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Does Business Strategy Impact a Firm's Information Environment?

Kathleen Bentley

University of New South Wales

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Does Business Strategy Impact a Firm's Information Environment?

Kathleen A. Bentley ^{a,*}, Thomas C. Omer ^b, Brady J. Twedt ^c

^a *The University of New South Wales, Sydney, NSW 2052, Australia*

^b *University of Nebraska-Lincoln, NE 68588, United States*

^c *Texas A&M University, College Station TX 77843-4353, United States*

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*Correspondence to: School of Accounting, Australian School of Business, 3058 Quadrangle Building, The University of New South Wales, UNSW Sydney, NSW 2052 Australia.

Tel.: + 61 2 9385 6930.

Fax: + 61 2 9385 5925.

E-mail addresses: k.bentley@unsw.edu.au (K. Bentley), thomas.omer@unl.edu (T. Omer), btwedt@mays.tamu.edu (B. Twedt).

Does Business Strategy Impact a Firm's Information Environment?

Abstract: Using organizational theory, our study examines whether a firm's business strategy impacts their information environment. On the one hand, organizational theory suggests that firms following an innovation-oriented *Prospector* strategy are more likely to have attributes typically associated with information asymmetry (e.g., R&D and growth options) relative to industry peer firms following an efficiency-oriented *Defender* strategy. However, *Prospectors* are also hypothesized to have greater incentives to mitigate information asymmetry relative to *Defenders*, thus reflecting the complex interrelationships that a firm's strategy may have on their overall information environment. We find that *Prospectors* are associated with significantly lower levels of information asymmetry relative to *Defenders*. We then examine several mechanisms that may explain why *Prospector* firms exhibit less information asymmetry than *Defender* firms. We find that *Prospectors* are associated with higher levels of analyst and business press coverage, and issue more frequent voluntary disclosures compared to *Defenders*. We conclude that although *Prospectors* have inherent firm-level attributes associated with information asymmetry (e.g., R&D and growth options), incentives and mechanisms exist that allow firms following this strategy to mitigate this information asymmetry. Overall, our results suggest that business strategy does impact firms' information environments.

Keywords: Business strategy; Information asymmetry; Information environment

JEL classification: D21, D80, L21, M41

Data availability: Data are obtained from public sources as indicated in the text.

Does Business Strategy Impact a Firm's Information Environment?

1. Introduction

Beyer et al.'s (2010) review of the information environment literature reveals that little is known regarding the interrelationships among a firm's information environment, its voluntary disclosure practices, and analyst forecasts. In this study, we address Beyer et al.'s (2010) call for research in this area by examining these interrelationships within the context of a fundamental element of a firm's identity: namely, its business strategy. Using organizational theory, we posit that the type of business strategy firms follow could have an important effect on their information environments, and we investigate whether business strategy explains differences in information asymmetry among firms. We also investigate whether mechanisms that mitigate or reduce information asymmetry (e.g., analyst and press coverage, voluntary disclosures) differ across firm strategies.

This study is important because organizational theory represents an unexplored framework for understanding why business strategy could be an underlying factor in firms' information environments. Thus, we seek to provide a new basis for understanding the complex interrelationships that determine a firm's overall information environment. In addition, our study attempts to address the "identification of the major sources or firm-specific drivers of information asymmetry", which Aboody and Lev (2000, p. 2748) identify as an important area of research with public policy implications. Because firms' business strategies are chosen very early in a firm's history and remain relatively stable over time (Hambrick, 1983; Snow and Hambrick, 1980), business strategy is likely an *underlying*, firm-specific characteristic of firms' information environments.

We rely on organizational theory and the Miles and Snow (1978, 2003) business strategy typology to address our research questions.¹ Similar to prior accounting research (e.g., Bentley et al., 2012; Ittner et al., 1997; Simons, 1987), we focus our discussion on firms following *Prospector* and *Defender* strategies, as these strategies are the endpoints of the Miles and Snow (1978, 2003) business

¹ Refer to Bentley et al. (2012) for a discussion of how Miles and Snow's typology aligns with other types of business strategy typologies (e.g., Porter, 1980).

strategy continuum and are most easily differentiated in terms of organizational characteristics (e.g., risk-taking, managerial discretion). Firms following a *Prospector* strategy compete on the basis of innovation for a diverse and rapidly changing set of products, while firms following a *Defender* strategy compete on the basis of efficiency for a narrow and stable set of products.²

On the one hand, organizational theory suggests that *Prospectors* may have greater information asymmetry relative to *Defenders* because the *Prospector* strategy is closely aligned with firm-specific characteristics that prior research has associated with greater information asymmetry: R&D and growth options (e.g., Aboody and Lev, 2000; Barth et al., 2001; Smith and Watts, 1992). However, prior research also suggests that firms with these same characteristics attract greater analyst coverage due to the potential gains from private information acquisitions (Barth et al., 2001; Lehavy et al., 2011). Greater analyst coverage in turn is associated with *reduced* mispricing, uncertainty about firm value, and information asymmetry (Barth et al., 2001; Brennan and Subramanyam, 1995; Thomas, 2002). Further, *Prospectors* may be more likely to receive coverage in the business press relative to *Defenders* for many of the same reasons that analysts choose to follow *Prospectors*, where prior research indicates that firms with greater press coverage experience lower levels of information asymmetry (e.g., Bushee et al., 2010; Soltes, 2010).

In addition, organizational theory suggests that relative to *Defenders*, *Prospectors* may have greater strategic incentives to provide more frequent voluntary disclosures, thereby potentially decreasing information asymmetry (e.g., Coller and Yohn, 1997; Frankel et al., 1995). For example, because *Prospectors* rely more heavily on external sources for financing relative to *Defenders* (Bentley et al., 2012; Hambrick, 1983; Ittner et al., 1997; Miles and Snow, 1978, 2003), *Prospectors* have greater strategic incentives to reduce information asymmetry via voluntary disclosure with providers of capital—

² Organizational theory indicates that both *Prospector* and *Defender* strategies coexist within industries where “Prospectors succeed by moving fast, and Defenders by moving efficiently” (Miles and Snow, 1994, p. 13). For example, Miles and Snow (1994, pp. 13-14) indicate that within the microprocessor industry, Intel is classified as a *Prospector* and National Semiconductor is classified as a *Defender* where the former is a “leader in product innovation” while the latter is a company “focusing narrowly on efficient chip production”. Refer to Miles and Snow (1994) for other strategy classification examples.

i.e., to lower their cost of capital. Because *Prospectors* use stock-based compensation plans more extensively than *Defenders* (Rajagopalan, 1997; Rajagopalan and Finkelstein, 1992), managers of *Prospectors* are more likely to provide voluntary disclosures (Aboody and Kasznik, 2000; Nagar et al., 2003; Noe, 1999). Finally, because a successful *Prospector* strategy is highly dependent on extensive marketing efforts (Miles and Snow, 1978, 2003), *Prospectors* may seek greater visibility through media outlets (e.g., issuing more press releases) relative to *Defenders*. Because of the interrelationships a firm's business strategy may have with other elements impacting the firm's information environment, it is unclear whether *Prospectors'* voluntary disclosures, analyst following, and press coverage successfully reduce their information asymmetry. Thus, the question of whether *Prospectors* or *Defenders* have more or less information asymmetry is an empirical question that we address in this study.

We use an archival measure of Miles and Snow's (1978, 2003) business strategy typology developed by Bentley et al. (2012) to investigate the relation between business strategy and proxies for information asymmetry. Overall, we find evidence of significant differences in the information environments of firms following these two business strategies. We find that *Prospectors* relative to *Defenders* have smaller bid-ask spreads, lower analyst forecast dispersion, and higher analyst forecast accuracy. Thus, our results suggest that *Prospectors* are associated with less information asymmetry when compared to *Defenders*. We then analyze whether mechanisms that mitigate or reduce information asymmetry (e.g., analyst and press coverage, voluntary disclosures) differ across these two business strategies. We find that *Prospectors* attract greater analyst and business press coverage compared to *Defenders*. We also find that *Prospectors* engage in greater and more frequent voluntary disclosures than *Defenders* by issuing more frequent management earnings guidance and more press releases in general. We conclude that although *Prospectors* have inherent firm-level attributes associated with greater information asymmetry (e.g., R&D and growth options), *Prospectors'* ability to attract both greater analyst and press coverage, combined with their incentives to issue voluntary disclosures more frequently, successfully lowers *Prospectors'* information asymmetry relative to *Defenders*. Altogether our results suggest that firms' chosen business strategy does impact their information environments.

Our contributions are three-fold. First, by examining the interrelationships among a firm's information environment, its voluntary disclosure practices, and analysts' forecasting behavior, we not only address Beyer et al.'s (2010) call for more research in this area but also extend the analysis of these interrelationships to a fundamental element of a firm's identity: its business strategy. Second, by examining voluntary disclosure practices in the context of business strategies, our study provides some insights into a theoretical rationale for why firms select different levels of disclosure—i.e., firms' strategic objectives may either constrain or encourage these practices. Finally, by linking organizational theory to accounting, we provide a theoretical framework for understanding why business strategy is an underlying determinant of firms' information environments.

The rest of the paper is organized as follows. Section 2 provides the literature review and hypotheses development. Section 3 presents our empirical models, and Section 4 describes our data. Section 5 provides our main empirical results. Section 6 presents our additional analyses while Section 7 concludes.

2. Literature review and hypothesis development

Beyer et al.'s (2010) review of the literature indicates that the “corporate information environment develops endogenously as a consequence of information asymmetries and agency problems between investors, entrepreneurs, and managers” (p.296). Accounting information serves to decrease information asymmetries between managers with private information and external capital providers regarding the expected profitability of the firm's investment opportunities (e.g., the lemons problem in Akerlof, 1970) and also mitigates agency costs that arise from the separation of a firm's ownership and control (Beyer et al., 2010; Healy and Palepu, 2001). Prior research has focused on executive compensation and identified a firm's business strategy as a source for agency problems (e.g., Rajagopalan, 1997; Rajagopalan and Finkelstein, 1992). We extend this work by investigating whether firms' business strategies are an underlying source of differences in firms' information environments.

2.1 Business strategy, firm-specific characteristics, and information asymmetry

Firms with more research and development (R&D) expenditures have greater information asymmetry because unlike tangible assets (e.g., Property, Plant and Equipment), there are no organized markets for intangible assets from which to derive asset pricing information (Aboody and Lev, 2000). Furthermore, because R&D is firm-specific, informational value cannot be obtained from observing other firms (Aboody and Lev, 2000). Barth et al. (2001) indicate that for firms with substantial intangible assets there is greater uncertainty about firm value and these firms are more likely to be perceived as mispriced by outsiders (e.g., analysts). Similarly, Lev and Zarowin (1999) indicate that firms with substantial intangible investments have lower earnings informativeness. Organizational theory predicts, and empirical research confirms, that firms following a *Prospector* strategy invest more heavily in R&D because their strategic objectives are focused on locating and exploiting new and continually changing product-market opportunities (Hambrick, 1983; Miles and Snow, 1978, 2003). Conversely, firms following a *Defender* strategy tend to minimize R&D expenditures for their narrowly defined product set, investing instead in single-core technologies (e.g., Property, Plant and Equipment) to enable the production of cost-efficient outputs on a continual and predictable basis (Hambrick, 1983; Miles and Snow, 1978, 2003). Therefore, relative to *Defenders*, *Prospectors* may be inherently associated with greater information asymmetry due to their substantial R&D investments.

Prior research also suggests that firms with more growth options have greater information disparity between managers and outside investors because managers have better knowledge about the expected future cash flows from their firm's investment opportunities (e.g., McLaughlin et al., 1998; Smith and Watts, 1992). Organizational theory predicts that firms following a *Prospector* strategy are associated with more growth options due to their focus on locating and exploiting new product-market opportunities compared to firms following a *Defender* strategy (Miles and Snow, 1978, 2003). For instance, *Prospectors* exhibit rapid and sporadic growth patterns as they continually pursue new product-market opportunities, while *Defenders* grow gradually through market penetration of their existing product lines (Miles and Snow, 1978, 2003). *Prospectors* are also associated with greater outcome

uncertainty because they pursue innovative products where new and innovative projects are riskier and have a greater probability of failure (Rajagopalan, 1997; Rajagopalan and Finkelstein, 1992).³ In light of their greater potential for growth options and their higher investment outcome uncertainty, *Prospectors* may generate greater information asymmetry between managers and outside investors concerning the expected future cash flows from their investment opportunities.

However, prior literature also suggests that firms that are growth-oriented and R&D intensive attract greater analyst coverage because analysts perceive there to be more mispricing in these firms; thus, analysts can potentially benefit more through private information acquisitions (Barth et al., 2001; Lehavy et al., 2011). Barth et al. (2001) find that analyst coverage and effort are greater for firms with larger R&D investments relative to their industry peers, while firms with more tangible assets (e.g., Property, Plant and Equipment) provide fewer incentives for analysts to engage in private information acquisition. Increases in analyst coverage in turn can then *reduce* mispricing, uncertainty about firm value, and information asymmetry (Barth et al., 2001; Brennan and Subramanyam, 1995; Thomas, 2002). Based on these results we expect that *Prospectors* will be more likely to attract analyst coverage due to their inherent characteristics (e.g., growth-oriented, R&D intensive firms).

Prospectors may also be more likely to receive coverage in the business press relative to *Defenders* for many of the same reasons that analysts choose to follow *Prospectors*, and firms with greater press coverage also experience reductions in information asymmetry (e.g., Bushee et al., 2010; Soltes, 2010). For instance, Bushee et al. (2010) find that the business press serves as an information intermediary where the broad dissemination of information reduces information asymmetry (e.g., lower

³ *Defender* firms also have some outcome uncertainty which stems from their reliance on a narrow product-market domain and their inability to adapt quickly to sudden market changes, leaving *Defenders* vulnerable to obsolescence (Miles and Snow, 1978, 2003). However, because this type of uncertainty depends primarily on market-wide factors (e.g., market demand, new technological developments), prior research assumes that managers and investors are considered equally informed for this type of uncertainty (e.g., Dierkens, 1991; Krishnaswami et al., 1999). Thus, only the firm-specific element of a firm's total uncertainty contributes to information asymmetry—i.e., where managers have private information about the firm before the information reaches the market (e.g., Bhagat et al., 1985; Blackwell et al., 1990; Dierkens, 1991; Krishnaswami et al., 1999). In addition, Miles and Snow (1978) find that when firms are faced with greater environmental uncertainty they focus their efforts externally on marketing and product development activities while firms faced with lower environmental uncertainty focus on internally-oriented functions such as production efficiency. Therefore organizational theory implies that firms following a *Prospector* relative to *Defender* strategy are associated with greater uncertainty.

bid-ask spreads) around earnings announcements. Thus, we expect that *Prospectors* are more visible in the press compared to *Defenders* for several reasons. First, *Prospectors*' success in implementing an innovative first-mover strategy depends on extensive marketing efforts (Miles and Snow, 1978, 2003), where marketing efforts (e.g., product advertising) include actions that potentially increase the firm's visibility in the business press. Conversely, organizational theory predicts and research confirms (Hambrick, 1983; Miles and Snow, 1978, 2003) that *Defenders* minimize marketing-related activities, focusing instead on operational efficiency. Because continual change occurs more frequently in *Prospectors* relative to *Defenders* not only in terms of product offerings but also regarding organizational leadership and structure (e.g., Miles and Snow, 1978, 2003; Simons, 1987), *Prospectors* are more likely to be covered in the business press. For example, publicly-traded firms are required to file a form 8-K announcing significant events to shareholders such as changes in management or directorship control or the completion of acquisitions (U.S. Securities and Exchange Commission, 2012), and *Prospectors* are both more likely to have a "transitive dominant coalition" (i.e., greater executive turnover) and are also shown to engage in more mergers and acquisitions (Bentley et al., 2012; Miles and Snow, 1978, 2003; Thomas and Ramaswamy, 1994, 1996).⁴

Altogether, we expect that while *Prospectors* likely embody firm-specific characteristics associated with greater information asymmetry (i.e., R&D and growth options), *Prospectors* also likely attract greater analyst and press coverage, thus perhaps reducing their overall information asymmetry. Further complicating the relationship between a firm's business strategy and its overall information environment are different strategic incentives that firms have for providing voluntary disclosures, which we explore in the next section.

2.2 Business strategy, voluntary disclosure incentives, and information asymmetry

Prior literature suggests that reducing information asymmetry can potentially increase a firm's stock liquidity and lower its cost of capital (e.g., Barry and Brown, 1984, 1985; Brown, 1979; Diamond

⁴ We note that these actions also imply that *Prospector* firms are more likely to be active in issuing press releases, which we explore in greater detail in the next section covering voluntary disclosures.

and Verrecchia, 1991; Easley and O'Hara, 2004; Kim and Verrecchia, 1994). Firms can reduce information asymmetry by issuing more voluntary disclosures (Coller and Yohn, 1997), where greater frequency of disclosure enables firms to gain access to capital markets more often (Frankel et al., 1995) and reduce their cost of capital (see Beyer et al.'s 2010 review).⁵ We posit that *Prospectors* have greater strategic incentives to lower their cost of capital relative to *Defenders*. For example, although both types of firms clearly benefit from lower costs of capital; organizational theory suggests that *Defenders* are more capable of generating funds internally from operations while *Prospectors* rely heavily on external sources for financing (Miles and Snow, 1978, 2003). Prior research confirms that relative to *Defenders*, *Prospectors* are associated with lower levels of profitability and operating cash flows, greater levels of financial distress, and have larger *ex ante* financing needs (Bentley et al., 2012; Hambrick, 1983; Ittner et al., 1997). *Prospectors'* tendencies toward lower profitability suggest that internally generated funds may not be sufficient to fund their extensive R&D investments. Thus, *Prospectors* would benefit more relative to *Defenders* by lowering information asymmetry via voluntary disclosures to decrease their cost of capital when seeking external financing.

In addition, *Prospectors* may have other incentives to decrease information asymmetry through voluntary disclosure because of their compensation structure. The executive compensation literature suggests that agency costs are higher for firms following a *Prospector* strategy than firms following a *Defender* strategy because of the additional discretion afforded managers in *Prospector* firms to pursue innovative and risky projects.⁶ In order to better align the interests of managers with owners, management compensation within *Prospector* firms is more closely linked to stock prices (e.g., stock options) than compensation at *Defender* firms (Rajagopalan, 1997; Rajagopalan and Finkelstein, 1992; Singh and

⁵ For instance, Lang and Lundholm (2000) find that firms which maintain a consistent level of disclosure reduce the information asymmetry inherent in equity offerings, while Easley and O'Hara (2004) find that cost of capital can be reduced through both the quantity and quality of accounting disclosures.

⁶ Significant managerial discretion within *Prospector* firms exacerbates control and motivation problems and results in greater cause-effect ambiguity, enabling managers to engage in self-serving projects with a reduced fear of discovery (Rajagopalan, 1997; Rajagopalan and Finkelstein, 1992). Conversely, cause-effect ambiguity is lower in *Defenders* wherein the problem of controlling self-serving managerial behavior is less of a concern in light of incentive mechanisms that are linked to more objective criteria (e.g., Ittner et al., 1997; Rajagopalan, 1997; Singh and Agarwal, 2002).

Agarwal, 2002). Prior research finds that stock-based compensation plans induce greater levels of voluntary disclosure, thereby decreasing information asymmetry (Aboody and Kasznik, 2000; Nagar et al., 2003; Noe, 1999). For example, Aboody and Kasznik (2000) find that CEOs strategically time voluntary disclosures to maximize stock option awards. Further, Beyer et al. (2010) note that management may use voluntary disclosures to explain poor performances for career concern purposes because executive turnover is associated with poor performance (e.g., Warner et al., 1988; Weisbach, 1988). Because *Prospectors* have both lower profitability tendencies and also experience greater management turnover (Miles and Snow, 1978, 2003), *Prospector* managers may have additional incentives to disclose more frequently relative to managers of *Defender* firms. Prior research also indicates that highly litigious firms voluntarily disclose more information (Field et al., 2005; Skinner, 1994). Bentley et al. (2012) find that *Prospectors* experience greater occurrences of financial statement irregularities (including shareholder lawsuits and SEC enforcement actions) relative to other firms, thus giving additional incentives for *Prospectors* to provide voluntarily disclosures. Altogether, we suggest that *Prospector* firms are likely to have greater incentives to reduce information asymmetry through voluntary disclosures.

Finally, because *Prospectors*' strategic objectives are geared towards marketing their new and continually changing mix of products, these firms are likely to maximize product visibility by issuing more press releases. *Prospectors*' success in implementing an innovative first-mover strategy depends on aggressive marketing efforts where budgets are oriented towards "protecting" these activities (Miles and Snow, 1978, 2003). Marketing activities play such a dominant role in *Prospector* firms that leadership in these firms is often held by experts with marketing and R&D expertise whose credentials have been confirmed by prior studies (e.g., Thomas and Ramaswamy 1994, 1996). Conversely, *Defenders* minimize marketing-related activities, focusing instead on operational efficiency where budgets "protect" activities related to their core production and distribution operations (Hambrick, 1983; Miles and Snow, 1978, 2003). Thus, while the strategic objectives (and budgets) of *Prospector* firms may encourage the use of

voluntary press releases to promote product visibility, the strategic objectives (and budgets) of *Defender* firms may actually constrain these practices.⁷

2.3 Hypotheses

In summary, we expect that firms following a *Prospector* strategy may have greater inherent information asymmetry relative to *Defenders* because of their firm-specific characteristics (i.e., R&D and growth options). However, we also expect that *Prospectors* may be more likely to attract greater analyst and press coverage because of these same firm characteristics, hence reducing information asymmetry. Furthermore, because *Prospectors* likely have more strategic incentives to voluntarily disclose information compared to *Defenders*, they may also generate more voluntary disclosures. After considering all these interrelationships, it is unclear whether the information environment for firms following a *Prospector* strategy will be associated with higher, lower, or similar levels of information asymmetry relative to firms following a *Defender* strategy; thus, we state our first hypothesis in the null form:

H₁: Firms' business strategies are not associated with information asymmetry.

Our next set of hypotheses is concerned with the relation between a firm's business strategy and mechanisms that have been shown to reduce information asymmetry (e.g., analyst and press coverage, voluntary disclosures). Because we are uncertain *ex ante* whether *Prospectors* and *Defenders* have different information environments, we state each hypothesis in the null form:

H_{2a}: Firms' business strategies are not associated with analyst coverage.

H_{2b}: Firms' business strategies are not associated with business press coverage.

H_{2c}: Firms' business strategies are not associated with management earnings guidance frequency.

H_{2d}: Firms' business strategies are not associated with press release frequency.

⁷ We note that according to the Proprietary Cost Hypothesis (e.g., Verrecchia, 1983), firms with high proprietary costs will withhold full disclosure and may be more likely to redact proprietary information. However, we are unable to make a prediction concerning whether *Prospectors* or *Defenders* have greater incentives to withhold proprietary information from competitors. For instance, *Prospectors* which benefit from a first-mover advantage may be more selective about disclosing new product R&D activities, while *Defenders* which benefit from a cost-saving advantage may be more selective regarding technological investments that aid in their operational efficiency.

3. Research design

3.1 Business strategy and information asymmetry models

To investigate the relationship between firms' business strategies and their information environments (H_1), we use a series of Ordinary Least Squares (OLS) regressions to examine whether business strategy is associated with three frequently used proxies for information asymmetry: bid-ask spreads (e.g., Bushee et al., 2010; Collier and Yohn, 1997), analyst forecast dispersion (e.g., Feng and Koch, 2010; Zhang, 2006), and analyst forecast accuracy (e.g., Gebhardt et al., 2001; Lang et al., 2003).⁸ Specifically, we estimate the following pooled OLS cross-sectional regression with standard errors clustered by firm for each measure of information asymmetry:⁹

$$INFO_ASYM_PROXY = \alpha + \beta_1 STRATEGY + \beta_2 CF_VOL + \beta_3 LN_ASSETS + \beta_4 LOSS + \beta_5 ROA + \beta_6 BTM + \beta_7 BIG_N + \beta_8 HORIZON + \beta_9 INDUSTRY_FE + \beta_{10} YEAR_FE + \varepsilon. \quad (1)$$

Our first information asymmetry proxy is bid-ask spreads (*SPREAD*). Following Chung and Zhang (2009), we define bid-ask spreads as the average daily spread during the fiscal year, where daily spreads are calculated by subtracting the bid price from the ask price, dividing this by the mean of the two, and multiplying by 100. The second and third measures of information asymmetry relate to the earnings forecasts of financial analysts. *DISPERSION* is measured as the standard deviation of the individual forecasts comprising the most recent analyst forecast of annual earnings occurring before the end of the fiscal year. *ACCURACY* is defined as the absolute value of the difference between reported annual earnings and the mean consensus analyst forecast prior to the end of the fiscal year, scaled by stock price as of two days prior to the forecast and multiplied by -100.¹⁰

⁸ We perform a factor analysis to examine the extent to which these information asymmetry proxies relate to similar/unique theoretical constructs. In untabulated analysis, we find that all three capture unique dimensions of information asymmetry. However, our results are robust to using the factor score as an alternative dependent variable.

⁹ Our results are robust to removing year fixed effects and double-clustering by both firm and year (e.g., Gow et al., 2010).

¹⁰ We use analyst forecast data that is not split adjusted (Payne and Thomas, 2003). Therefore, we use CRSP share split factors to ensure that actual earnings and analyst forecasts are based on the same number of shares. Our results are robust to calculating our own consensus forecast from the I/B/E/S detail file (Diether et al., 2002) as well as using the median consensus forecast instead of the mean.

The independent variable of interest in equation (1) is *STRATEGY* following Bentley et al. (2012), where firms with higher (lower) *STRATEGY* scores represent *Prospector* (*Defender*) firms, consistent with Miles and Snow's (1978, 2003) business strategy typology.¹¹ Following Bentley et al. (2012), we measure a firm's business strategy using six ratios, which capture different dimensions of Miles and Snow's (1978, 2003) business strategy typology: (1) new product development (ratio of research and development to sales), (2) marketing efforts (ratio of selling, general and administrative expenses to sales), (3) growth patterns (annual percentage change in sales), (4) production efficiency (ratio of employees to sales), (5) capital structure (ratio of property, plant and equipment to assets), and (6) organizational stability (standard deviation of total number of employees). Consistent with prior research (e.g., Bentley et al., 2012; Ittner et al., 1997) and organizational theory expectations, these measures are computed over a rolling five year average and are ranked relative to other firms in the industry such that firms with higher (lower) *STRATEGY* scores represent *Prospector* (*Defender*) firms. For instance, firms with higher *STRATEGY* scores have more R&D, marketing and growth activities *relative* to industry competitors (i.e., characteristics of *Prospectors*).¹² Validation for *STRATEGY* has been confirmed using both archival (Bentley et al., 2012) and survey methods (Bentley, 2013).¹³

A positive (negative) and significant β_1 in the *SPREAD/DISPERSION* (*ACCURACY*) regression indicates that *Prospectors* are associated with greater information asymmetry relative to *Defenders*. Conversely, a negative (positive) and significant β_1 in the *SPREAD/DISPERSION* (*ACCURACY*) regression suggests that *Prospectors* have less information asymmetry than *Defenders*. Equation (1) also includes several variables to control for other factors (e.g., size, performance, growth opportunities) that

¹¹ Within the executive compensation literature, Ittner et al. (1997) use a similar archival measure of *STRATEGY* to classify *Prospector* and *Defender* firms.

¹² Refer to Appendix 3 in Bentley et al. (2012) for details of how *STRATEGY* aligns with firms following *Prospector* or *Defender* strategies.

¹³ Using factor analysis, Bentley et al. (2012) find that all six raw *STRATEGY* components load on one factor, which suggests that the six components are capturing one underlying construct. Bentley et al. (2012) also find evidence that *STRATEGY* is a separate construct from traditional complexity and risk measures by using canonical correlation and redundancy index tests. Additional component analyses suggest that the collective *STRATEGY* measure captures a construct that is "greater than the sum of its parts" (see Bentley et al., 2012, pp. 31-32). Finally, another study by Bentley (2013) finds evidence that firms following a *Prospector* or *Defender* strategy are properly classified by comparing survey responses from senior executives in management and marketing positions to the archival *STRATEGY* measure.

may affect the relation between business strategy and information asymmetry. All variables are formally defined in the appendix.

3.2 Business strategy and mechanisms for reducing information asymmetry models

To examine our second hypothesis regarding the relationship between a firm's business strategy and mechanisms that have been shown to reduce information asymmetry (e.g., analyst and press coverage, voluntary disclosures), we replace the dependent variable in equation (1) with proxies capturing each of these different mechanisms (*IA_MECHANISM_PROXY*):¹⁴

$$IA_MECHANISM_PROXY = \alpha + \beta_1 STRATEGY + \beta_2 CF_VOL + \beta_3 LN_ASSETS + \beta_4 LOSS + \beta_5 ROA + \beta_6 BTM + \beta_7 BIG_N + \beta_8 HORIZON + \beta_9 INDUSTRY_FE + \beta_{10} YEAR_FE + \varepsilon. \quad (2)$$

Our first *IA_MECHANISM_PROXY* is analyst following (*ANALYST_FOLLOW*) which is defined as the number of analysts following the firm. Analyst data is obtained from the I/B/E/S database. We estimate equation (2) using a negative binomial regression because *ANALYST_FOLLOW* is measured as a count variable and untabulated analysis provides evidence of overdispersion. A positive (negative) and significant β_1 in the *ANALYST_FOLLOW* regression indicates that *Prospectors (Defenders)* are associated with greater analyst following (H_{2a}), after controlling for other determinants of analyst following such as firm size.

Our second *IA_MECHANISM_PROXY* is business press coverage (*PRESS_COVERAGE*). Our sample of business press articles comes from the Dow Jones (DJ) news archives, which consists of all DJ Newswire and Wall Street Journal articles. Access to these articles is provided by RavenPack, a news analytics firm which has a unique partnership with DJ. We define *PRESS_COVERAGE* as the number of days during the fiscal year that the firm had at least one article written about it in the DJ news archives.¹⁵

¹⁴ We perform a factor analysis to examine the extent to which these proxies relate to similar/unique theoretical constructs. In untabulated analysis, we find that all load on one factor suggesting that the four measures capture a similar theoretical construct. However, we note that management forecast frequency exhibits a low factor loading compared to the other three measures. Our results are robust to using the factor score as an alternative dependent variable.

¹⁵ Measuring press coverage based on the number of days rather than the number of articles is important because newswires often issue multiple updates of the same event within a short period of time (Soltes, 2010). This approach is consistent with prior research (Barber and Odean, 2008; Chan, 2003). RavenPack also provides a relevance score

A positive (negative) and significant β_1 in the *PRESS_COVERAGE* regression indicates that *Prospectors* (*Defenders*) are associated with greater coverage in the business press (H_{2b}).

Our third *IA_MECHANISM_PROXY* is management earnings guidance frequency (*MGMT_FREQ*) which is measured as the number of unique annual forecasts issued by the firm during the year.¹⁶ Management earnings guidance data is obtained from First Call's Company Issued Guidance database. We include all management forecasts of annual earnings per share denoted in U.S. dollars issued by our sample firms.¹⁷ A positive (negative) and significant β_1 in the *MGMT_FREQ* regression indicates that *Prospectors* (*Defenders*) are associated with more frequent management earnings guidance (H_{2c}).

Finally, we examine the relationship between business strategy and the number of press releases issued by the firm during the year (*PRESS_RELEASES*) as an alternative measure of voluntary disclosure (Badertscher et al., 2012; Shroff et al., 2012). Similar to the *PRESS_COVERAGE* variable, our sample of press releases comes from the RavenPack database. A positive (negative) and significant β_1 in the *PRESS_RELEASES* regression indicates that *Prospectors* (*Defenders*) are associated with more press releases (H_{2d}).

4. Data

The sample selection is presented in Table 1. *STRATEGY* is constructed using all firms from the Compustat Annual file for fiscal years between 1992 and 2009 with nonnegative sales and asset observations, and non-missing historical SIC codes. We then delete utilities and financial industries (SIC 4900-4999 and 6000-6999) due to the regulated nature of these industries. All data used to construct *STRATEGY* requires a five-year rolling average (e.g., Bentley et al., 2012; Ittner et al., 1997). After

(0 to 100) which indicates the relevance of the article to the company. Based on discussions with RavenPack representatives, we require a relevance score of 90 or above when calculating *PRESS_COVERAGE*. We also remove press releases, articles designated by RavenPack as "Tabular Material", and any articles relating to equity market trade imbalances.

¹⁶ We note this *IA_MECHANISM_PROXY* as well as the remaining proxies we test are also count variables where untabulated analysis provides evidence of overdispersion, and as such, we continue to use negative binomial regressions in analyzing these dependent variables.

¹⁷ We focus on annual forecasts rather than quarterly forecasts because *STRATEGY* is measured annually for each firm. However, our results are robust to using all quarterly forecasts issued by the firm during the year.

imposing the five-year rolling average constraint, we are left with a sample of 44,754 firm-year observations during our sample period of 1997 to 2009 with sufficient data to calculate *STRATEGY*.

[Insert Table 1 about here]

Because several of our tests rely on analyst forecast data, we require actual earnings and a consensus analyst forecast issued within 90 days prior the end of the fiscal year from the I/B/E/S database. We also require an analyst following of at least three in order to measure analyst forecast dispersion. Next, we eliminate observations with missing stock price data from CRSP or a stock price lower than \$2.00 in order to mitigate the small denominator problem. Finally, because we use management earnings guidance data in subsequent tests, we require analyst coverage on the First Call Analyst Forecast Database to ensure that our sample firms are covered by First Call as well as I/B/E/S (Ajinkya et al., 2005). The final sample consists of 15,532 firm-year observations from 1997 to 2009.¹⁸

5. Results

5.1 Descriptive statistics

Table 2 presents our descriptive statistics for the overall sample of observations (n=15,532) and for firms following a *Prospector* (n=1,147) or *Defender* (n= 604) business strategy. Firm-level characteristics for *Prospectors* and *Defenders* are consistent with prior research (e.g., Bentley et al., 2012; Hambrick, 1983; Ittner et al., 1997; Miles and Snow, 1978, 2003) where *Prospectors* are smaller in size (*LN_ASSETS*), less profitable (*LOSS*; *ROA*), and more growth-oriented (*BTM*) compared to *Defenders*. In untabulated tests we confirm that *Prospectors* are associated with significantly greater ($p<0.01$) R&D expenditures relative to *Defenders*, consistent with organizational theory expectations. Therefore, as expected, *Prospectors* have firm-level attributes which prior research has shown are related to greater information asymmetry which include not only greater growth and R&D-related activities but also smaller firm size.¹⁹

¹⁸ In our models analyzing press coverage and releases, our sample is further reduced to 11,374 firm-years because our sample of articles (as provided by RavenPack) begins in 2000.

¹⁹ Prior research associates smaller firms with greater information asymmetry because these firms tend to be less liquid, attract fewer institutional investors, and have a larger percentage of insiders (e.g., Diamond and Verrecchia,

Univariate mean and median tests (*t*-tests and Wilcoxon tests, respectively) indicate that *Prospectors* and *Defenders* have significantly different information environments. Specifically, we find that *Prospectors* have significantly lower bid-ask spreads (*SPREAD*) and analyst forecast dispersion (*DISPERSION*) compared to *Defenders* at $p < 0.01$. *Prospectors* also have significantly greater analyst forecast accuracy (*ACCURACY*) compared to *Defenders* (only median value is significant at $p < 0.01$). Therefore the univariate tests suggest that *Prospectors* are associated with *less* information asymmetry compared to *Defenders* despite the fact that *Prospectors* have firm-level characteristics typically associated with greater information asymmetry (e.g., R&D and growth options).

The univariate results concerning mechanisms for decreasing information asymmetry— e.g., analyst and press coverage, voluntary disclosures—appear to differ significantly across firm strategy. Specifically, we find that *Prospectors* are followed by significantly more analysts and receive significantly greater press coverage compared to *Defenders* at $p < 0.01$. For instance, *Prospectors* are followed by 9 analysts, on average, compared to *Defenders* which are being followed by 7 analysts. Further, *Prospectors* issue significantly more frequent annual earnings management guidance and issue a greater number of press releases than *Defenders* at $p < 0.01$. On average, *Prospectors* issue annual earnings management guidance 1.3 times a year and issue 74 press releases annually, while *Defenders* issue annual earnings management guidance 1.1 times a year and issue 54 press releases annually. Therefore, the univariate tests suggest that *Prospectors* have greater incentives to reduce information asymmetry when compared to *Defenders*.

[Insert Table 2 about here]

1991; Vermaelen, 1981). *Ex ante*, we made no prediction regarding size differences between *Prospectors* and *Defenders* because neither organizational theory nor prior empirical research provides consistent evidence regarding this attribute. For example, while Smith et al. (1989) predict that *Defenders* have a tendency to be larger in size relative to *Prospectors* in order to achieve efficiency through economies of scale, they find no significant size distribution differences. Similarly, while Bentley et al. (2012) find some evidence that *Defenders* tend to be larger than *Prospectors* in one of their subsamples, they find insignificant size differences in another subsample.

5.2 Univariate correlations

Table 3 presents Pearson and Spearman correlations among *STRATEGY*, information asymmetry proxies, mechanisms for reducing information asymmetry, and control variables. *STRATEGY* is negatively correlated with *SPREAD* and *DISPERSION* and positively correlated with *ACCURACY*. These results suggest that firms following a *Prospector* strategy (i.e., firms with higher *STRATEGY* scores) are associated with less information asymmetry. *STRATEGY* is positively correlated with *ANALYST_FOLLOW*, *MGMT_FREQ*, and *PRESS_RELEASES*, all significant at the 5% level. These results suggest that firms following a *Prospector* strategy are associated with greater analyst and press coverage, and more frequent voluntary disclosures.

[Insert Table 3 about here]

5.3 Multivariate regressions: business strategy and information asymmetry

To test our first hypothesis, we regress proxies for information asymmetry (*SPREAD*, *DISPERSION* and *ACCURACY*) on *STRATEGY* (equation 1). Table 4 presents the multivariate results. We find that the coefficient on *STRATEGY* is negative and significant for both *SPREAD* and *DISPERSION*, and positive and significant for *ACCURACY*, all at the .01 level.²⁰ These results indicate that firms following a *Prospector* strategy (i.e., firms with higher *STRATEGY* scores) are associated with lower bid-ask spreads and analyst forecast dispersion, and higher analyst forecast accuracy relative to firms following a *Defender* strategy (i.e., firms with lower *STRATEGY* scores).²¹ Thus, *Prospectors* are associated with less information asymmetry relative to *Defenders* (rejecting H_1).

Overall, we conclude that business strategy does impact firms' information environments, after controlling for other factors identified by prior research as being associated with information asymmetry. We also note that the signs of the coefficients on the control variables are generally consistent with expectations (i.e., high cash flow volatility, low profitability, and small firms are associated with higher

²⁰ We confirm that our results are not driven by outliers using robust and median regressions.

²¹ In robustness tests we replace the discrete *STRATEGY* measure with *Prospector* and *Defender* indicator variables following Bentley et al. (2012) and inferences remain unchanged. Untabulated F-tests confirm that *Prospectors* have significantly lower levels of information asymmetry than *Defenders* (all p -values < 0.05).

levels of information asymmetry), and the models appear to fit well (adjusted R^2 s ranging from 18.2% to 59.1%).

[Insert Table 4 about here]

5.4 Multivariate regressions: business strategy and mechanisms for reducing information asymmetry

We next consider whether the results discussed above are the result of *Prospectors*' efforts at reducing information asymmetry. In this section, we examine several mechanisms that may result in *Prospector* firms being associated with reduced information asymmetry relative to *Defender* firms: analyst and business press coverage, and the issuance of voluntary disclosures.

5.4.1 Analyst coverage

The first mechanism for reducing information asymmetry is analyst following. Analysts follow firms where they believe they can provide incremental information and analysis to their clients and thus gain a competitive advantage (Lehavy et al., 2011). Accordingly, *Prospectors* are likely to attract more analysts than *Defenders* because prior research (e.g., Barth et al., 2001; Lehavy et al., 2011) finds that more complex, growth-oriented, R&D intensive firms have greater analyst coverage where analysts believe there is mispricing. The first column of Table 5 presents the results of regressing analyst following on *STRATEGY* and our control variables. The coefficient on *STRATEGY* is positive and significant ($p < 0.01$) indicating that *Prospectors* have greater analyst following relative to *Defenders* (rejecting H_{2a}).

[Insert Table 5 about here]

5.4.2 Business press coverage

We hypothesize that *Prospectors* are more likely to receive coverage in the business press relative to *Defenders* for many of the same reasons that analysts choose to follow *Prospectors*. We also expect that *Prospector* firms are more likely to receive press coverage than *Defender* firms because of *Prospectors*' greater marketing efforts and continual organizational change—e.g., leadership and structure (Hambrick, 1983; Miles and Snow, 1978, 2003; Simons, 1987). The results of estimating equation (2) using *PRESS_COVERAGE* as the dependent variable are presented in the second column of

Table 5. The coefficient on *STRATEGY* is positive and significant indicating greater press coverage for *Prospector* firms relative to *Defender* firms ($p < 0.05$). Therefore, firms following a *Prospector* rather than a *Defender* strategy are more likely to receive greater coverage in the business press (rejecting H_{2b}), thus contributing to their reduced information asymmetry (e.g., Bushee et al., 2010; Soltes, 2010).

5.4.3 Management guidance

Because prior research finds that firms are able to reduce information asymmetry with the issuance of management forecasts (e.g., Collier and Yohn, 1997) where *frequency* in forecasting enables firms to gain access to capital markets more often (Frankel et al., 1995), we examine the association between *STRATEGY* and management guidance frequency. As shown in Table 5, column 3, we find that the coefficient on *STRATEGY* is positive and significant ($p < 0.01$) with *MGMT_FREQ* suggesting that *Prospector* firms have more frequent management guidance when compared to *Defender* firms (rejecting H_{2c}).²²

5.4.4 Press releases

Finally, we examine the relationship between business strategy and the number of press releases issued by the firm during the year (*PRESS_RELEASES*) as an alternative measure of voluntary disclosure (Badertscher et al., 2012; Shroff et al., 2012). We hypothesize that while the strategic objectives of a *Prospector* firm may encourage the use of voluntary disclosures through press releases to promote product visibility, the strategic objectives of a *Defender* firm may actually constrain the use of these practices. The results of estimating equation (2) using *PRESS_RELEASES* as the dependent variable are presented in the last column of Table 5. Table 5, column 4 indicates that the coefficient on *STRATEGY* is positive and significant indicating more press releases for *Prospectors* relative to *Defenders* ($p < 0.01$). Therefore, firms following a *Prospector* rather than a *Defender* strategy are likely to issue more press releases (rejecting H_{2d}), thus contributing to their reduced information asymmetry (e.g., Bushee et al. 2010).

²² Untabulated tests reveal that *Prospectors* relative to *Defenders* issue slightly better *quality* management guidance. Specifically, we find that *Prospectors* are associated with more specific guidance (i.e., point vs. range) compared to *Defenders* ($p < 0.05$).

Overall, we conclude that the mechanisms that reduce information asymmetry favor firms following a *Prospector* relative to those following a *Defender* business strategy. Our results are consistent with theoretical expectations that *Prospectors* likely have greater strategic incentives to reduce information asymmetry when compared to *Defenders*. Specifically, we find that *Prospectors* are associated with greater analyst following and business press coverage, as well as more voluntary disclosures (e.g., more frequent management guidance and a greater number of press releases) compared to *Defenders*. We also note that the signs of the coefficients on the control variables are generally consistent with expectations (i.e., larger and more growth-oriented firms are associated with more frequent voluntary disclosures and greater analyst following).

6. Additional analyses

6.1 Additional controls

6.1.1. Firm innovation

Prior research identifies that innovation-related proxies such as R&D intensity and growth are associated with information environment variables (e.g., bid-ask spreads, analyst forecast properties, media coverage). While both R&D and growth serve as inputs into the *STRATEGY* measure, we explicitly test whether *STRATEGY* provides incremental contribution above these innovation-related proxies. In untabulated tests, we add R&D intensity as an additional control to our base models (which already control for firm size, profitability and growth) and find that our results are robust to this additional control specification (except in the *PRESS_COVERAGE* model). Untabulated results suggest that *STRATEGY* significantly contributes to the explanatory power in all models ($p < 0.001$). Further, semipartial correlations reveal that *STRATEGY* provides relatively greater contribution relative to R&D intensity and growth proxies in both the *DISPERSION* and *MGMT_FREQ* models.

6.1.2 External financing needs

Organizational theory suggests that *Prospectors* rely more heavily on external sources for financing than do *Defenders*, and has been confirmed by prior empirical research (e.g., Bentley et al. 2012). In turn, we expect that *Prospectors*' need for external financing may partially influence managers'

disclosure decisions. To ensure that our results are not being influenced by a potential correlated omitted variable (i.e., financing), we control for *ex ante* financing needs and free cash flow following prior research (e.g., Dechow, Sloan and Sweeney 1996; Erickson et al. 2006). Untabulated tests indicate that our results are robust to these additional controls.

6.1.3 Institutional ownership

Prior research finds that institutions invest more heavily in R&D and growth firms (e.g., Wahal and McConnell 2000) and that institutional ownership is associated with analyst following and other disclosure mechanisms (e.g., O'Brien and Bhushan 1990; Bushee and Noe 2000). Thus, as our results could potentially reflect the investment preferences and information gathering activities of institutional investors, rather than explicit link between strategy and manager's disclosure decisions, we control for institutional ownership in our models. Untabulated tests reveal that our results are robust to this additional control specification.

6.1.4 Economic news

We consider that if *Prospectors* actively engage in more acquisitions and new ventures than *Defenders*, then these activities also generate news. Hence, more news events likely leads to more analyst and press coverage, press releases, and forecasts. To ensure that our results are not the result of the amount of economic news about the firm during the period, we control for market-adjusted returns, unexpected earnings and share turnover in untabulated tests. Our results across all models are robust to these control specifications with the exception of our press coverage model where the *STRATEGY* coefficient becomes insignificant.

6.2 Regulation Fair Disclosure (Reg. FD)

In an effort to 'level the informational playing field', Regulation Fair Disclosure (Reg. FD) was passed by Congress in 2000 to prohibit firms from disclosing material information to selective users—e.g., certain analysts and institutional shareholders (see Beyer et al., 2010 for an overview—e.g., Bushee et al., 2004; Heflin et al., 2003; Kothari et al., 2009; Wang, 2007). Because our sample period covers periods both before and after the enactment of Reg. FD, we partition our sample into these two periods in

order to examine the effects of this mandatory disclosure requirement on our results. In untabulated analysis, we continue to find that *Prospectors* are associated with significantly less information asymmetry (i.e., lower bid-ask spreads, lower analyst dispersion, and greater analyst accuracy) relative to *Defenders* both before and after the enactment of Reg. FD. Similarly, we find that *Prospectors* relative to *Defenders* are associated with greater analyst following in both the pre- and post-Reg. FD periods. However, we do find that the significant relationship between management annual earnings guidance frequency and business strategy only exists in the post-Reg. FD period, thus suggesting that this mandatory requirement impacted firms' voluntary disclosure practices differentially depending on their business strategy. However, we are unable to rule out a potential alternative explanation: the lack of significance between management guidance frequency and business strategy in the pre-Reg. FD period may be due to power limitations (i.e., our analysis in the pre-Reg. FD period only covers years 1997-1999).²³

6.3 Strategy consistency

Organizational theory suggests that firms' business strategies are chosen very early in a firm's history, initiated by management's commitment of resources towards pursuing certain product-market domain(s), and remain relatively stable over time (Hambrick, 1983; Miles et al., 1978; Snow and Hambrick, 1980).²⁴ Companies are reluctant to change their chosen strategies due to the significant resources "required to develop the distinctive competences, technologies, structures, and management processes needed to pursue a particular strategy....[therefore] when faced with external change or pressure, [companies] tend to *adjust* rather than *change* their strategies" (Snow and Hambrick, 1980, p. 529). Using a strategic-choice perspective, Miles et al. (1978, 548), further elaborate upon this adaptive cycle concept by explaining that organizational structure and process are determined by top management choices and are only partially predetermined by environmental conditions. These management choices

²³ We note that we are unable to test the effects of business press coverage and press releases on a firm's business strategy in the pre-Reg. FD period because our sample for these tests begins in 2000.

²⁴ The Miles and Snow typology is rooted in the strategic-choice view whereby "[top managers] largely enact or create the organization's relevant environment. That is, the organization responds largely to what its management perceives" (Miles and Snow, 1978, p.20).

help solve three central functions of organizational adaption (entrepreneurial, engineering and administrative), which within an organization must be addressed *simultaneously* for internal consistency to be maintained.²⁵ Thus, in order for a firm to have a successful business strategy, internal consistency must be maintained across these three functions and aligned with their chosen strategy. Hence, “over time...organizations following these strategies develop certain internal consistencies and tend to perpetuate the strategies” (Hambrick, 1983, p. 7). Consequently, inconsistency among a firm’s “strategy, technology, structure, and process” results in “strategic failure” and an unstable form of organization (Miles et al. 1978, 550), referred to as “Reactors” under the Miles and Snow typology.

Empirically, the Bentley et al. (2012) *STRATEGY* measure is relatively stable over time, consistent with organizational theory expectations. For example, firms classified as *Prospectors* exhibit consistently high *STRATEGY* scores year-to-year over the entire sample period while firms classified as *Defenders* exhibit consistently low *STRATEGY* scores. While firm *STRATEGY* scores can range from 6 to 30, we find that less than 3 percent of firms change their *STRATEGY* score by more than 3 values year-to-year and find no evidence of firms switching from a *Defender* to *Prospector* (or vice-versa) over the sample period.

There are several implications for the consistency of a firm’s strategy over time on our analysis. First, because firms’ business strategy is often set at the inception of the firm with little variability, this implies that business strategy serves as one of the *underlying*, firm-specific characteristic that determines their information environments.²⁶ Second, because firms adjust rather than change their firms’ strategies over time (which we confirm empirically), and if business strategy serves as an *underlying* factor in

²⁵ Miles and Snow (1978, 2003) contend that managers of Prospector and Defender firms would have different skills and competencies. Hence, “by contending that organizations pursuing different strategies would be lead by managers with different characteristics, Miles and Snow (1978) acknowledged the necessity of matching managers to strategy”-- i.e., matching the administrative function to strategy (Thomas and Ramaswamy, 1996, p.252). Subsequent research by Thomas and Ramaswamy (1994, 1996) find empirical evidence to support the claim that managerial traits differ amongst Prospectors and Defenders. Further, they find that firms where top management characteristics aligned with the strategic objectives outperformed those firms where misalignment occurred.

²⁶ In untabulated analyses, we test whether there is significant cross-sectional variation in firms’ information environments *within* strategy types. In general, we find little variability within *Prospector* and *Defender* firms concerning their information environments. Therefore, because cross-sectional variation *within* strategy types is generally small, this further supports the notion that strategy is an underlying factor of information environment differences.

determining the firm's information environment, then this implies that the firm's information environment, all else equal, can be expected to be generally constant over time. Thus, our study suggests inherent difficulties firms may have in being able to change their information environments. Finally, because a firm's business strategy is generally constant over time, identifying a firm's strategy may serve as a useful context for understanding the numerous interdependencies related to a firm's information environment that Beyer et al. (2010) discuss in their review. For instance, Beyer et al. (2010, p. 298) state that "as a result of the numerous interdependencies, one would not expect simple causal relationships to hold...[r]ather, "equilibrium" concepts for the market for information defy a simplified view of cause and effect...[however,] our understanding of the interdependencies and interactions of the elements of the information system is still limited". Thus, our study aims to give a context in which to view these "equilibrium" concepts by considering the firm's fundamental identity: its business strategy.

7. Conclusion

Using organizational theory, we examine whether information environments vary between firms following different business strategies. We also examine whether mechanisms that reduce information asymmetry differ across firm strategies. Overall, our results suggest that business strategy does impact firms' information environments. We find that firms following an innovation-oriented *Prospector* strategy have lower bid-ask spreads and analyst forecast dispersion and greater analyst forecast accuracy relative to firms following an efficiency-oriented *Defender* strategy, suggesting that *Prospectors* have lower information asymmetry. Next, we find evidence that *Prospector* firms attract greater levels of analyst and press coverage, engage in more frequent management earnings guidance and issue more press releases compared to *Defender* firms. Altogether these findings suggest that *Prospectors* are more successful in reducing information asymmetry through various strategic mechanisms (e.g., analyst and business press coverage, voluntary disclosures).

In additional analyses we provide evidence that business strategy provides incremental explanatory power over measures suggested by prior literatures proxy for firm-related innovation (e.g., R&D intensity, growth, financing needs). Generally, we also find that business strategy remains

significant both before and after the enactment of Regulation Fair Disclosure, providing additional evidence that business strategy impacts a firm's information environment irrespective of regulatory intervention. Finally, we find that a firm's business strategy is relatively stable over time, consistent with organizational expectations.

Our research is subject to several caveats. While we rely on Miles and Snow's (1978, 2003) strategy typology and prior empirical research to create our business strategy measure, our measure is still assessed with noise. Hence, a limitation of our study is the extent that measurement error potentially leads to misclassifying some firms' business strategies. Another limitation of our study is the inability to parse out the firm's inherent information asymmetry from their mechanisms for reducing information asymmetry. Consistent with Beyer et al. (2010), we take the "equilibrium" position for the market of information which due to the "numerous interdependencies ...defy a simplified view of cause and effect" (p.298). Because a firm's business strategy is generally constant over time, identifying a firm's strategy may serve as a useful context for understanding the numerous interdependencies related to a firm's information environment.

Our study makes several contributions. First, by examining the interrelationships among a firm's information environment, its voluntary disclosure practices, and analyst forecasts, we not only address Beyer et al.'s (2010) call for more research in this area but extend the analysis of these interrelationships to a fundamental element of a firm's identity: its business strategy. Second, by examining voluntary disclosure practices in the context of a firm's strategy, our study provides some insights into a theoretical rationale for why firms select different levels of disclosure—i.e., firms' strategic objectives may either constrain or encourage these practices. Finally, by linking organizational theory to accounting, we provide a theoretical framework for understanding why business strategy may be an underlying factor in firms' information environments.

References

- Aboody, D., Kasznik, R., 2000. CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics* 29, 73-100.
- Aboody, D., Lev, B., 2000. Information asymmetry, R&D, and insider gains. *The Journal of Finance* 55, 2747-2766.
- Ajinkya, B., Bhojraj, S., Sengupta, P., 2005. The association between outside directors, institutional investors and the properties of management earnings forecasts. *Journal of Accounting Research* 43, 343-376.
- Akerlof, G.A., 1970. The market for 'lemons': quality uncertainty and the market mechanism. *The Quarterly Journal of Economics* 84, 488-500.
- Badertscher, B., Shroff, N., White, H., 2012. Externalities of public firms' disclosures: evidence from private firms' investment decision. Working paper, University of Notre Dame.
- Barber, B., Odean, T., 2008. All that glitters: the effect of attention and news on the buying behavior of individual and institutional investors. *Review of Financial Studies* 21, 785-818.
- Barry, C.B., Brown, S.J., 1984. Differential information and the small firm effect. *Journal of Financial Economics* 13, 283-294.
- Barry, C.B., Brown, S.J., 1985. Differential information and security market equilibrium. *The Journal of Financial and Quantitative Analysis* 20, 407-422.
- Barth, M.E., Kasznik, R., McNichols, M.F., 2001. Analyst coverage and intangible assets. *Journal of Accounting Research* 39, 1-34.
- Bentley, K.A., 2013. Antecedents to financial statement misreporting: the influence of organizational business strategy, ethical culture and climate. Working paper, The University of New South Wales.
- Bentley, K.A., Omer, T.C., Sharp, N.Y. 2012. Business strategy, financial reporting irregularities, and audit effort. *Contemporary Accounting Research*. doi: 10.1111/j.1911-3846.2012.01174.x.

- Beyer, A., Cohen, D.A., Lys, T.Z., Walther, B.R., 2010. The financial reporting environment: review of the recent literature. *Journal of Accounting and Economics* 50, 296-343.
- Bhagat, S., Marr, M.W., Thompson, G.R., 1985. The Rule 415 experiment: equity markets. *The Journal of Finance* 40, 1385-1401.
- Blackwell, D.W., Marr, M.W., Spivey, M.F., 1990. Shelf registration and the reduced due diligence argument: implications of the underwriter certification and the implicit insurance hypotheses. *The Journal of Financial and Quantitative Analysis* 25, 245-259.
- Brennan, M.J., Subramanyam, A., 1995. Investment analysis and price formation in securities markets. *Journal of Financial Economics* 38, 361-381.
- Brown, S., 1979. The effect of estimation risk on capital market equilibrium. *The Journal of Financial and Quantitative Analysis* 14, 215-220.
- Bushee, B.J., Core, J., Guay W., Hamm, S., 2010. The role of the business press as an information intermediary. *Journal of Accounting Research* 48, 1-19.
- Bushee, B.J., Matsumoto, D.A., Miller, G.S. 2004. Managerial and investor responses to disclosure regulation: the case of Reg FD and conference calls. *The Accounting Review* 79, 617-643.
- Bushee, B.J., Noe, C.F. 2000. Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research* 38, 171-202.
- Chan, W, 2003. Stock price reaction to news and no-news: drift and reversal after headlines. *Journal of Financial Economics* 70, 223-260.
- Chung, K., Zhang, H., 2009. A simple approximation of intraday spreads using daily data. Working paper, State University of New York.
- Coller, M., Yohn, T.L., 1997. Management forecasts and information asymmetry: an examination of bid-ask spreads. *Journal of Accounting Research* 35, 181-191.
- Diamond, D.W., Verrecchia, R.E., 1991. Disclosure, liquidity, and the cost of capital. *The Journal of Finance* 46, 1325-1359.

- Dierkens, N., 1991. Information asymmetry and equity issues. *Journal of Financial and Quantitative Analysis* 26, 181-199.
- Diether, K., Malloy, C., Scherbina, A., 2002. Difference of opinion and the cross section of stock returns. *The Journal of Finance* 57, 2113-2141.
- Easley, D., O'Hara, M., 2004. Information and cost of capital. *The Journal of Finance* 59, 1553-1583.
- Feng, M., Koch, A., 2010. Once bitten, twice shy: the relation between outcomes of earnings guidance and management guidance strategy. *The Accounting Review* 85, 1951-1984.
- Field, L., Lowry, M., Shu, S., 2005. Does disclosure deter or trigger litigation? *Journal of Accounting and Economics* 39, 487-507.
- Frankel, R., McNichols, M., Wilson, G.P., 1995. Discretionary disclosure and external financing. *The Accounting Review* 70, 135-150.
- Gebhardt, W., Lee, C., Swaminathan, B., 2001. Toward an implied cost of capital. *Journal of Accounting Research* 39, 135-176.
- Gow, I.D., Ormazabal, G., Taylor, D.J., 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85, 483-512.
- Hambrick, D.C., 1983. Some tests of the effectiveness and functional attributes of Miles and Snow's strategic types. *The Academy of Management Journal* 26, 5-26.
- Healy, P.M., Palepu, K.G., 2001. Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics* 31, 405-440.
- Heflin, F., Subramanyam, K., Zhang, Y., 2003. Regulation FD and the financial information environment: early evidence. *The Accounting Review* 78, 1-37.
- Ittner, C.D., Larcker, D.F., Rajan, M.V., 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72, 231-255.
- Kim, O., Verrecchia, R.E., 1994. Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics* 17, 41-67.

- Kothari, S.P., Shu, S., Wysocki, P., 2009. Do managers withhold bad news? *Journal of Accounting Research* 45, 385-420.
- Krishnaswami, S., Spindt, P.A., Subramanyam, V., 1999. Information asymmetry, monitoring, and the placement structure of corporate debt. *Journal of Financial Economics* 51, 407-434.
- Lang, M.H., Lins, K. V., Miller, D. P., 2003. ADRs, analysts, and accuracy: does cross listing in the United States improve a firm's information environment and increase market value? *Journal of Accounting Research* 41, 317-345.
- Lang, M.H., Lundholm, R.J., 2000. Voluntary disclosure and equity offerings: reducing information asymmetry or hyping the stock? *Contemporary Accounting Research* 17, 623-662.
- Lehavy, R., Li, F., Merkley K., 2011. The effect of annual report readability on analyst following and the properties of their earnings forecasts. *The Accounting Review* 86, 1087-1115.
- Lev, B., Zarowin, P., 1999. The boundaries of financial reporting and how to extend them. *Journal of Accounting Research* 37, 353-385.
- McLaughlin, R., Safieddine, A., Vaudevan, G.K., 1998. The information content of corporate offerings of seasoned securities: an empirical analysis. *Financial Management* 27, 31-45.
- Miles, R.E., Snow, C.C., 1978. *Organizational strategy, structure and process*. McGraw-Hill, New York.
- Miles, R.E., Snow, C.C., Meyer, A.D., Coleman, Jr., H.J. 1978. *Organizational strategy, structure, and process*. *The Academy of Management Review* 3, 546-562.
- Miles, R.E., Snow, C.C., 1994. *Fit, failure, and the hall of fame: how companies succeed or fail*. The Free Press, New York.
- Miles, R.E., Snow, C.C., 2003. *Organizational strategy, structure, and process*. Stanford University Press, Stanford.
- Nagar, V., Nanda, D., Wysocki, P., 2003. Discretionary disclosures and stock-based incentives. *Journal of Accounting and Economics* 34, 283-309.
- Noe, C.F., 1999. Voluntary disclosures and insider transactions. *Journal of Accounting and Economics* 27, 305-326.

- O'Brien, P.C., Bhushan, R. 1990. Analyst following and institutional ownership. *Journal of Accounting Research* 28, 55-76.
- Payne, J., Thomas, W., 2003. The implications of using stock-split adjusted I/B/E/S data in empirical research. *The Accounting Review* 78, 1049-1067.
- Petersen, M.A., 2009. Estimating standard errors in finance panel data sets: comparing approaches. *The Review of Financial Studies* 22, 435-480.
- Porter, M.E., 1980. *Competitive strategy: techniques for analyzing industries and competitors*. Free Press, New York.
- Rajagopalan, N., 1997. Strategic orientation, incentive plan adoptions, and firm performance: evidence from electric utility firms. *Strategic Management Journal* 18, 761-785.
- Rajagopalan, N., Finkelstein, S., 1992. Effects of strategic orientation and environmental change on senior management reward systems. *Strategic Management Journal* 13, 127-142.
- Shroff, N., Sun, A., White, H., Zhang, W., 2012. Economic consequences of voluntary disclosure before seasoned equity offerings: the impact of the 2005 Securities Offering Reform. Working paper, Massachusetts Institute of Technology.
- Simons, R., 1987, Accounting control systems and business strategy: an empirical analysis. *Accounting Organizations and Society* 12, 357-374.
- Singh, P., Agarwal, N.C., 2002. The effects of firm strategy on the level and structure of executive compensation. *Canadian Journal of Administrative Sciences* 19, 42-56.
- Skinner, D.J., 1994. Why firms voluntarily disclose bad news. *Journal of Accounting Research* 32, 38-60.
- Smith Jr., C.W., Watts, R.L., 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32, 263-292.
- Smith, K.G., Guthrie, J.P., Chen, M.-J., 1989. Strategy, size and performance. *Organization Studies* 10, 63-81.
- Snow, C.C., Hambrick, D.C., 1980. Measuring organizational strategies: some theoretical and methodological problems. *The Academy of Management Review* 5, 527-538.

- Soltes, E, 2010. Disseminating firm disclosures. Working paper, Harvard University.
- Thomas, A.S., Ramaswamy, K. 1994. Matching managers to strategy: an investigation of performance implications and boundary conditions. *Australian Journal of Management* 19, 73-93.
- Thomas, A.S., Ramaswamy, K. 1996. Matching managers to strategy: further tests of the Miles and Snow typology. *British Journal of Management* 7, 247-261.
- Thomas, S., 2002. Firm diversification and asymmetric information: evidence from analysts' forecasts and earnings announcements. *Journal of Financial Economics* 64, 373-396.
- U.S. Securities and Exchange Commission, 2012. Form 8-K. <<http://www.sec.gov/answers/form8k.htm>>.
- Vermaelen, T., 1981. Common stock repurchases and market signaling: an empirical study. *Journal of Financial Economics* 9, 139-183.
- Verrecchia, R.E., 1983. Discretionary disclosure. *Journal of Accounting and Economics* 5, 179-194.
- Wahal, S., McConnell, J.J. 2000. Do institutional investors exacerbate managerial myopia? *Journal of Corporate Finance* 6, 307-329.
- Wang, I., 2007. Private earnings guidance and its implications for disclosure regulation. *The Accounting Review* 82, 1299-1332.
- Warner, J.B., Watts, R.L., Wruck, K.H. 1988. Stock prices and top management changes. *Journal of Financial Economics* 20, 461-492.
- Weisbach, M.S., 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20, 431-460.
- White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48, 817-838.
- Zhang, F., 2006. Information uncertainty and analyst forecast behavior. *Contemporary Accounting Research* 23, 565-590.

Appendix

Variable	Description
<i>ACCURACY</i>	The absolute value of the difference between reported annual earnings and the most recent consensus analyst forecast occurring before the end of the fiscal year, scaled by stock price as of two days before the forecast and multiplied by -100.
<i>ANALYST_FOLLOW</i>	The number of analysts following the firm.
<i>BIG_N</i>	An indicator variable set equal to one if the firm's financial statements are audited by a Big N auditor, and zero otherwise.
<i>BTM</i>	Book-to-market ratio, calculated as total common equity outstanding divided by market capitalization.
<i>CF_VOL</i>	Cash flow volatility, calculated as the standard deviation of the firm's cash flows from operations over the past ten years divided by total assets.
<i>DISPERSION</i>	The standard deviation of the individual forecasts comprising the most recent consensus analyst forecast of annual earnings occurring before the end of the fiscal year.
<i>MGMT_FREQ</i>	The total number of annual earnings guidance issued by the firm for the fiscal year.
<i>HORIZON</i>	The number of days between the consensus analyst forecast date and the fiscal year end.
<i>LN_ASSETS</i>	The natural logarithm of total assets.
<i>LOSS</i>	An indicator variable set equal to one if income before extraordinary items was negative in the prior year, and zero otherwise.
<i>PRESS_COVERAGE</i>	The number of days during the year that the firm had at least one article in the Dow Jones news archives.
<i>PRESS_RELEASES</i>	The number of press releases issued by the firm during the year.
<i>ROA</i>	Return on assets, calculated as income before extraordinary items divided by total assets.
<i>SPREAD</i>	The average daily bid-ask spread during the fiscal year, calculated following Chung and Zhang (2009) by subtracting the daily bid price from the asking price, scaling this by the mean of the two, taking the yearly average, and multiplying by 100.
<i>STRATEGY</i>	Our primary measure of business strategy calculated following Bentley et al. (2012), ranging from six (<i>Defender</i>) to thirty (<i>Prospector</i>).

Table 1
Sample selection.

Description	Observations
Firm-years between 1997 and 2009 with sufficient Compustat data necessary to calculate the <i>STRATEGY</i> measure	44,754
Less:	
Firm-years without actual annual earnings available in I/B/E/S	(9,445)
Firm-years without a consensus analyst forecast issued in the 90 day period prior to the fiscal year end in I/B/E/S	(8,612)
Firm-years not followed by at least three analysts in I/B/E/S	(8,170)
Firm-years with missing stock price data in CRSP	(1,393)
Firm-years not found in First Call	(1,602)
Final Sample	15,532

Table 2
Descriptive statistics and univariate tests.

Variable	Full Sample (N=15,532)					Prospectors (N=1,147)		Defenders (N=604)	
	Mean	Median	Std. Dev.	First Quartile	Third Quartile	Mean	Med	Mean	Med
<i>STRATEGY</i>	18.471	18.000	3.418	16.000	21.000	25.121	25.000	11.127	11.000
<i>SPREAD</i>	0.723	0.297	0.921	0.126	0.982	0.678	0.295	0.984	0.394
<i>DISPERSION</i>	0.048	0.020	0.076	0.010	0.050	0.045	0.020	0.067	0.040
<i>ACCURACY</i>	-0.572	-0.166	1.333	-0.468	-0.056	-0.661	-0.175	-0.751	-0.281
<i>ANALYST_FOLLOW</i>	9.750	8.000	6.636	5.000	13.000	9.486	7.000	7.005	6.000
<i>PRESS_COVERAGE</i>	45.486	36.000	38.744	20.000	60.000	44.538	35.000	40.347	33.000
<i>MGMT_FREQ</i>	1.527	0.000	2.282	0.000	3.000	1.330	0.000	1.066	0.000
<i>PRESS_RELEASES</i>	81.862	44.000	133.349	24.000	80.000	73.727	46.000	53.539	38.000
<i>CF_VOL</i>	0.048	0.039	0.035	0.026	0.057	0.054	0.039	0.051	0.041
<i>LN_ASSETS</i>	7.008	6.888	1.589	5.871	8.012	6.465	6.376	6.944	6.888
<i>LOSS</i>	0.335	0.000	0.472	0.000	1.000	0.572	1.000	0.354	0.000
<i>ROA</i>	0.037	0.052	0.108	0.013	0.090	-0.025	0.027	0.033	0.043
<i>BTM</i>	0.487	0.408	0.366	0.251	0.628	0.421	0.339	0.552	0.481
<i>BIG_N</i>	0.935	1.000	0.246	1.000	1.000	0.918	1.000	0.944	1.000
<i>HORIZON</i>	13.798	14.000	2.009	12.000	15.000	13.838	14.000	13.833	14.000

See the appendix for variable definitions. Means and medians presented in bold indicates a significant difference at the $\alpha = 0.01$ level, using a two-tailed *t*-test of means and Wilcoxon test of medians.

Table 3

Correlation matrix (Pearson-upper/ Spearman-lower).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 <i>STRATEGY</i>		-0.05	-0.10	0.01	0.08	0.00	0.03	0.02	0.03	-0.08	0.13	-0.14	-0.07	-0.02	-0.01
2 <i>SPREAD</i>	-0.04		0.05	-0.17	-0.21	-0.24	-0.26	-0.16	-0.01	-0.25	0.08	-0.09	0.22	0.03	0.00
3 <i>DISPERSION</i>	-0.13	0.05		-0.34	0.02	0.11	-0.16	0.02	-0.03	0.18	0.11	-0.14	0.14	0.03	0.00
4 <i>ACCURACY</i>	0.05	-0.19	-0.37		0.16	0.06	0.13	0.05	-0.11	0.11	-0.29	0.35	-0.24	0.03	-0.01
5 <i>ANALYST_FOLLOW</i>	0.09	-0.34	0.01	0.27		0.45	0.10	0.41	-0.10	0.61	-0.12	0.15	-0.22	0.16	0.02
6 <i>PRESS_COVERAGE</i>	0.00	-0.43	0.11	0.10	0.40		0.15	0.70	-0.10	0.54	-0.12	0.11	-0.15	0.09	0.02
7 <i>MGMT_FREQ</i>	0.03	-0.28	-0.21	0.22	0.12	0.14		0.13	-0.10	0.22	-0.20	0.14	-0.07	0.03	-0.02
8 <i>PRESS_RELEASES</i>	0.05	-0.40	0.06	0.05	0.39	0.71	0.13		-0.04	0.50	-0.03	0.05	-0.11	0.09	0.03
9 <i>CF_VOL</i>	-0.01	-0.02	-0.08	-0.11	-0.08	-0.10	-0.09	-0.04		-0.33	0.22	-0.17	-0.10	-0.09	-0.01
10 <i>LN_ASSETS</i>	-0.08	-0.35	0.19	0.18	0.62	0.48	0.19	0.50	-0.33		-0.17	0.13	-0.03	0.25	0.01
11 <i>LOSS</i>	0.12	0.13	0.10	-0.31	-0.13	-0.12	-0.21	0.03	0.16	-0.16		-0.55	0.16	-0.04	-0.01
12 <i>ROA</i>	-0.07	-0.19	-0.18	0.36	0.17	0.13	0.15	-0.03	0.08	0.05	-0.59		-0.24	0.03	0.06
13 <i>BTM</i>	-0.08	0.18	0.18	-0.30	-0.24	-0.17	-0.07	-0.11	-0.14	-0.03	0.12	-0.41		-0.03	-0.05
14 <i>BIG_N</i>	-0.02	-0.02	0.03	0.07	0.18	0.08	0.03	0.10	-0.07	0.25	-0.04	0.02	-0.03		0.00
15 <i>HORIZON</i>	-0.01	-0.09	0.01	-0.03	0.02	0.03	-0.02	0.07	-0.02	0.01	-0.01	0.05	-0.06	0.00	

See the appendix for variable definitions. Correlations are presented in bold when they are statistically significant at the $\alpha = .05$ level using a two-tailed test.

Table 4

Regression results for firms' information environments and business strategies.

Variable	<i>SPREAD</i>	<i>DISPERSION</i>	<i>ACCURACY</i>
	(1)	(2)	(3)
STRATEGY	-0.018*** (.001)	-0.002*** (.001)	0.016*** (.001)
<i>CF_VOL</i>	0.822*** (.002)	0.082*** (.002)	-2.283*** (.001)
<i>LN_ASSETS</i>	-0.107*** (.001)	0.008*** (.001)	0.044*** (.001)
<i>LOSS</i>	0.081*** (.001)	0.012*** (.001)	-0.377*** (.001)
<i>ROA</i>	-0.369*** (.001)	-0.081*** (.001)	2.894*** (.001)
<i>BTM</i>	0.463*** (.001)	0.016*** (.001)	-0.549*** (.001)
<i>BIG_N</i>	0.012 (.668)	0.003 (.330)	-0.003 (.947)
<i>HORIZON</i>		0.000 (.317)	-0.012** (.023)
<i>Intercept</i>	2.372*** (.001)	0.007 (.490)	-0.497*** (.001)
Industry Fixed Effects	Included	Included	Included
Year Fixed Effects	Included	Included	Included
Number of Observations	15,532	15,532	15,532
Adj. R ²	59.1%	18.2%	18.2%
Type of Regression	OLS	OLS	OLS

Table entries are estimates with two-tailed *p*-values in parentheses. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. All continuous variables are winsorized at the first and 99th percentiles to alleviate the effects of outliers on the analysis. T-statistics are calculated using White's (1980) heteroscedasticity robust standard errors clustered by firm to control for dependency in the error terms (Gow et al., 2010; Petersen, 2009). Industry and year fixed effects are also included in the model (coefficients not reported). See the appendix for variable definitions.

Table 5

Regression results for information asymmetry reduction mechanisms and business strategies.

Variable	<i>ANALYST_ FOLLOW</i>	<i>PRESS_ COVERAGE</i>	<i>MGMT_ FREQ</i>	<i>PRESS_ RELEASES</i>
	(1)	(2)	(3)	(4)
STRATEGY	0.021*** (.001)	0.008** (.016)	0.019*** (.006)	0.016*** (.001)
<i>CF_VOL</i>	1.306*** (.001)	0.740** (.018)	-3.004*** (.001)	3.422*** (.001)
<i>LN_ASSETS</i>	0.268*** (.001)	0.272*** (.001)	0.156*** (.001)	0.467*** (.001)
<i>LOSS</i>	-0.023 (.132)	-0.013 (.542)	-0.404*** (.001)	0.185*** (.001)
<i>ROA</i>	0.334*** (.001)	-0.079 (.386)	1.422*** (.001)	-0.513*** (.001)
<i>BTM</i>	-0.307*** (.001)	-0.352*** (.001)	-0.123** (.036)	-0.396*** (.001)
<i>BIG_N</i>	0.078*** (.006)	-0.123*** (.005)	0.052 (.545)	-0.203*** (.003)
<i>Intercept</i>	0.179*** (.006)	2.097*** (.001)	-3.058*** (.001)	1.047*** (.001)
Industry Fixed Effects	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included
Number of Observations	15,532	11,374	15,532	11,374
Type of Regression	Negative Binomial	Negative Binomial	Negative Binomial	Negative Binomial

Table entries are estimates with two-tailed *p*-values in parentheses. *, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. All continuous variables are winsorized at the first and 99th percentiles to alleviate the effects of outliers on the analysis. T-statistics are calculated using White's (1980) heteroscedasticity robust standard errors clustered by firm to control for dependency in the error terms (Gow et al., 2010; Petersen, 2009). Industry and year fixed effects are also included in the model (coefficients not reported). See the appendix for variable definitions.