively disclosed will now be provided more broadly, through communication mechanisms such as voluntary public disclosure (Gomes et al. 2007).

⁷ Heflin et al. (2003) also examine analyst earnings forecasts, but they fail to find a significant change in analyst forecast accuracy or dispersion.

firm proprietary costs of public disclosure. The shutdown of the private disclosure channel is problematic for firms that face high proprietary costs of public disclosure. We take these arguments as a starting point in evaluating how the Reg FD induced change in disclosure regime affects firm financing choices.

Modigliani and Miller (1958) note that in a world of perfect capital markets, capital structure decisions are value irrelevant because they do not affect firm cash flows but merely affect the division of cash flows between a firm's debt holders and equity holders. However, this world of perfect capital markets is not realistic. An important imperfection is the information asymmetry between a firm and its outside investors. This information asymmetry creates a wedge between a firm's internal and external cost of financing, and capital structure decisions are no longer viewed as value irrelevant (Myers and Majluf 1984). Principally, Myers and Majluf (1984) contend that firms with poor information environments, i.e., higher information asymmetry, use internal funds first before proceeding to raise funds externally. If the firm resorts to external financing, it will opt for less information-sensitive debt before turning to information-sensitive equity funds (Myers and Majluf 1984, Myers 1984).

As noted earlier, Reg FD impacts the firm information environment but its effects are not identical across firms. If Reg FD induces greater disclosure of firm-specific information, thus improving the information environment, the pecking order theory advanced by Myers and Majluf (1984) and Myers (1984) suggests firms will more likely issue an information-sensitive security such as equity. However, the restrictions posed by Reg FD may hurt the information environment if a firm is unwilling to publicly disclose information previously disclosed selectively. For these firms, Reg FD may render equity financing less attractive than less information-sensitive debt financing since Reg FD continues to allow selective disclosure of firm-specific information to credit rating agencies. Whether Reg FD improves or hurts the firm information environment is dependent on the proprietary costs of public disclosure and whether the firm utilized the private disclosure channels eliminated by Reg FD. For high-proprietary-cost firms utilizing private communication channels, Reg FD hurts the firm information environment since selective disclosure represents an important channel to convey firm-specific information. For these high-proprietary-cost firms, theory anticipates Reg FD will result in an increased preference for debt financing. For low-proprietary-cost firms, Reg FD induces a move from selective disclosure to public disclosure (Wang 2007) because a move toward public disclosure is less costly. For these low-proprietary-cost firms, firms may be more willing to resort to

information-sensitive equity financing following the enactment of Reg FD. We next empirically evaluate these predictions.

3. Sample Selection

Our sample of debt and equity issuances is determined using annual firm-level data from Compustat between 1997 and 2003. Consistent with prior research, we exclude financial firms (SIC codes 6000–6999) and utilities (SIC codes 4900–4999), the former because their financial structures differ from other firms and the latter because they face additional regulations on capital. We identify our debt (equity) issuing firms using a similar methodology used in prior studies (Hovakimian et al. 2004 and 2001; Leary and Roberts 2010 and 2005; and Korajczyk and Levy 2003, for example).⁸ Because we are interested in firm financing decisions, particularly those using external funds to finance investment (Myers and Majluf 1984), we classify each sample firm as a firm issuing debt (equity) when net cash debt (equity) issuances as per the statement of cash flows are in excess of 5% of the prior year's assets. We exclude any firm that does not meet our debt/equity issuance threshold or any firm identified as issuing both debt and equity in the same fiscal year. This approach allows us to include firms issuing public or private debt and equity, yet exclude firms that are refinancing debt or engaging in debt for equity swaps or conversions. To ensure we are not picking up initial public offerings, we require our observations to have market price information for two years prior to the equity issuance. We further exclude any observation that does not have data available to construct our control and proprietary cost measures, which leaves 4,353 annual observations meeting our requirements. All noncategorical variables are trimmed to the 1% and 99% values annually to mitigate the impact of outliers.

Table 1 provides the descriptive comparison between our debt and equity observations for a number of characteristics known to influence a firm's preference for external financing source. Panel A provides the descriptive comparison between our debt and equity observations of the full sample, and consistent with prior research, we find that our median equity issuing firm is significantly smaller, has more growth opportunities, more earnings variability, less

⁸ Of the 21,553 firm observations between 1997 and 2003 that remain after making similar data exclusions as in Leary and Roberts (2010) (LR), we find we have slightly less debt issuers (16.0% versus 22.6% in LR and slightly more equity issuances 10.4% in our sample versus 7.1% in LR); however, given our time period in relation to the longer LR sample period between 1980 and 2005, we find these differences reasonable.

Table 1 Descriptive Statistics

| Panel A: Comparison of debt and equity firms for the full sample | | | | |
|--|------------|--------|--------------|-----------|
| Variable | Debt firms | | Equity firms | |
| | Mean | Median | Mean | Median |
| %Equity | −0.014 | 0.000 | 0.471*** | 0.210*** |
| %Debt Issue | 0.211 | 0.127 | −0.032*** | −0.003*** |
| Size | 0.333 | 0.250 | 0.210*** | 0.100*** |
| Market to Book | 1.470 | 1.106 | 4.023*** | 2.511*** |
| Net PP&E | 0.361 | 0.305 | 0.225*** | 0.144*** |
| ΔAAA | −0.006 | −0.009 | −0.007 | −0.009 |
| Earn Var | 0.345 | 0.082 | 1.117*** | 0.238*** |
| t_{CDUM} | 1.450 | 2.000 | 0.919*** | 1.000*** |
| Lag Leverage | 0.295 | 0.261 | 0.190*** | 0.099*** |
| Deficit | 0.092 | 0.060 | 0.499*** | 0.216*** |
| Prefollowed | 0.614 | 1.000 | 0.552*** | 1.000*** |
| Composite Factor | −0.275 | −0.542 | 0.462*** | 0.463*** |
| Competitive | 0.686 | 1.000 | 0.873*** | 1.000*** |
| High Tech | 0.184 | 0.184 | 0.466*** | 0.000*** |
| R&D | 0.033 | 0.000 | 0.180*** | 0.112*** |
| Litigation Risk | 0.113 | 0.000 | 0.393*** | 0.000*** |
| N | 2,729 | | 1,624 | |
| Panel B: Comparison of debt issuing firms pre- and post-Reg FD | | | | |
| Variable | Pre-Reg FD | | Post-Reg FD | |
| | Mean | Median | Mean | Median |
| %Equity | −0.017 | 0.000 | −0.011*** | 0.000*** |
| %Debt Issue | 0.225 | 0.130 | 0.188*** | 0.121*** |
| Size | 0.317 | 0.200 | 0.356*** | 0.250*** |
| Market to Book | 1.414 | 1.091 | 1.554** | 1.121 |
| Net PP&E | 0.368 | 0.318 | 0.350* | 0.291** |
| ΔAAA | −0.005 | −0.008 | −0.008*** | −0.009 |
| Earn Var | 0.335 | 0.081 | 0.359 | 0.085 |
| t_{CDUM} | 1.514 | 2.000 | 1.353*** | 1.000*** |
| Lag Leverage | 0.289 | 0.265 | 0.303 | 0.258 |
| Deficit | 0.103 | 0.070 | 0.076** | 0.047*** |
| Prefollowed | 0.596 | 1.000 | 0.642** | 1.000** |
| Composite Factor | −0.328 | −0.542 | −0.194*** | −0.542** |
| Competitive | 0.674 | 1.000 | 0.705* | 1.000* |
| High Tech | 0.156 | 0.000 | 0.227*** | 0.000*** |
| R&D | 0.029 | 0.000 | 0.039*** | 0.000*** |
| Litigation Risk | 0.094 | 0.000 | 0.142*** | 0.000*** |
| N | 1,651 | | 1,078 | |

asset tangibility, and greater financing needs. Since we are examining shifts in financing decisions after Reg FD, we rely on the fact that our debt firms and equity firms remain relatively comparable to each other across time.

In panels B and C of Table 1, we compare the descriptive statistics of our debt and equity firms across the pre- and post-Reg FD regimes. With respect to incremental firm financing decisions, we find a decline in the proportion of debt issuing firms relative to equity firms across time as 68.3% of our pre-Reg FD observations issued debt and only 55.7% of our post-Reg FD observations issued debt. These changes may reflect broad trends in incremental firm

financing choices or changes in financing patterns that may or may not be related to Reg FD. At this juncture, it is difficult to attribute these financing patterns to any one of these explanations. Besides the changes in financing patterns, we also find that the mean (median) amount of the debt issued declined from 22.5% (13.0%) to 18.8% (12.1%) of prior-year assets, the mean (median) equity issue, although larger than the debt issued, remained relatively unchanged over time (45.3% (21.6%) in the pre-Reg FD period to 48.6% (19.9%) post-Reg FD).

Finally, we find that the mean level of proprietary costs of debt firms increases in the post-Reg FD period. This finding holds across multiple measures

Table 1 (Continued)

| Panel C: Comparison of equity issuing firms pre- and post-Reg FD | | | | |
|--|------------|--------|-------------|----------|
| Variable | Pre-Reg FD | | Post-Reg FD | |
| | Mean | Median | Mean | Median |
| %Equity | 0.453 | 0.216 | 0.486 | 0.199 |
| %Debt Issue | −0.032 | −0.003 | −0.032 | −0.003 |
| Size | 0.201 | 0.100 | 0.218 | 0.100* |
| Market to Book | 4.455 | 2.832 | 3.636*** | 2.353*** |
| Net PP&E | 0.228 | 0.155 | 0.222 | 0.138 |
| ΔAAA | −0.005 | −0.013 | −0.009*** | −0.009 |
| Earn Var | 1.037 | 0.243 | 1.188 | 0.233 |
| t_{cDUM} | 1.005 | 1.000 | 0.842*** | 1.000*** |
| Lag Leverage | 0.179 | 0.096 | 0.199 | 0.107 |
| Deficit | 0.488 | 0.238 | 0.508 | 0.191* |
| Prefollowed | 0.522 | 1.000 | 0.579** | 1.000** |
| Composite Factor | 0.417 | 0.463 | 0.501* | 0.492* |
| Competitive | 0.866 | 1.000 | 0.880 | 1.000 |
| High Tech | 0.459 | 0.000 | 0.471 | 0.000 |
| R&D | 0.171 | 0.103 | 0.188 | 0.115 |
| Litigation Risk | 0.365 | 0.000 | 0.419** | 0.000** |
| N | 767 | | 857 | |

Notes. The full sample includes 4,353 annual observations of firms with net cash receipts for debt or equity issuances (but not both) in excess of 5% of prior year assets with all required available data in Compustat. %Equity is the amount of cash received from stock issues (SSTK) less cash paid for stock repurchases (PRSTKC) divided by assets at the end of the prior year. %Debt Issue is the cash received from debt issues (DLTIS) less cash paid to retire debt (DLTR) divided by prior year assets. Size is firm size decile formed based on the Fama/French monthly NYSE market equity breakpoint at the end of the prior fiscal year; Market to Book equals the sum of preferred stock, market value of common equity, and book value of debt divided by total assets; Net PP&E equals the net property, plant, and equipment divided by total assets at the beginning of year t ; ΔAAA equals the average monthly change in the interest rate on the AAA corporate bonds over the year; Earn Var is the earnings variance calculated as the standard deviation of $(EBIDT_t - EBIDT_{t-1})$ divided by the mean of total assets, for the 10 years prior to the issue (at least four years if data are missing); t_{cDUM} is a trichotomous variable equal to 0 if the firm had an unused net operating loss (NOL) carryforward and negative income in the prior year, 1 if the firm had either an unused NOL carryforward or negative income in the prior year, and 2 if the firm had no unused NOL carryforward and had positive income in the prior year; Lag Leverage equals long-term debt plus current portion of debt divided by the book value of the assets as of the end of the prior year; Deficit equals $DIV_{t-1} + X_{t-1} + \Delta W + R_{t-1} - C_{t-1}$, all scaled by prior-year assets, where DIV = dividend payments, X = capital expenditures, ΔW = net increase in working capital from year $t - 2$ to $t - 1$, R = current portion of long-term debt at the beginning of the period, and C = operating cash flows, after interest and taxes; Prefollowed is an indicator variable measured as a 1 for any firm followed by two or more analysts prior to Reg FD; Composite Factor is the principal factor of the composite of Competitive, HighTech, R&D, and Litigation Risk; Competitive is an indicator of 1 if the firm operates in the top tercile of competitive industries, measured annually, using Hoberg and Phillips (2010) fitted SIC-based industry concentration data; High Tech is an indicator variable equal to 1 if a company operates within a high-tech industry or 0 otherwise (SIC codes coded as high tech include 2833–2836, 3612–3613, 3621–3629, 3651–3652, 3661–3669, 3671–3672, 3674, 3695, 4812–4822, and 4832–4899 per Bushee et al. 2004); R&D is the ratio of R&D expense to assets at the end of the prior year; and Litigation Risk is an indicator variable measured as per Kim and Skinner (2012). Extreme observations are winsorized to the 1st and 99th percentiles.

***, **, and * indicate a 0.01, 0.05, and 0.10 difference, respectively, between the respective samples using a two sample mean test and Wilcoxon sum rank tests of the medians.

of proprietary costs of public disclosure (and litigation risk): industry competitiveness, *Competitive*, high-technology industry membership, *High Tech*; research and development intensity, *R&D*; and litigation risk, *Litigation Risk*. For the equity firms, apart from a slight increase in firms facing higher litigation costs, no other changes are noted in our proprietary cost proxies. When selective disclosure is permitted, firms can privately convey firm-specific information, and hence an information-sensitive security such as equity is still viable for a firm facing high proprietary costs of

public disclosure. By restricting selective disclosure, high-proprietary-cost firms will find less information-sensitive securities, such as debt, as cost advantageous. The above evidence supports this contention.

4. Empirical Design

The aim of our study is to examine whether changes in firm information environment induced by Reg FD influenced the choice between debt and equity financing. Following prior research, we recognize that the

information effects of Reg FD need not be uniform across firms and that it is impacted by a firm's proprietary costs of public disclosure. We also take into consideration the argument that Reg FD largely targets and hence impacts firms that relied on selective disclosure in the pre-Reg FD regime. We next take a firm's proprietary costs and selective disclosure into account in evaluating the impact of Reg FD on firm financing choices.

To examine firm financing choices around Reg FD, we estimate a logit model that regresses firm financing choices involving debt or equity issuances on Reg FD, propriety costs of disclosure, an indicator variable identifying firms most likely impacted by Reg FD, and other control variables. The sample includes firm observations from fiscal years beginning between January 1997 and October 1999 in the pre-Reg FD period and from fiscal years beginning between October 2000 and January 2003 in the post-Reg FD period.⁹ The dependent variable, *Debt Fund*, is a dichotomous variable depicting the choice between debt and equity. *Debt Fund* is equal to 1 for a debt issuance and 0 for an equity issuance.

We base our analysis on the assumption that managers make optimal financing choices involving debt and equity, given their set of circumstances (Mackie-Mason 1990). To the extent that Reg FD impacts a firm's information environment, it becomes a relevant variable of consideration in this choice setting. However, we recognize the impact of Reg FD on the firm information environment is nuanced in that it may not affect the information environment of all firms and that these effects may not be the same across the affected firms. As such, our focus is on the interactions between Reg FD and firm attributes and how these interactions influence a firm's financing decisions.

Our baseline model specification, which includes controls for size, mispricing, profitability, tangibility, and macroeconomic conditions is as follows:

$$\begin{aligned} \Pr(\text{DebtFund})_{i,t} &= \alpha + \beta_1 \text{RegFD} + \beta_2 \text{Prefollowed} \\ &+ \beta_3 \text{Proprietary Cost} + \beta_4 \text{Proprietary Cost} * \text{RegFD} \\ &+ \beta_5 \text{Prefollowed} * \text{RegFD} \\ &+ \beta_6 \text{Prefollowed} * \text{Proprietary Cost} \\ &+ \beta_7 \text{Proprietary Cost} * \text{RegFD} * \text{Prefollowed} \\ &+ \text{Control Variables} + \varepsilon \end{aligned} \quad (1)$$

⁹ Our definition of the Reg FD time period splits fiscal year 2000 observations between the pre- and post-periods. Of the 698 fiscal year 2000 observations, 245 are identified as pre-Reg FD observations and 453 are post-Reg FD observations. Although a potential concern is that the split on fiscal year could result in industry biases as year ends tend to be clustered by industry, our results are not affected by using either fiscal years or calendar years in our models.

Before proceeding, it is important to discuss the empirical methodology employed in our multivariate analysis. An appropriate empirical framework for the present setting is the difference-in-difference (DID) methodology. In DID, one distinguishes between a treatment and control group of firms and assesses the differential effect due to a particular treatment (such as Reg FD). Although Reg FD covers all U.S. public firms, studies such as Wang (2007) contend that it largely impacts firms that previously relied on selective disclosure. Hence, one could argue that researchers should distinguish between the treatment and control firms on the basis of a firm's use of selective disclosure in the pre-Reg FD period. However, firms can rely on selective disclosure for several reasons. Whereas many firms may wish to avoid public disclosure costs, Hermalin and Weisbach (2012) contend that managers may be reticent to publicly disclose even in the absence of disclosure related proprietary costs. The point here is that a firm could have adopted a selective disclosure policy even when public disclosure was not prohibitively costly. Alternatively, a researcher could differentiate between the treatment and control firms on the basis of a firm's proprietary costs of public disclosure. High-proprietary-cost firms are more likely to rely on selective disclosure in the pre-Reg FD regime and may have experienced a more adverse shock to their information environment after enactment of Reg FD as public disclosure is not likely a viable option for these firms. In light of these issues, we depart from traditional DID models and include multiple interactions to better assess whether and how Reg FD affects firm financing choices.¹⁰ In doing so, our aim is to disentangle the effects of various factors that can influence firm response to the policy change.

Test and Proprietary Cost Variables. *RegFD* is an indicator variable equal to 1 for fiscal years beginning between October 2000 and January 2003. This variable reflects the change in the disclosure regime that prohibited selective disclosure. We clearly recognize this variable can also reflect changes in other macroeconomic variables. Other concurrent events such as the Global Research Analyst Settlement make it difficult to strictly interpret the *RegFD* coefficient as only reflecting the informational effects of Reg FD. As such, we focus on narrower predictions and relate the interaction between the change in disclosure regulation and firm attributes to firm financing decisions.

The baseline model above includes several interactions between the enactment of Reg FD and firm attributes. We include an interaction between *RegFD*

¹⁰ We thank the editor and a referee for suggesting a fuller model specification with multiple interactions. Also, see Barth and Israeli (2013) for a related discussion on this topic.

and proprietary costs of public disclosure. By restricting selective disclosure, Reg FD can have an adverse impact on the information environment of high-proprietary-cost firms. Hence, debt financing may be more attractive for these firms in the post-Reg FD regime since it represents a less information sensitive security. Furthermore, debt is also attractive since Reg FD provides a safe harbor provision that permits a firm to selectively disclose to debt market participants such as credit rating agencies. Hence, we anticipate the coefficient on this interaction to be positive. We also include a three-way interaction involving the use of selective disclosure *Prefollowed*, *RegFD*, and proprietary costs of public disclosure. This interaction accounts for the argument that Reg FD affects only the subset of firms that had previously relied on selective disclosure. Hence, it is argued that it is selective disclosers with high proprietary costs that are more likely to turn to debt financing in the post-Reg FD regime. The coefficient on this three-way interaction is expected to be positive. We also include an interaction between *RegFD* and firm use of selective disclosure in the pre-Reg FD regime. By restricting selective disclosure, one could argue that Reg FD hurts the information flow of these firms and as a result induces an increase in debt financing in the post-Reg FD regime. However, this argument presumes that firms opted for selective disclosure because public disclosure is costly. As noted above, firms may avoid public disclosure even in the absence of high proprietary costs of disclosure. The implication is that selective disclosure firms may switch to public disclosure in the post-Reg FD regime without incurring significant proprietary costs. As such, we do not predict a sign for the coefficient on this interaction.¹¹

To identify firms that rely on selective disclosure, we include an indicator variable, *Prefollowed*, which takes on a value of 1 when the firm is followed by more than one analyst in the two years preceding Reg FD (i.e., 1999 and 2000).¹² Financial analysts are typically characterized as key recipients of information through the selective disclosure channel (Gomes et al. 2007).¹³

¹¹ For completeness, we also include an interaction between firm use of selective disclosure and proprietary costs of public disclosure.

¹² Selective disclosers are defined as an indicator variable measured as a 1 for any firm followed by two or more analysts prior to Reg FD. Like Frankel and Lee (1998), if a firm is not included in IBES, we consider it to have a 0 analyst following; 1,455 of our 2,531 firms meet this definition of a followed firm.

¹³ A shortcoming of this measure is that it does not reflect demand side considerations such as proprietary costs of public disclosure that can affect firm use of selective disclosure. In a sense, the analyst-based measure of selective disclosure can be viewed as capturing the supply of selectively disclosed information.

Since we cannot directly measure proprietary (and litigation) costs of public disclosure facing a firm, we follow prior research and proxy for these costs using several firm characteristics. Prior research notes that public disclosure affects a firm's competitive position, particularly in settings where there is intense product market competition.¹⁴ We identify a firm as operating within a *Competitive* market if its industry is measured within the top tercile of competitive industries using the fitted SIC-based annual industry concentration data from Hoberg and Phillips (2010).¹⁵

Our second proprietary cost measure, *High Tech*, indicates whether a firm belongs to a high-tech industry.¹⁶ Since high-technology firms have higher growth opportunities, increased public disclosure could erode the firm's competitive position. High-technology firms also exhibit higher stock price volatility, raising the risk of "class action lawsuits filed in response to a drop in the stock's price and alleging that some disclosure (or failure to make disclosure) was either false or misleading" (Wang 2011, p. 36). Thus, the Reg FD induced elimination of selective disclosure could adversely impact the information environment of high-technology firms.

Litigation risk is related to *High Tech* as Kasznik and Lev (1995) and Francis et al. (1994) find that high-tech firms are subject to a higher rate of shareholder lawsuits than other industries. We follow Kim and Skinner (2012) and measure our third measure of proprietary costs, *Litigation Risk*, as 1 if the firm operates in a litigious industry as per Francis et al. (1994)¹⁷ and exceeds the median in one of the following: lagged total assets, monthly stock price volatility, or lagged sales growth. *Litigation Risk* is measured as of the end of the prior year. Litigation risk can discourage public disclosure and by prohibiting selective disclosure, Reg FD is more likely detrimental to the information environment of a firm with high litigation risk of disclosure.

¹⁴ In untabulated results, we use a measure of Hindex based on the Hirschman-Herfindahl index of a firm's sales in relation to the distribution of sales within the firm's industry. Empirically, there is considerable difficulty evaluating the relation between product market competition and debt-equity decisions since product market competition and capital structure are endogenously determined (Xu 2012). The inclusion of Hindex in place of *Competitive* did not alter our findings; thus, our main results only consider the dichotomous measure.

¹⁵ Hoberg and Phillips generously provide access to these data at <http://www.rhsmith.umd.edu/industrydata/>.

¹⁶ As per Bushee et al. (2004), we consider high-technology industries to include the following SIC codes: 2833–2836, 3612–3613, 3621–3629, 3651–3652, 3661–3669, 3671–3672, 3674, 3695, 4812–4822, and 4832–4899.

¹⁷ Francis et al. (1994) define litigious industries as biotechnology (SIC 2833–2836 and 8731–8734), computer (SIC 3570–3577 and 7370–7374), electronics (SIC 3600–3674), or retail (SIC 5200–5961).

The fourth measure of proprietary costs is research and development intensity (*R&D*). Prior research notes that property rights associated with product innovation are imperfectly enforced (King et al. 1990). Consequently, firms with higher research and development expenditures may limit information flows if public disclosure is viewed as increasing competitive pressure and reducing the value of investments. Finally, since we acknowledge potential overlap in our proprietary cost measures, we construct a *Composite Factor* as the factor score from the factor analysis of *Competitive*, *High Tech*, *Litigation Risk*, and *R&D*.

Control Variables. We include additional control variables found in prior research to influence a firm's financing decisions. We control for firm size, *Size*, which is the percentile of the firm's market value of equity measured against the New York Stock Exchange (NYSE) as of the beginning of the year. We control for both growth opportunities and potential market mispricing (Baker and Wurgler 2002) with *Market to Book* measured as the market value of equity divided by the book value of common equity as of the beginning of the year. Asset tangibility is controlled by *Net PP&E* or net property plant and equipment divided by book assets as of the beginning of the year. To proxy for the risk of a firm's earnings performance (and hence the risk of its cash flow realizations), we measure *Earn Var* as the standard deviation of the change in earnings before interest, depreciation, and taxes divided by the mean of total assets for 10 years prior to the observation year (or for a minimum of four years if data is missing). To control for a firm's tax exhaustion (or inability to use additional interest deductions to reduce the firm's tax obligation), we calculate t_{CDUM} as a trichotomous variable that equals 0 if the firm has an unused NOL carryforward and negative taxable income in the prior year, 1 if the firm has either an unused NOL carryforward or negative taxable income in the prior year, and 2 if the firm has no unused NOL carryforward and positive taxable income in the prior year (Shevlin 1990). *Lag Leverage* controls for a firm's existing level of debt (Welch 2004) and is measured as debt plus the current portion of long-term debt divided by assets as of the beginning of the year (Frank and Goyal 2009).¹⁸

¹⁸ In lieu of *Lag Leverage*, we include a measure of financial condition as reflected in credit ratings. *Non-Invest. Grade* takes on a value of 1 when a firm's credit rating in the fiscal period before the debt or equity issue is below BBB- and 0 otherwise. A low credit rating points to the presence of financial constraints in that it limits firm access to external funds. For those firms that do not have an S&P credit rating reported in Compustat, we derive a credit rating using the method in Barth et al. (2008). As anticipated, the coefficient on *Non-Invest. Grade* is negative and significant, suggesting that firms with noninvestment grade credit ratings exhibit a higher propensity for equity financing than debt financing; however, our main results remain qualitatively unchanged.

We control for a firm's level of institutional ownership to proxy for limitations on a firm's overinvestment risk (Dhaliwal et al. 2007) and measure *lown* as the percentage of shares held by institutions to common shares outstanding at the beginning of the year.¹⁹ Finally, we proxy for a firm's financing need by measuring *Deficit*, which is calculated as the excess of operating cash flows less payments for dividends, capital expenditures, increases in working capital, and current portion of long-term debt at the beginning of the period (Shyam-Sunder and Myers 1999).

Additionally, we include controls for conditions in the external financing markets, which may impact the cost of additional debt or equity financing. The variable ΔAAA is an indicator of changing interest rates and is measured as the mean monthly change in the AAA corporate bond rates over the year.²⁰ We include fiscal year indicator variables to control for systematic time effects influencing a firm's financing decision and adjust the standard errors for clustering by firm and fiscal year.

5. Empirical Results

5.1. Reg FD and Firm Financing Decisions

Descriptive Statistics. Panels A and B of Table 2 present the correlation among our control and proprietary cost variables for the 4,353 firms issuing debt or equity over our sample time period. We find, consistent with prior research, that firms more likely to issue debt are larger and exhibit higher asset tangibility, and have higher institutional ownership but have lower market to book ratios, earning variance, and deficits (Rajan and Zingales 1995, Bharath et al. 2009, Frank and Goyal 2009, Leary and Roberts 2010). The correlations suggest that the sample is well behaved given that we find the relationships among our *Debt Fund* and control variables consistent with both theory and prior empirical findings.

Each proprietary cost proxy may capture a particular dimension of a firm's actual proprietary cost of disclosure. Ideally, we would like to present a model that accounts for each of these proprietary cost dimensions. However, these measures are not orthogonal to each other. In fact, there is high correlation among these measures. Instead, we opt to present a statistically determined composite measure composed of our

¹⁹ If institutional ownership data is missing *lown* is coded 0.

²⁰ We also consider two additional economic controls, *EconRec* for the period of economic recession from March through November 2001 and *TaxAct2003* for changes to the economic environment induced by the enactment of the Jobs and Growth Tax Relief Reconciliation Act of 2003. Neither of these control variables provide a significant impact on the models tested.

Table 2 Correlation Matrix

| Panel A: Full sample | | | | | | | | | | | | |
|-----------------------|------------------|----------------|----------------|-----------------------|---------------------|----------------|----------------|-----------------|----------------|----------------|---------------------|--------------------|
| | <i>Debt Fund</i> | <i>RegFD</i> | <i>Size</i> | <i>Market to Book</i> | <i>Net PP&E</i> | Δ AAA | <i>lown</i> | <i>Earn Var</i> | t_{cDUM} | <i>Deficit</i> | <i>Lag Leverage</i> | <i>Prefollowed</i> |
| <i>Debt Fund</i> | | −0.1278 | 0.2122 | −0.3617 | 0.2573 | 0.0136 | 0.1676 | −0.1783 | 0.3353 | −0.3140 | 0.1841 | 0.0614 |
| <i>RegFD</i> | −0.1278 | | 0.0322 | 0.0102 | −0.0581 | −0.0829 | 0.0949 | 0.0343 | −0.1412 | 0.0303 | 0.0052 | 0.0420 |
| <i>Size</i> | 0.2023 | 0.0412 | | −0.0445 | 0.0897 | −0.0195 | 0.5420 | −0.1697 | 0.2609 | −0.1794 | −0.0077 | 0.4026 |
| <i>Market to Book</i> | −0.4549 | 0.0254 | 0.0619 | | −0.1869 | −0.0191 | −0.0999 | 0.1467 | −0.2026 | 0.3037 | −0.0295 | −0.0322 |
| <i>Net PP&E</i> | 0.2969 | −0.0703 | 0.1265 | −0.2372 | | −0.0226 | 0.0901 | −0.1010 | 0.1059 | −0.1132 | 0.2369 | 0.0782 |
| Δ AAA | 0.0119 | 0.0044 | −0.0200 | −0.0258 | −0.0224 | | 0.0065 | −0.0238 | 0.0157 | 0.0046 | 0.0055 | 0.0121 |
| <i>lown</i> | 0.1607 | 0.0865 | 0.5188 | −0.0462 | 0.1225 | 0.0064 | | −0.1252 | 0.2519 | −0.1648 | −0.0536 | 0.5992 |
| <i>Earn Var</i> | −0.4066 | 0.0559 | −0.4603 | 0.2054 | 0.2565 | 0.0132 | −0.3449 | | −0.1637 | 0.1379 | −0.0276 | −0.1055 |
| t_{cDUM} | 0.3379 | −0.1419 | 0.2975 | −0.1823 | 0.1534 | 0.0022 | 0.2551 | −0.3972 | | −0.2224 | −0.0766 | 0.1719 |
| <i>Deficit</i> | −0.3211 | −0.0230 | −0.2384 | 0.2288 | −0.0866 | −0.0301 | −0.1683 | 0.2971 | −0.2088 | | −0.0075 | −0.0441 |
| <i>Lag Leverage</i> | 0.2812 | −0.0346 | 0.0422 | −0.2764 | 0.3441 | 0.0142 | −0.0088 | −0.2083 | 0.0158 | −0.1424 | | |
| <i>Prefollowed</i> | 0.0614 | 0.0420 | 0.4770 | 0.0385 | 0.0919 | 0.0025 | 0.6033 | −0.2357 | 0.1765 | −0.0981 | −0.0132 | |

| Panel B: Proprietary cost measures | | | | | | | |
|------------------------------------|------------------|----------------|--------------------|------------------|----------------|------------------------|-------------------------|
| | <i>Debt Fund</i> | <i>RegFD</i> | <i>Competitive</i> | <i>High Tech</i> | <i>R&D</i> | <i>Litigation Risk</i> | <i>Composite Factor</i> |
| <i>Debt Fund</i> | | −0.1278 | −0.2107 | −0.2999 | −0.4372 | −0.3284 | −0.3951 |
| <i>RegFD</i> | −0.1278 | | 0.0555 | 0.0911 | 0.0954 | 0.1015 | 0.1133 |
| <i>Competitive</i> | −0.2107 | 0.0555 | | 0.3213 | 0.2328 | 0.2559 | 0.4091 |
| <i>High Tech</i> | −0.2999 | 0.0911 | 0.3213 | | 0.4397 | 0.6578 | 0.9057 |
| <i>R&D</i> | −0.4450 | 0.1076 | 0.2614 | 0.4701 | | 0.4641 | 0.6291 |
| <i>Litigation Risk</i> | −0.3284 | 0.1015 | 0.2559 | 0.6578 | 0.5047 | | 0.8830 |
| <i>Composite Factor</i> | −0.4140 | 0.1126 | 0.6924 | 0.7805 | 0.7259 | 0.7103 | |

Notes. Panel A includes the Spearman (lower) and Pearson (upper) correlations of the 4,353 annual observations of the sample described in Table 1. Variables are as defined in Table 1. Correlations with significance greater than $p = 0.10$ are noted in bold. Panel B includes the correlations among the proprietary cost measures and the composite factor.

four individual proprietary cost measures and constructed using factor analysis.²¹ In panel B of Table 2, we find that *Composite Factor* appears highly correlated with each of the four proprietary cost measures that it represents. Overall, the univariate results provide support for the argument that firms with high proprietary costs are more likely to issue debt financing after Reg FD. However, the univariate results do not control for cross-sectional variation in firm characteristics that may impact financing choices. We turn to multivariate analysis to address these issues.

Multivariate Results. In our multivariate analysis, we examine how the interaction between Reg FD and firm attributes affects a firm's financing choices. Specifically, we focus on the interaction between Reg FD and the firm's use of selective disclosure; the interaction between Reg FD and firm proprietary costs of disclosure; and the three-way interaction involving Reg FD, selective disclosure, and proprietary costs of disclosure. The latter interaction evaluates whether the enactment of Reg FD induces selective disclosure firms facing high proprietary costs to move toward

the less information-sensitive security, debt. Table 3 reports the coefficients of the logit regression, which operationalizes Equation (1). We adjust the standard errors for heteroscedasticity (White 1980) and clustering by firm and fiscal year (Petersen 2009) because firms in similar industries may have similar fiscal year ends.²² Model 1 presents a baseline model including the variables prior research finds relevant in this choice setting. We find significance on the coefficients of these control variables in the direction consistent with prior research (Rajan and Zingales 1995). We also find that earnings variability, institutional ownership, and one of our time and economic indicators, Δ AAA, are not significant. The coefficient on *RegFD* is not significant. This latter finding is not altogether surprising since the variable may capture the effect of various macrolevel events that can have differing implications on the choice between debt and equity financing. Model 2 takes into account the impact of proprietary costs. Specifically, we add the *Composite*

²¹ The first principal component factor explains 81% of the common variation among the four proprietary cost measures. Another variation of the composite measure also includes size; however, we note no meaningful improvement and no changes to the results reported.

²² In Tables 3 and 5, the t -statistics reported include robust standard errors clustered by firm and fiscal year. We also cluster standard errors by firm and calendar year-end in a model with annual year-end indicator variables and find qualitatively similar results. In this model, 713 observations occur during calendar year 2000; we identify 260 of these observations within the pre-Reg FD regime and 453 within the post-Reg FD regime.

Table 3 Firm Financing Decisions, Proprietary Costs, Analyst Following, and Reg FD

| Model: | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|-------|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Proprietary cost: | Pred. | Logit (dependent variable = 1 for debt issue) | | | | | | | Regression | |
| | | | <i>Composite Factor</i> | <i>Composite Factor</i> | <i>High Tech</i> | <i>R&D</i> | <i>Competitive</i> | <i>Litigation Risk</i> | <i>Composite Factor</i> | |
| | | | Coefficient (<i>p</i> -values) | | | | | | | |
| <i>Intercept</i> | +/- | -0.007 (0.98) | 0.125 (0.53) | 0.174 (0.38) | 0.338 (0.11) | 0.386 (0.03) | 0.451 (0.11) | 0.289 (0.21) | 0.169 (0.00) | 0.173 (0.00) |
| <i>RegFD</i> | - | -0.178 (0.63) | -0.217 (0.60) | -0.217 (0.63) | -0.406 (0.37) | -0.483 (0.31) | -0.518 (0.47) | -0.211 (0.65) | 0.001 (0.97) | -0.004 (0.87) |
| <i>Size</i> | + | 1.263 (0.00) | 1.365 (0.00) | 1.555 (0.00) | 1.552 (0.00) | 1.459 (0.00) | 1.419 (0.00) | 1.567 (0.00) | 0.007 (0.56) | 0.017 (0.12) |
| <i>Market to Book</i> | - | -0.421 (0.00) | -0.370 (0.00) | -0.366 (0.00) | -0.389 (0.00) | -0.350 (0.00) | -0.404 (0.00) | -0.392 (0.00) | 0.002 (0.70) | 0.002 (0.67) |
| <i>Net PP&E</i> | + | 1.100 (0.00) | 0.783 (0.01) | 0.836 (0.00) | 0.970 (0.00) | 0.850 (0.00) | 1.105 (0.00) | 0.939 (0.00) | 0.054 (0.00) | 0.056 (0.00) |
| Δ AAA | - | 0.442 (0.51) | 0.673 (0.50) | 0.808 (0.46) | 0.703 (0.46) | 0.871 (0.39) | 0.881 (0.30) | 0.632 (0.54) | 0.037 (0.79) | 0.039 (0.78) |
| <i>Earn Var</i> | - | -0.044 (0.11) | -0.049 (0.07) | -0.053 (0.07) | -0.053 (0.06) | -0.053 (0.07) | -0.045 (0.10) | 0.046 (0.10) | -0.004 (0.05) | -0.004 (0.05) |
| <i>t_{cDUM}</i> | + | 0.626 (0.00) | 0.577 (0.00) | 0.590 (0.00) | 0.626 (0.00) | 0.584 (0.00) | 0.641 (0.00) | 0.616 (0.00) | -0.005 (0.29) | -0.004 (0.31) |
| <i>Lag Leverage</i> | +/- | 1.187 (0.00) | 1.641 (0.00) | 1.633 (0.00) | 1.706 (0.00) | 1.511 (0.00) | 1.720 (0.00) | 1.686 (0.00) | 0.654 (0.00) | 0.653 (0.00) |
| <i>lown</i> | +/- | -0.003 (0.99) | -0.116 (0.64) | 0.394 (0.09) | 0.430 (0.06) | 0.459 (0.05) | 0.475 (0.04) | 0.401 (0.08) | -0.047 (0.00) | -0.022 (0.03) |
| <i>Deficit</i> | - | -1.088 (0.00) | -1.031 (0.00) | -1.013 (0.00) | -1.061 (0.00) | -0.943 (0.00) | -1.055 (0.00) | -1.036 (0.00) | -0.079 (0.00) | -0.078 (0.00) |
| <i>Proprietary Cost</i> | - | | -0.493 (0.00) | -0.556 (0.00) | -0.926 (0.00) | -4.143 (0.00) | -0.509 (0.00) | -0.863 (0.00) | -0.023 (0.00) | -0.022 (0.00) |
| <i>Prefollowed</i> | - | | | -0.589 (0.00) | -0.673 (0.00) | -0.496 (0.00) | -0.574 (0.01) | -0.597 (0.00) | | -0.032 (0.00) |
| <i>Proprietary Cost * RegFD</i> | + | | 0.409 (0.00) | 0.416 (0.00) | 0.795 (0.00) | 4.238 (0.00) | 0.486 (0.11) | 0.370 (0.02) | 0.029 (0.00) | 0.027 (0.06) |
| <i>Prefollowed * RegFD</i> | + | | | -0.037 (0.89) | -0.040 (0.89) | -0.018 (0.95) | 0.180 (0.72) | -0.143 (0.55) | | 0.007 (0.69) |
| <i>Proprietary Cost * Prefollowed</i> | | | | 0.128 (0.30) | 0.347 (0.13) | -1.108 (0.41) | 0.067 (0.79) | 0.218 (0.50) | | -0.002 (0.65) |
| <i>Proprietary cost * RegFD * Prefollowed</i> | + | | | -0.011 (0.94) | -0.063 (0.84) | 0.098 (0.94) | -0.350 (0.40) | 0.233 (0.54) | | 0.005 (0.78) |
| Observations | | 4,353 | 4,353 | 4,353 | 4,353 | 4,353 | 4,353 | 4,353 | 4,353 | 4,353 |
| Firms | | 2,531 | 2,531 | 2,531 | 2,531 | 2,531 | 2,531 | 2,531 | 2,531 | 2,531 |
| Debt Issue (%) | | 62.7 | 62.7 | 62.7 | 62.7 | 62.7 | 62.7 | 62.7 | | |
| Model fit | | 0.303 | 0.316 | 0.322 | 0.317 | 0.325 | 0.311 | 0.316 | 0.190 | 0.190 |

Notes. Models 1–9 report coefficients of a logit analysis of the propensity to issue debt (*Debt Fund*) as modeled in Equation 1 using the sample and independent variables described in Table 1 and Models 10–11 report the coefficients of the regression analysis of a firm's debt ratio (*Debt Ratio*). *Prefollowed* firms report more than one annual analyst forecast during the two-year window preceding Reg FD. *Proprietary Cost * RegFD * Prefollowed* represents the interaction of the respective proprietary cost measure and *RegFD* of the firms covered by analysts prior to Reg FD. All models include fiscal year indicator variables (results not tabulated) and the *p*-values reported in parentheses incorporate robust standard errors clustered by firm and fiscal year. Variable coefficients with significance greater than $p = 0.10$ are noted in bold.

Factor and the interaction between *Composite Factor* and *RegFD* to the model. The coefficient on the interaction term is positive and significant, suggesting that high-proprietary-cost firms are more likely to use debt financing in the post-Reg FD regime. This evidence is consistent with the argument that the prohibition of selective disclosure due to Reg FD adversely affects

the information environment of high-proprietary-cost firms and, as a consequence, induces these firms to opt for less information-sensitive debt financing.

In Model 3 we include *Prefollowed* and the interaction between *Prefollowed* and *RegFD*. We find that firms followed by an analyst in the pre-Reg FD period are more likely to issue equity. This finding is consistent

with prior research that notes analysts are key beneficiaries of selectively disclosed information. Such selective disclosure can lower the information asymmetry between a firm and its outside investors and hence increase the likelihood that a firm will rely on equity financing (Chang et al. 2006). The coefficient on the interaction term is not significant, most likely because of the averaging of the impact on the high- and low-proprietary-cost firms that are not separately identified in this model. As we noted earlier, firms may use selective disclosure even in the absence of high proprietary costs of public disclosure. For completeness, we also include the interaction between the proprietary cost measure and *Prefollowed*. This interaction aims to capture the joint impact of these two variables in the pre-Reg FD regime. Given the wide range of reasons as to why a manager may opt for selective disclosure, the sign on the relation between this interaction and the choice of financing is not ex ante clear. Lastly, we include the interaction among *Composite Factor*, *Prefollowed*, and *Reg FD*. If firms facing relatively higher proprietary costs show a stronger preference for debt financing after Reg FD, we expect a positive coefficient on the interaction among the proprietary cost measure, *Prefollowed*, and *RegFD*.

In Models 3–7 we find that firms followed by an analyst pre-Reg FD and firms facing higher proprietary costs exhibit a higher propensity to issue equity, but our focus is on the shift in a firm's financing propensity after Reg FD. Consistent with prior results, we find that firms with higher proprietary costs of disclosure have a higher likelihood of a debt issue after Reg FD for the composite measure, high-technology firms, more R&D intensive firms, and highly litigious firms. We do not find significance on the interaction among our proprietary cost measures, *RegFD*, and *Prefollowed*. This finding suggests that the relation is not sensitive to a firm's reliance on selective disclosure in the pre-Reg FD regime. Taken together, the results suggest that firms with high proprietary costs are more likely to issue debt after Reg FD. A limitation of *Prefollowed* is that when it is zero, we do not distinguish whether the firm was not followed or whether the firm did not have the data available to evaluate its analyst following (i.e., privately traded), which may add noise to our measure.

As we noted before, our aim in including the three-way interaction, i.e., proprietary cost measures * *RegFD* * *Prefollowed*, is to assess whether the impact of Reg FD is more pronounced for high-proprietary-cost firms that had relied on private disclosure in the pre-Reg FD regime. However, we consistently find the coefficient on this three-way interaction to be insignificant. In contrast, we find the coefficient on the interaction variable between proprietary cost and Reg FD

to be positive and significant. Taken together, this evidence suggests that the enactment of Reg FD induced high-proprietary-cost firms to turn to debt financing. The insignificance of the aforementioned three-way interaction could suggest that the impact of Reg FD does not differ between firms that relied on private disclosure in the pre-Reg FD regime and those that did not. However, we offer two caveats to this interpretation. First, the lack of significance can be due to the noisiness of our proxy for private disclosure as we noted earlier. Secondly, assuming the proxy for private disclosure is accurate, the insignificance of the three-way interaction might suggest that the effects of Reg FD are unrelated to its impact on firm information environment. In light of these concerns, we carry out additional tests that focus explicitly on changes in firm disclosure policy around the enactment of Reg FD. The results of this analysis are reported and discussed below.

A firm's capital structure reflects its cumulative financing decisions over time. More importantly, a capital structure measure considers not only whether the firm issues debt or equity, but also the amount issued. As such, a capital structure measure gives us an idea as to the shift in firm leverage related to Reg FD. We examine whether an analysis of a firm's capital structure yields similar findings to those based on incremental financing decisions. We use multivariate regression to estimate Equation (1) with a capital structure-based dependent variable, *Debt Ratio*, for our sample of debt and equity issuing firms. We define *Debt Ratio* as the sum of current and long-term liabilities divided by the sum of current and long-term liabilities and the market value of equity at the end of the year. In Model 8 we include *Composite Factor* and its interaction with *RegFD* as well as our control variables. In Model 9 we also include *Composite Factor*, *Prefollowed*, and all related dual and three-way interactions. The results of these models support our prior findings: high-proprietary-cost firms exhibit an increased propensity for debt financing in the post-Reg FD period.

5.2. Disclosure Changes and Proprietary Costs

Descriptive Statistics. Our hypotheses rely on the assumption that firms facing higher proprietary costs alleviate information asymmetry by selectively disclosing information to analysts. The regulatory changes to the selective disclosure communication channel after Reg FD caused these firms to reconsider their disclosure policies. Wang (2007) identifies the disclosure policies of firms in the pre-Reg FD period as one of nondisclosure, public disclosure, or private (selective) disclosure. She finds that pre-Reg FD private disclosers exhibit higher proprietary information costs. In the post-FD period, Wang finds

that a significant portion of her pre-Reg FD private disclosers replaced selective disclosure with nondisclosure. Wang measured the deterioration of the information environment using price reactions to earnings announcements and changes in analyst forecasts (including forecast errors and forecast dispersions).

We compare the descriptive characteristics of our proprietary cost measures and Wang's disclosure shifts of the private firms over the pre-Reg FD period (1997–1999) to the post-Reg FD period (2001–2003). In the post-Reg FD period, we note which previously private firms Wang (2007) identifies as improving their information environments (i.e., move to public disclosure) and which previously private firms Wang identifies as reducing information flows (i.e., move to *nondisclosure*). Wang's public disclosers serve as the control group of firms in both the pre- and post-Reg FD samples.

Table 4 includes the descriptive comparisons among all firms identified by Wang (2007) as a private discloser or a public discloser in the pre-Reg FD

period with available Compustat data to construct at least one of our proprietary cost measures. The sample for Table 4 is distinct from our main tests because we do not require a firm to issue debt or equity in any sample year since we are only interested in the correlation among disclosure policy changes after Reg FD (increases or decreases) and our proprietary cost measures. For these tests, private (selective) disclosers in the pre-Reg FD period equal 1 and are compared to the public disclosers, which equal 0, and we expect to find a positive correlation between the disclosure variable and our four measures of proprietary costs. Higher proprietary cost firms face more competitive disadvantage to a broad and public release of information regarding current performance, current projects, and management plans and will prefer to release such information privately, if possible. We expect a negative correlation between our disclosure variable and size because larger firms tend to be more closely followed by analysts, have more sophisticated investor relations and legal resources,

Table 4 Comparison of Proprietary Cost Measures of Public Disclosing and Private Disclosing Firms

| Panel A: Pre-Reg FD sample period 1997–1999 | | | | | | | |
|---|-------------------|-------|--------|--|----------|----------|--|
| Variable | Public disclosers | | | Private disclosers | | | Correlation with disclosure policy (1 = private; 0 = public disclosure) |
| | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median | CORR |
| <i>R&D</i> | 1,511 | 0.064 | 0.015 | 1,221 | 0.083*** | 0.010 | 0.078*** |
| <i>High Tech</i> | 1,511 | 0.245 | 0.000 | 1,224 | 0.220 | 0.000 | −0.090*** |
| <i>Competitive</i> | 1,378 | 0.721 | 1.000 | 1,137 | 0.693 | 1.000 | −0.031 |
| <i>Litigation Risk</i> | 1,478 | 0.209 | 0.000 | 1,143 | 0.206 | 0.000 | −0.004 |
| <i>Log (TA)</i> | 1,511 | 6.120 | 5.991 | 1,221 | 5.569*** | 5.408*** | −0.157*** |
| <i>Size</i> | 1,490 | 0.480 | 0.450 | 1,168 | 0.359*** | 0.300*** | −0.204 |
| Panel B: Post-Reg FD sample period 2001–2003: | | | | | | | |
| Variable | Public disclosers | | | Nondisclosers (formerly private disclosers) | | | Correlation with disclosure policy (1 = nondisclosure; 0 = public disclosure) |
| | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median | CORR |
| <i>R&D</i> | 1,533 | 0.044 | 0.009 | 390 | 0.089*** | 0.009*** | 0.199*** |
| <i>High Tech</i> | 1,536 | 0.196 | 0.000 | 393 | 0.275*** | 0.000*** | 0.078*** |
| <i>Competitive</i> | 1,400 | 0.676 | 1.000 | 365 | 0.781*** | 1.000*** | 0.092*** |
| <i>Litigation Risk</i> | 1,509 | 0.180 | 0.000 | 358 | 0.235** | 0.000** | 0.055** |
| <i>Log (TA)</i> | 1,533 | 6.731 | 6.691 | 390 | 5.488*** | 5.524*** | −0.272*** |
| <i>Size</i> | 1,527 | 0.479 | 0.450 | 383 | 0.236*** | 0.150*** | −0.314*** |

Notes. Firms are identified as private, public, or nondisclosers based on Wang (2007), who graciously shared her data. The sample includes the overlap of Wang's (2007) identifications and at least one of the Compustat-constructed proprietary measures above. *R&D* is the ratio of current year R&D expense (or 0 if missing or combined) divided by prior year total assets. *High Tech* is an indicator variable equal to 1 if a company operates within a high-tech industry or 0 otherwise (SIC codes coded as high tech include 2833–2836, 3612–3613, 3621–3629, 3651–3652, 3661–3669, 3671–3672, 3674, 3695, 4812–4822, and 4832–4899 per Bushee et al. 2004). The *Competitive* indicator is 1 for firms operating in the top tercile of competitive industries as per Hoberg and Phillips (2010). *Litigation Risk* is calculated as per Kim and Skinner (2012) and is a 1 for firms operating in the biotechnology (SIC 2833–2836 and 8731–8734), computer (SIC 3570–3577 and 7370–7374), electronics (SIC 3600–3674), or retail (SIC 5200–5961) industries and are above the median in one of the following: lagged total assets, monthly stock price volatility, or lagged sales growth. *Log (TA)* is the log of the prior year total assets. *Size* measures the relative size of the firms' market value against the NYSE firms at the end of the prior year.

*** and ** indicate a 0.01 and 0.05 difference, respectively, between the respective samples using a two sample mean test and a Wilcoxon sum rank tests of the medians.

and have higher information precision such that private disclosure is not necessary.

As reported in panel A of Table 4, in the pre-Reg FD period, the median public discloser is larger than the median private discloser (when measured by asset size or percentile of market equity), but is no more likely to operate in a competitive or high-tech industry, engage in R&D activities, or face higher litigation risk than a median private disclosing firm. The correlation, though between private discloser and R&D is positive and significant indicating that higher R&D intensity is associated with policies of selective disclosure. The public disclosing sample includes a higher proportion of high-technology firms, which is contrary to our expectations. Overall, the limited correlation among private disclosure policies and our proprietary cost measures indicates that firm characteristics had limited impact on the private versus public disclosure choices made in the pre-Reg FD disclosure regime. However, since we examine whether Reg FD-induced shifts in disclosure policies are related to firm financing choices, we are more concerned with whether a private firm's shift to a more expansive disclosure environment or to a deteriorated information environment is associated with our proprietary cost measures.

In the post-Reg FD period, privately disclosing firms needed to make adjustments to their release of information because selective disclosure was no longer allowed. We contend that firms facing higher proprietary costs of disclosure are less willing to release information publicly and choose to not replace formerly private information flows. We expect that the higher the proprietary costs facing the firm, the more likely the firm becomes what Wang (2007) identifies as a new nondisclosure firm in the post-Reg FD period and reduces information available to the public (*New Nondiscloser*). Likewise, larger private firms facing relatively lower proprietary information costs will elect to make public disclosures in the post-Reg FD period (*New Public*).

In panel B of Table 4, we compare the descriptive statistics of our proprietary cost measures for these two groups of firms, *New Public* and *New Nondiscloser*, for the post-Reg FD period between 2001 and 2003. *Public* disclosers are included as a control group for comparison and are combined with the *New Public* firms defined above. We compare the proprietary cost measures of this public group of disclosers to the subsample of private disclosers that moved to nondisclosure (*New Nondiscloser*) and find that the two groups of firms now differ significantly across all proprietary cost and size measures, in the direction we predict as the high-proprietary-cost firms tend to elect a nondisclosure policy. Since our sample membership requires a pre-Reg FD identification, our sample may

suffer from survivorship bias; however, since each group faces some probability of losing membership to mergers and bankruptcies and faces equal changing economic conditions, we believe that the increased differences between the proprietary cost measures of the two groups results from the firms switching from private to public disclosures and having lower proprietary costs than the average private disclosing firm. Thus, the results of this panel support our contention that the higher the proprietary costs facing a firm, the more likely the firm moves to an information environment characterized by reduced information flows. Our proprietary cost measures are now positively and significantly correlated with an information environment of nondisclosure.

Multivariate Results. We find that Wang (2007) identifies 192 of the 2,531 firms used in our main analysis as making selective disclosures in the pre-Reg FD period. The regulation forced these firms to alter their disclosure policies to comply with the law's requirements; thus, after Reg FD, the private disclosers would choose either to begin making public disclosures (*New Public*), which we assume increased the information flows, or would choose to freeze information reported through any channel, causing a reduction in the information available (*New Nondiscloser*) to investors. Of the 353 annual *Private Discloser* observations, 187 are from the pre-Reg FD period and include 81% debt issues. In the post-Reg FD period, we observe 166 debt and equity issuances of these formerly private disclosers, 90 issuances from *New Nondiscloser* companies, and 76 issuances from *New Public* issuers, with debt issues comprising approximately 60% of these issues for both groups of formerly private firms.

To utilize a DID research design, we use 443 additional annual issuances in our original sample made by 255 firms, which Wang (2007) identifies as public disclosers in the pre-Reg FD period as our control group. Since these firms already report information through public channels, they are likely less impacted by the regulation's limitations on private communications, yet these firms face the same macroeconomic events as the *Private Discloser* firms.²³ If public firms make shifts in their disclosure policies after Reg FD, these shifts are likely due to economic causes other than Reg FD. We find that the 796 observations in the

²³ Over our sample period, we acknowledge that confounding economic events such as the Global Research Analyst Settlement, decimalization of stock exchanges, devaluing of technology stocks, disclosure of fraud at Enron and Worldcom, in addition to the economic recession following the events of September 11, 2001, could impact the economic environment of our sample firms and influence their financing choices and disclosure policies. The directional predictions of these economic events for partitions of our sample are mixed, which increases confidence that Reg FD is a plausible alternative for our results.

Wang subsample are comprised of larger firms more likely to issue debt than equity (78.6% debt issues) than in the full sample; however, like the full sample, there is a general decrease in the preference for debt versus equity in the post-Reg FD period as the proportion of debt issues drops to 62.3% in the post-Reg FD period. For the full Wang subsample, the median annual debt (equity) issuance is 11.0% (12.5%) of prior year assets, which is smaller than the full sample, but in untabulated results we continue to

find that there are few differences in the debt (equity) issuance across the pre- and post-Reg FD disclosure regimes that are not the result of annual changes in the economic environment.

In Table 5, we report the results of the logit model for Equation 1 for the Wang subsample where we include *Private Discloser*, an indicator representing a pre-Reg FD selectively disclosing firms in place of the analyst following indicator used in the main tests. Model 1 includes only *RegFD* and the control

Table 5 The Relation Between Reg FD, Financing Decisions, and Disclosure Policy

| Model: | | 1 | 2 | 3 | 3a | 4 | 4a |
|----------------------------------|-------|---------------------------------|-------------------------------|-------------------------------|-------------------------|---------------------------------|-------------------------|
| | | Logistic models | | | | Regression models | |
| Dep. var.: | | Wang sample debt = 1 | Private discloser debt = 1 | Private discloser debt = 1 | Constant sample | Private discloser debt ratio | All Wang debt ratio |
| | Pred. | Coefficient (<i>p</i> -values) | | | | | |
| <i>Intercept</i> | +/- | -0.609 (0.40) | -1.101 (0.14) | -1.145 (0.08) | -2.238 (0.02) | 0.095 (0.01) | 0.073 (0.02) |
| <i>RegFD</i> | - | 0.060 (0.89) | 0.379 (0.40) | 0.374 (0.40) | 0.483 (0.39) | 0.016 (0.04) | 0.019 (0.39) |
| <i>Size</i> | + | 2.058 (0.00) | 2.136 (0.00) | 2.192 (0.00) | 2.321 (0.00) | -0.102 (0.00) | -0.086 (0.00) |
| <i>Market to Book</i> | - | -0.624 (0.02) | -0.610 (0.02) | -0.629 (0.02) | -0.837 (0.00) | -0.029 (0.00) | -0.026 (0.00) |
| <i>Net PP&E</i> | + | 1.740 (0.03) | 1.766 (0.03) | 1.818 (0.02) | 1.384 (0.13) | 0.128 (0.00) | 0.111 (0.00) |
| Δ AAA | - | -0.869 (0.71) | -0.118 (0.96) | -0.397 (0.89) | 1.498 (0.82) | -0.266 (0.05) | -0.091 (0.49) |
| <i>lown</i> | +/- | -0.215 (0.67) | -0.122 (0.81) | 0.008 (0.98) | 1.181 (0.11) | 0.004 (0.90) | -0.006 (0.78) |
| <i>Earn Var</i> | - | -0.139 (0.10) | -0.139 (0.10) | -0.141 (0.08) | -0.128 (0.11) | -0.010 (0.00) | -0.010 (0.00) |
| t_{cDUM} | + | 0.829 (0.00) | 0.867 (0.00) | 0.912 (0.00) | 1.225 (0.00) | 0.005 (0.77) | 0.009 (0.47) |
| <i>Lag Leverage</i> | +/- | 1.109 (0.09) | 1.041 (0.11) | 0.856 (0.26) | -1.039 (0.33) | 0.496 (0.00) | 0.495 (0.00) |
| <i>Deficit</i> | - | -1.109 (0.01) | -1.285 (0.00) | -1.230 (0.00) | -0.051 (0.95) | -0.073 (0.00) | -0.044 (0.00) |
| <i>Private Discloser</i> | - | | 0.935 (0.02) | 0.977 (0.01) | 0.958 (0.01) | 0.040 (0.03) | 0.047 (0.00) |
| <i>Private Discloser * RegFD</i> | | | -1.004 (0.02) | | | | |
| <i>New Public</i> | - | | | -1.649 (0.00) | -1.898 (0.00) | -0.042 (0.04) | -0.010 (0.74) |
| <i>New Nondiscloser</i> | + | | | -0.524 (0.42) | 0.085 (0.76) | 0.062 (0.00) | 0.075 (0.00) |
| <i>N</i> | | 796 | 796 | 796 | 355 | 796 | 1,471 |
| <i>%Debt Issue (%)</i> | | 71.6 | 71.6 | 71.6 | 68.5 | 71.6 | 67.4 |
| <i>Model Fit</i> | | 0.344 | 0.354 | 0.361 | 0.391 | 0.170 | 0.161 |

Notes. Models 1–3a report coefficients of a logit analysis of the propensity to issue debt (*Debt Fund*) as modeled in Equation (1) for the sample of debt and equity issuing firms identified by Wang (2007) as either a private or publicly disclosing firm pre-Reg FD. *New Public* is an indicator variable representing a pre-Reg FD private disclosing firm that moves to public disclosure post-Reg FD. *New Nondiscloser* is an indicator variable representing a pre-Reg FD private discloser that moves to nondisclosure after Reg FD. Models 4 and 4a are linear regression models, where the dependent variable is measured as the firm's debt ratio at the end of the observation year $((DLC + DLTT)/(DLC + DLTT + MVE))$. All other explanatory variable definitions as per Table 1 and include fiscal year indicator variables (untabulated). The *p*-values are reported in parentheses and incorporate robust standard errors clustered by firm and fiscal year. Variable coefficients with significance greater than $p = 0.05$ are noted in bold.

variables, and we find, consistent with prior research, that larger firms with higher asset tangibility and lower market to book ratios, earnings variability, and financing deficits exhibit stronger preferences for debt financing. We do not note a difference in the propensity to issue debt in the post-Reg FD environment (i.e., no significance on *RegFD*), similar to our prior findings after controlling for annual and macroeconomic events. In Model 2 we include an indicator variable for pre-Reg FD privately disclosing firms (*Private Discloser*) and interact this variable with *RegFD*. The positive and significant coefficient on *Private Discloser* indicates that private disclosers are more likely to issue debt than public disclosers in general and across both reporting regimes of the sample period. Wang (2007) notes a lack of clear understanding how firms decide between private and public disclosure. However, she notes that firms are more likely to undertake private disclosure if the proprietary costs of public information are high and the value of conveying firm-specific information is high. Given the prominence of the proprietary costs in Wang's *Private Discloser* measure, it is not surprising that the variable is positively associated with the use of less information-sensitive debt financing. After Reg FD, the negative and significant coefficient on *Private Discloser * RegFD* indicates a decrease in the propensity to issue debt for the formerly private disclosure firms, which is a finding consistent with Reg FD improving the dissemination of information flows for this group. However, this model does not allow us to make distinctions between the disclosure policies of the formerly private firms, all of which were forced to make disclosure changes in the post-Reg FD period.

To determine whether Reg FD impacted all formerly private disclosing firms similarly, we include two indicator variables to differentiate those formerly private disclosers that increase public information flows after Reg FD (*New Public*) from formerly private disclosers that did not increase public information flows after Reg FD (*New Nondiscloser*) using the Wang (2007) measure of disclosure changes in the post-Reg FD period. We code a formerly private disclosing firm as *New Public* if Wang identifies it as moving to a policy of public disclosure post-Reg FD and we code a firm as *New Nondiscloser* if Wang identifies it as moving to a policy of nondisclosure after Reg FD. These results are summarized in Model 3 of Table 5.

The coefficient on *New Public* is negative and significant, suggesting that whereas private disclosers in general exhibit an increased propensity for debt financing, formerly private firms that move to a public disclosure policy exhibit a more pronounced increased propensity for equity financing. The coefficient on *New Nondiscloser* is not significant. This

result is consistent with our contention that after the selective disclosure communication channel is eliminated, formerly private disclosing firms must increase their public disclosures in order to make equity an economically efficient means to raise external funds. Although we do not report a shift in the preference for debt financing of the *New Nondiscloser* firms, recall that the Wang subset of firms initiated a higher proportion of debt issues in the pre-Reg FD period than the general sample we used previously in Table 3. The results in Model 3, however, indicate a clear difference in financing preference of the formerly private firms in the post-Reg FD period. For these firms, an analysis of the marginal effect of the mean firm's choice to implement a public disclosure policy (*New Public*) or a nondisclosure policy (*New Nondiscloser*) indicates that the selection of a public disclosure policy reduces the probability of debt financing by 19.8% ($p = 0.00$), whereas a formerly private firm's move to a nondisclosure policy after Reg FD has no discernable impact on financing preference. To ensure that the results in Model 3 are not driven by changing sample composition across the disclosure regimes, Model 3a includes only firms that issue debt or equity in *both* the pre- and post-Reg FD sample periods. In this model, for the mean formerly private firm, the choice to move to a public disclosure policy versus a nondisclosing policy after Reg FD increases the probability of equity financing by 22.9% ($p < 0.00$) thus confirming that the results are robust in this constant sample.

Similar to our earlier analysis, we examine whether a firm's capital structure yields similar findings to those based on incremental financing decisions. We use multivariate regression for our sample to estimate the model with *Debt Ratio* as the dependent variable in Model 4. We find that formerly private disclosers moving to public disclosure after Reg FD exhibit a decrease in their debt usage when compared to the control group and *New Nondisclosers*, whereas *New Nondisclosers* exhibit higher debt ratios in the post-Reg FD period than firms with more open disclosure policies. A statistical comparison of the coefficients *New Public* and *New Nondiscloser* indicates the financing preference is clearly distinguishable between these two groups ($p < 0.00$) after Reg FD.

Model 4a includes not only the private and public disclosing firms Wang (2007) identifies in the pre-Reg FD period but also the firms she identifies in the pre-Reg FD period as nondisclosers. By construction, these nondisclosing firms are included in the control group with the public firms. Wang (2007) labels nondisclosing firms as those not clearly differentiated as either public or private firms in her tests, so

misidentifying a privately disclosing firm as a control firm may bias against finding our expected results. However, if a firm is properly identified as a nondisclosing firm that does not make use of private communication channels prior to Reg FD, then Reg FD should have limited impact on such a firm. We find similar results in Model 4a that we find in Model 4, indicating an increased preference for debt in the *New Nondiscloser* firms. Although the coefficient on *New Public* is no longer significant, indicating the financing preference of these firms in the post-Reg FD period is no longer distinct from the comparison group of pre-Reg FD public and nondisclosing firms, a statistical comparison of the coefficients of *New Public* and *New Nondiscloser* continues to indicate that the debt preferences of these two groups of formerly private disclosers remains significantly different ($p < 0.00$).

Though the results above indicate that firms moving from private to public disclosure exhibit an increased propensity for equity financing after Reg FD, particularly when compared to firms moving from private to nondisclosure, our tests may not adequately capture the sequence of the disclose-equity issue decision. It is possible a firm coincidentally increased disclosure around Reg FD to opportunistically decrease the cost of a future equity issue and then, subsequent to the issue, returned to a policy of less disclosure.²⁴ However, we believe there is little evidence of systematic strategic disclosure behavior in our sample for two reasons. First, the formerly private disclosers exhibited a significantly greater shift toward equity financing in the post-Reg FD period than the public disclosers,²⁵ consistent with the response we would expect if Reg FD induced greater information flows of the private disclosers. More importantly, the movement toward equity financing of the two groups of formerly private disclosers is indistinguishable with 42.2% of the issues by new nondisclosure firms and 39.4% of the issues by new public firms are equity issues. We believe if a new public firm's disclosure choice represents a systematic and opportunistic decision strategically related to the future equity issue and not Reg FD, we would have found a much higher percentage of newly public disclosers issuing equity than we find.

Secondly, we examine changes in analyst forecast accuracy in the year following the equity issue of the new publicly disclosing firms. To accomplish this,

we calculate mean analyst forecast error as the absolute value of the average annual forecast minus the actual value, scaled by the end of the month stock price (Mikhail et al. 2003) and winsorize the results at the 1% and 99% levels. We also calculate the median analyst forecast error as the median annual forecast minus the actual value, scaled by the end of the month stock price (Gu and Wu 2004). We examine a t -test comparing analyst forecast error in the issue year to forecast error in the issue year $t+1$ for the Wang subsample of formerly private firms that moved to public disclosure in the post-FD period. We find that the t -test for the change in mean and median analyst forecast error between the year of and the year following the new financing issue is not significant for this subgroup of firms as a whole or when examined separately for debt and equity issuers. If the firm's choice to increase disclosure around the equity issue, in particular, was strategic and later followed by an opportunistic reduction in disclosure after the equity issue, we would have expected an increase in analyst forecast errors in the year subsequent to issuance.

5.3. Sensitivity Tests

We next carry out a range of tests to evaluate the robustness of our findings and to raise the confidence for any conclusions drawn. Since the passage of Reg FD occurred during a time of other important but potentially confounding events, careful reexamination of our results is required to ensure that our models capture the information effects related to Reg FD. To address the question of whether our results are driven by Reg FD's impact on the information environment or other simultaneous macroeconomic causes, we separately reestimate our models after excluding annual observations surrounding the enactment of Reg FD. We also carry out separate analysis by excluding financially constrained firms since these firms face limited financial flexibility. We also undertake an analysis using an alternative measurement of high proprietary costs and alternative thresholds to identify our equity and debt issuing firms. Finally, to examine whether our findings reflect trends in financing patterns, we reestimate our models using two alternative samples and alternative regulatory event dates.

Although Reg FD became effective in October 2000, firms may have had some prior knowledge of the forthcoming restrictions on selective disclosure. Such knowledge may affect the identification of the impact of Reg FD on corporate financing activities. Thus, we exclude the 690 annual observations that include the months immediately surrounding Reg FD or fiscal years that include the months August through

²⁴ We appreciate an anonymous reviewer for bringing this issue to our attention.

²⁵ Public disclosers issued equity more frequently than the private disclosers in the pre-Reg FD period (23.2% versus 18.7%). After Reg FD, there is a significantly greater shift in movement toward equity in the formerly private firms as 40.9% and 34.7% of the post-Reg FD observations are equity issues for the formerly private and public firms, respectively.

December 2000.²⁶ The proprietary cost measure for this model is the composite factor. In untabulated tests involving this reduced sample, we find that the coefficient on the interaction *Composite Factor* * *RegFD* remains positive and significant ($p < 0.01$). We continue to find no significance on *Prefollowed* * *RegFD* or the triple interaction among *Reg FD*, proprietary costs, and analyst following. This result provides further support that higher proprietary cost firms clearly increased their propensity to issue debt after *Reg FD*.

If a firm is financially constrained, it either reduces investment or, if it chose to fund itself through external resources, accepts any funding it can attain. Korajczyk and Levy (2003) examine firm financing choices under various macroeconomic conditions and find that a firm's financing choice may appear economically countercyclical if it is unconstrained and has the financial flexibility to time the debt and equity markets. One concern is whether the increased preference for debt financing that we find for high-proprietary-cost firms is not due to *Reg FD* but instead due to the simultaneous drop in the equity market, which made equity access expensive and difficult for the firms we identify as high-proprietary-cost firms. In light of the findings of Korajczyk and Levy (2003), this may be particularly true of financially constrained firms facing limited financial flexibility and having no alternative but to accept debt financing. Thus, we examine the impact of financial constraint on our results reported previously.²⁷

Our analysis yields the following findings. First, when we add an additional control variable to our model to represent financially constrained firms measured as per Kaplan and Zingales (1997), we find a positive and significant coefficient on this variable.²⁸ More importantly, the coefficients on our proprietary cost interactions with *Reg FD* remain materially unchanged from the results reported in Table 3.

²⁶ This exclusion eliminates observations with fiscal years beginning between September 1999 and December 2000. Alterations to this window to eliminate fiscal years that include September through November 2000 make no qualitative differences on the results reported above.

²⁷ There are many measures in the literature used to identify financially constrained firms. Hennessey and Whited (2007) recommend measuring the financial constraint separately from the costs of financing. Thus, they recommend the Kaplan and Zingales (1997) financial constraint measure (KZ measure) to identify firms most in need of external funding. We identify financially constrained firms as those with a KZ measure in the top quintile of our sample firms. These data are not available for 23 of our sample observations.

²⁸ The significance of the coefficient on the KZ measure suggests that financial constraint has a bearing on firm financing decisions that is distinct from the impact captured by factors such as *Market to Book* and *Deficit*. The finding indicates that over our time period, financially constrained firms exhibit a higher propensity for debt financing.

Next, we rerun the model separately for the subsamples of financially constrained and unconstrained firms. For both the financially constrained ($n = 884$) and the unconstrained ($n = 3,446$) subsamples of firms, the coefficient on *Composite Factor* * *RegFD* remains positive and significant. Neither the interaction between *Composite Factor* and *Prefollowed* nor the three-way interaction among *Composite Factor*, *Prefollowed*, and *RegFD* appears to significantly impact a firm's propensity for debt financing. Similar results are obtained from estimating the models where proprietary costs are captured by *High Tech* and *R&D*. Thus, it does not appear likely that the results reported in Table 3 are driven by financially constrained firms.

Next, we recognize that our proxy for firms most likely impacted by *Reg FD*, *Prefollowed*, does not confirm whether a firm made private disclosures to analysts or whether *Reg FD* impacted its information environment. Our hypotheses rely on the conjecture that in the presence of high proprietary costs of disclosure, firms will seek to reduce the cost of equity financing through selective disclosure. After *Reg FD*, these firms should view debt as a more attractive option for financing given new regulatory constraints on private disclosures. Thus, we construct a measure to identify within our sample, the pre-*Reg FD* high-proprietary-cost firms (*High PC Firm*) relative to all Compustat firms meeting our data requirements. Within our sample, we identify 906 observations representing 489 firms we identify as *High PC Firms*, specifically measured as a reported *Composite Factor* within the highest annual tercile ranking of all Compustat observations for at least one year between 1999 and 2000. This time period is consistent with the pre-*Reg FD* period that we use to identify our *Prefollowed* firms. In untabulated tests, we include *High PC Firm* interacted with both *RegFD* and *Prefollowed* and find that the coefficients on both interactions are positive and significant ($p < 0.01$). Thus, although we cannot ascribe our increased debt financing propensity exclusively to the impact of the passage of *Reg FD*, even after controlling for analyst following, leverage, and deficit, we still find that there is an increased preference for debt financing after *Reg FD* for firms facing relatively higher proprietary costs.

Additionally, we examine the impact of changing our identification of a debt or equity issuing observation from our 5% threshold. If we broaden debt (equity) observations to those issuing debt (stock) in excess of 3% of prior year assets ($n = 5,230$), we find no qualitative differences in our results. If we limit our debt-equity firms to those issuing between 5% and 25% of prior year assets ($n = 3,166$), or those firms exhibiting a need to raise external funds but not

to the extent that requires a significant shift in corporate structure, we continue to find significance on the coefficient of the interaction between *RegFD* and our proprietary cost measures for *High Tech*, *R&D*, and *Composite Factor* ($p < 0.01$). However, if we restrict our sample to firms issuing debt or equity in excess of 25% of prior year assets, the coefficients on the proprietary cost interactions diminish in significance, if they remain significant at all. It appears that after a certain level of external funding is required, the preference for debt or equity financing is unrelated to the disclosure policies or proprietary costs a firm may face. We also examine the results of the full model if we change our definition of debt (equity) issuances using balance sheet measures²⁹ rather than cash flow measures; we find that our main results remain qualitatively unchanged. Lastly, we adjust our definition of an equity issue to exclude the netting of share repurchases (essentially defining an equity issue as exceeding 5% of prior year assets regardless of shares repurchased). This adjustment increases our sample size to 4,478 with an increase (decrease) to equity (debt) issue observations of 188 (63); however, we find no material changes to our prior results because the coefficients on these interactions remain positive and significant for our composite measure ($p < 0.01$), high-technology measure ($p < 0.01$), research and development measure ($p < 0.04$), litigation risk measure ($p < 0.02$), and our competitive indicator ($p < 0.04$).

Finally, to address whether our findings simply reflect trends in financing patterns, we reanalyze our data using pseudo or fake event dates. One concern is that our results simply reflect trends in the treatment and control groups not attributable to Reg FD. To address this issue, a standard approach is to carry out so-called placebo tests. We examine whether our results, in terms of the differential response of high- and low-proprietary-cost firms, hold even in the periods outside the regulatory change event. We first measure the incremental financing decision of two alternative samples of firms, each drawn either before or after Reg FD. We focus on the composite proprietary cost measure since it draws on the common elements in the individual proprietary cost measures. We define the first (second) alternative sample to include observations occurring between 1997 and 2000 (2003

and 2007) that meet our sample selection criteria.³⁰ We identified the pseudo-event as occurring in fiscal years ending after September 1998 (2005) and estimate the model. We intentionally define the later alternative sample period to include a period of time sufficiently outside of the period when the initial impact of Reg FD is most likely pronounced. We find no significance for any of the coefficients on the two-way and three-way interactions among *RegFD*, *Composite Factor*, or *Prefollowed* suggesting there is no shift in the financing propensity of the sample firms across either of these alternative sample periods. In both alternative samples, however, we continue to see differences in financing propensities of high- and low-proprietary-cost firms.

6. Conclusion

Although theory posits that firm information environment impacts the choice between debt and equity, the empirical evidence to date is limited. One explanation for this lack of evidence is that endogeneity issues hamper the identification of this posited relation. We revisit this issue by taking advantage of a change in the disclosure regime. Specifically, we focus on Reg FD, which restricted selective disclosure with the goal of inducing greater public disclosure of firm-specific information.

Although all public U.S. firms are subject to this regulation, it has been noted that its effects are not uniform across these firms. Specifically, prior research finds that Reg FD has an adverse effect on the firm information environment of firms with high proprietary costs of public disclosure. In contrast, Reg FD is found to improve the information environment of low-proprietary-cost firms in that it induced these firms to switch from private to public disclosure. In light of its impact on firm information environment, we exploit the Reg FD setting to examine how the regulation induced changes to firm information environment affected its financing decisions. To this end, our analysis distinguishes the differential impact of Reg FD on firms based on their proprietary costs of disclosure. We find that high-proprietary-cost firms are more likely to issue debt in the post-Reg FD regime. We find that this result is robust across multiple measures of proprietary costs of disclosure. We also carry out further analysis by directly assessing changes in firm disclosure policy around Reg FD and relating these changes to firm financing decisions.

²⁹ As per Leary and Roberts (2010), a balance sheet measure for the debt issuer is a firm where the net change in long-term debt plus the current portion of debt to prior year assets exceeds 5%. The equity issue is measured as the net increase in shares outstanding times the average of the high and low stock prices for the year. Leary and Roberts (2010) perform their main tests using the cash flow identification of equity issuers and the balance sheet identification of debt issuers. We prefer to utilize a consistent source to measure our equity and debt issuing firms.

³⁰ Although all of our control and proprietary cost variables are measured as before, *Prefollowed* is measured over the two-year “preperiod” of each alternative sample period, or between 1997 and 1998 and 2003 and 2004 for the early and late alternative sample periods, respectively. The early alternative sample includes 2,783 observations meeting our sample criteria and data availability requirements, and the later alternative sample includes 3,524 observations.

Focusing on disclosure changes around Reg FD, we find an increase in firm public disclosure is positively associated with firm choice of information-sensitive equity financing. Similarly, we also find some evidence that firms that did not adopt a higher public disclosure in response to Reg FD exhibit a greater reliance on debt financing.

Our study contributes to several streams of extant research. Although the role of the information environment is prominent in the theoretical capital structure literature, empirical inquiry has been stymied by the lack of exogenous changes in the information environment. As such, Reg FD provides a natural experimental setting to evaluate information-based capital structure theories. Consistent with theory, we find that deterioration in the information environment has an incremental positive effect on the use of debt financing. We also contribute to the inquiry related to Reg FD. Our evidence is consistent with prior research, which notes that the effect of Reg FD is not uniform across firms.

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