Article

Journal of Accounting,
Auditing & Finance
1–25

DOI: 10.1177/0148558X17726893
journals.sagepub.com/home/JAF
SAGE

Does Business Strategy Impact a Firm's Information Environment?

Kathleen A. Bentley-Goode[1], Thomas C. Omer[2], and Brady J. Twedt[3]

Abstract

This study examines whether a firm's business strategy affects their information environment. Organizational theory suggests that firms following an innovative "prospector" strategy have greater incentives to provide more frequent voluntary disclosures than firms following an efficient "defender" strategy. Furthermore, prospectors are more likely to attract greater coverage by external information intermediaries. We find that prospectors engage in more frequent management earnings guidance, issue more press releases, and are followed by more financial analysts compared with defenders. Next, we examine the association between business strategy and information asymmetry. We find that despite prospectors having attributes associated with information asymmetry (e.g., R&D, growth options), prospectors have lower information asymmetry than defenders. We attribute this finding to prospectors' greater access to both internal and external sources of disclosure compared with defender firms, which we confirm using mediation analysis. Collectively, our results suggest that business strategy does affect firms' information environments, incremental to known determinants, and that strategy serves as a useful context for understanding a firm's underlying information environment.

Keywords

business strategy, information asymmetry, information environment, voluntary disclosure

Introduction

Accounting information serves to decrease information asymmetries between managers with private information and external capital providers regarding the expected profitability of firms' investment opportunities (e.g., the lemons problem in Akerlof (1970)). It also mitigates agency costs that arise from the separation of firms' ownership and control (Beyer, Cohen, Lys, & Walther, 2010). Healy and Palepu (2001) argue that the ''demand

[1]University of New South Wales (UNSW), Sydney, Australia
[2]University of Nebraska–Lincoln, Lincoln, NE, USA
[3]Indiana University, Bloomington, IN, USA

Corresponding Author:
Thomas C. Omer, School of Accountancy, College of Business Administration, University of Nebraska–Lincoln, 386 CBA, P.O. Box 880488, Lincoln, NE 68588, USA.
Email: thomas.omer@unl.edu

for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors'' (p. 406). Beyond mandated disclosures, investors obtain information about firms from both internal and external sources. Internal sources of information include voluntary disclosures such as management earnings guidance and press releases, while intermediaries such as financial analysts and the business press provide external information. Beyer et al. (2010) note that there is little evidence to date on the associations among firms' information environments, voluntary disclosure practices, and analyst forecasts.

We address this gap in the literature by examining these associations in the context of an underlying determinant of firms' information environments—their business strategies.[1] Using agency and organizational theories, we focus on the association between firms' business strategies and their information environments. We begin by investigating the extent to which internal and external information sources (e.g., management earnings guidance, press releases, analyst following, and business press coverage) differ across business strategies. We then examine whether business strategy ultimately helps explain the observed variation in information asymmetry.

This study is important because organizational theory provides a framework for understanding how firms' business strategies can contribute to firms' financial disclosures and information environments. We use this framework to address Beyer et al.'s (2010) ''call for researchers to consider interdependencies between the various decisions that shape the corporate information environment'' (p. 296). We also address Aboody and Lev's (2000) argument that the ''[i]dentification of the major sources or firm-specific drivers of information asymmetry'' is research with public policy implications (p. 2748). Prior strategy research suggests that firms choose business strategies early in their history and once chosen are stable over time (Hambrick, 1983; Snow & Hambrick, 1980). Prior research on executive compensation identifies business strategies as a source of agency problems (e.g., Rajagopalan, 1997; Rajagopalan & Finkelstein, 1992). We extend this line of research by investigating whether firms' business strategies underlie differences in disclosure practices and information environments.

We rely on organizational theory and the Miles and Snow's (1978, 2003) business strategy typology to address our research questions. Consistent with prior research (e.g., Bentley, Omer, & Sharp, 2013; Higgins, Omer, & Phillips, 2015; Ittner, Larcker, & Rajan, 1997), we focus on firms following innovative-oriented, ''prospector'' strategies and efficiency-oriented ''defender'' strategies. These strategies are at the ends of the Miles and Snow's (1978, 2003) business strategy continuum and distinguished by specific organizational characteristics (e.g., risk-taking, managerial discretion).[2] Prospectors continually change their product-market portfolios and are typically industry first-movers. Prospectors invest heavily in research and development (R&D) and generate growth options because their strategic objective is to identify and exploit new opportunities in different market domains. In contrast, defenders rarely adjust their product-market portfolios, instead focusing on production efficiency in a narrowly defined, stable product set.

Organizational theory suggests that prospector firms have greater incentives to provide more voluntary disclosures than defender firms. These reasons include prospectors' greater agency costs, greater reliance on external financing, lower profitability tendencies, and greater emphasis on brand-building marketing strategies (e.g., Bentley et al., 2013; Hambrick, 1983; McDaniel & Kolari, 1987; Rajagopalan, 1997). Firms with prospector-like characteristics also tend to attract greater coverage by information intermediaries such as analysts and the business press (Barth, Kasznik, & McNichols, 2001; Lehavy, Li, &

Merkley, 2011). Furthermore, prospectors' innovative approach places strategic importance on promotional and marketing activities (McDaniel & Kolari, 1987) where firms that advertise more attract more analysts (Chung & Jo, 1996). Consequently, greater coverage by analysts and the business press reduces mispricing, uncertainty about firm value, and information asymmetry (Brennan & Subrahmanyam, 1995; Bushee, Core, Guay, & Hamm, 2010; Drake, Guest, & Twedt, 2014; Thomas, 2002).

However, there are several reasons why prospectors can exhibit greater information asymmetry compared with defenders. For example, firms with more R&D expenditures likely have greater information asymmetry because unlike tangible assets there are no organized markets for intangible assets to obtain asset pricing information (Aboody & Lev, 2000; Barth et al., 2001). Compared with defenders, prospectors also have greater outcome uncertainty because they focus on riskier, innovative projects (Higgins et al., 2015; Rajagopalan, 1997; Rajagopalan & Finkelstein, 1992; Singh & Agarwal, 2002).

Potentially, offsetting these incentives to reduce information asymmetry for both prospectors and defenders is the proprietary cost hypothesis (Verrecchia, 1983), which suggests that firms with high proprietary costs are less likely to disclose proprietary information. Prospectors are more selective about disclosing information about their R&D activities, while defenders are more selective about disclosing information on technological investments that aid their operational efficiency (Coeurderoy & Durand, 2004; Miller, 1992; Porter, 1980; Shapiro, 1989). Thus, the association between business strategy and information environments depends on firms' incentives to protect the underlying advantages of their chosen strategy, as well as the available internal and external disclosures that affect information asymmetry. Thus, the ultimate effect of business strategy on firms' information environments is an empirical issue.

We use a measure of Miles and Snow's (1978, 2003) business strategy typology developed by Bentley et al. (2013) to investigate the association between firms' business strategy and information environments. We find that prospectors issue more management earnings forecasts and press releases than defenders. We also find that prospectors receive greater analyst (but not press) coverage than defenders. Collectively, these results suggest that internal and external disclosures lead to more publicly available information for prospectors than defenders.

Next, we find that prospectors have lower information asymmetry than defenders. Prospectors exhibit smaller bid-ask spreads, lower analyst forecast dispersion, and higher analyst forecast accuracy than defenders. We attribute our findings to prospectors' greater use of both internal and external sources of disclosures. We formally test this proposition using mediation analysis. We find that disclosure fully (partially) mediates the association between business strategy and information asymmetry for spreads (dispersion; accuracy). Our evidence suggests that the benefits of an improved information environment for prospector firms outweigh the potential costs of disclosing proprietary information.

Our contributions are threefold. First, by examining the associations between firms' information environments, voluntary disclosure practices, analysts' forecasting behavior, and business strategy, we address Beyer et al.'s (2010) call for research on the interdependencies that exist within firms' information environments. We provide evidence that differences in firms' information environments result, at least in part, from decisions associated with their business strategies. Second, by examining the association between internal and external information sources and business strategies within the context of organizational theory, we provide a theoretical rationale for why firms select different levels of disclosure. Third, we provide a theoretical framework for understanding why business strategy is an

underlying determinant of firms' disclosure practices and information environments, as well as empirical evidence consistent with this framework.

Literature Review and Hypothesis Development

Business Strategy and Voluntary Disclosures

Healy and Palepu (2001) suggest the ''demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors'' (p. 406). Theory suggests that prospectors provide more voluntary disclosures for several reasons: greater agency costs, greater reliance on external financing, lower profitability tendencies, and greater emphasis on brand-building marketing strategies.

Agency costs are higher for prospectors because their managers are afforded the discretion to pursue innovative and risky projects (Rajagopalan, 1997; Rajagopalan & Finkelstein, 1992). In contrast, defender firm managers are more constrained in their decision making to ''primarily efficiency-based ones'' (Rajagopalan, 1997, p. 767). Because prospectors' innovative and risky projects take longer to materialize than defenders' efficiency-based ones, prospectors' incentive structures are measured over longer horizons and are market-based (e.g., stock and options) (Ittner et al., 1997; Rajagopalan, 1997; Singh & Agarwal, 2002). Consequently, we expect that prospectors provide more disclosures to the market, consistent with findings that firms with stock-based compensation plans provide greater levels of voluntary disclosure (e.g., Nagar, Nanda, & Wysocki, 2003).

Second, prospectors have greater incentives to reduce information asymmetry with capital providers because they rely on external financing sources more than defenders that place greater reliance on internal funds (Bentley et al., 2013; Miles & Snow, 1978, 2003). Reducing information asymmetry with capital providers improves stock liquidity and decreases the cost of capital (Diamond & Verrecchia, 1991; Merton, 1987). Firms reduce information asymmetry by issuing more voluntary disclosures such as earnings guidance (Coller & Yohn, 1997) or press releases (Badertscher, Shroff, & White, 2013). Consequently, issuing more voluntary disclosures allows accessing the capital markets more often, reduces the cost of capital, and improves analysts' precision (e.g., Byard & Shaw, 2003; Frankel, McNichols, & Wilson, 1995).

Third, prospectors tend to overextend their resources pursuing innovative products and often risk sacrificing short-run profitability (Hambrick, 1983; Ittner et al., 1997; Miles & Snow, 1978, 2003). Prospectors' lower profitability suggests that internal funds are insufficient to fund extensive R&D investments, increasing incentives for voluntary disclosure. Prior research finds that poorly performing firms voluntarily disclose more information because of potential litigation and/or reputational costs (e.g., Skinner, 1994; Tucker, 2010).

Finally, because prospectors focus on marketing new and a continually changing mix of products, they maximize product visibility by issuing more press releases. Prospectors' success depends on aggressive marketing efforts whereas defenders' success depends on improving operational efficiency (Hambrick, 1983; Miles & Snow, 1978, 2003). Consistent with this proposition, McDaniel and Kolari (1987) find significant differences in marketing strategies between prospectors and defenders. Based on the above, we posit that prospectors have greater incentives than defenders to issue more voluntary disclosures. Formally stated,

Hypothesis 1a (H1a): Prospectors issue more management earnings guidance than defenders.

Hypothesis 1b (H1b): Prospectors issue more press releases than defenders.

Business Strategy and External Intermediaries

We expect prospector firms to attract greater financial analyst and business press coverage than defenders for two reasons. First, they attract greater coverage because of inherent firm characteristics (e.g., growth options). Second, they attract greater coverage because advertising and promotional activities are of ''primary strategic importance'' (Miles & Snow, 2003, p. 60).

Prospectors invest heavily in R&D, to exploit new and changing product-market prospects, resulting in rapid and sporadic growth opportunities (Hambrick, 1983; Miles & Snow, 1978, 2003). On the contrary, defenders focus on stability in their existing product lines and experience more gradual and stable growth patterns (Miles & Snow, 1978, 2003). Defenders minimize R&D expenditures, investing instead in capital expenditures (e.g., property, plant, and equipment) that produce cost-efficient outputs (Hambrick, 1983; Miles & Snow, 1978, 2003).

Prior literature documents that firms with greater R&D and growth options attract more coverage by information intermediaries such as analysts (Barth et al., 2001; Lehavy et al., 2011). For example, Barth et al. (2001) find that analyst coverage and effort are greater for firms with larger R&D investments, while firms with more tangible assets (e.g., property, plant, and equipment) reduce analysts, private information acquisition. We expect that growth-oriented, R&D-intensive prospector firms attract more analysts than capital-intensive defender firms. Prospectors can also receive more business press coverage for many of the same reasons that analysts choose to follow them.

Second, prospectors emphasize promotional and marketing activities, even hiring ''its top managers from the ranks of marketing or product development'' (Miles & Snow, 2003, p. 60). Thus, prospectors' marketing efforts increase visibility, and firms that advertise more are expected to attract more analysts ''because these firms are better known'' (Chung & Jo, 1996, p. 497). Furthermore, prospectors frequently change their product offerings (Simons, 1987), which increases information intermediary coverage. Conversely, defenders emphasize promotional and product development activities less than prospectors and minimize marketing activities in favor of operational efficiency (Hambrick, 1983; McDaniel & Kolari, 1987).

We posit that prospectors attract greater coverage by analysts and the business press than defenders. Formally stated,

Hypothesis 2a (H2a): Prospectors receive greater analyst coverage than defenders.
Hypothesis 2b (H2b): Prospectors receive greater business press coverage than defenders.

Business Strategy and Information Asymmetry

The discussion above suggests that prospectors can exhibit *less* information asymmetry than defenders for several reasons. First, prospectors have incentives to provide more disclosures (e.g., to promote product visibility, to access external financing), potentially reducing information asymmetry. Second, prospectors likely attract more analyst and business press coverage, potentially reducing mispricing, uncertainty about firm value, and information asymmetry (Brennan & Subrahmanyam, 1995; Bushee et al., 2010; Thomas, 2002).

However, there are several reasons why prospectors might exhibit *greater* information asymmetry than defenders. Firms with more R&D expenditures likely have greater information asymmetry because unlike tangible assets there are no organized markets for intangible assets to obtain asset pricing information (Aboody & Lev, 2000; Barth et al., 2001). Because R&D is firm specific, observing other firms' R&D does not provide pricing information (Aboody & Lev, 2000). Also, firms with more growth options have greater information asymmetry between managers and outside investors regarding future cash flows from investment opportunities (e.g., Smith & Watts, 1992). Furthermore, prospectors have greater outcome uncertainty than defenders because they focus on new and innovative projects with a higher probability of failure (Bentley et al., 2013; Rajagopalan, 1997). Barth et al. (2001) document greater valuation uncertainty for firms with substantial intangible assets, and outsiders such as analyst are more likely to perceive these firms as mispriced. Similarly, Lev and Zarowin (1999) find that firms with substantial intangible investments have less informative earnings, while Kothari, Shu, and Wysocki (2009) indicate that ''[i]nvestors in technology firms may face greater information asymmetry given the uncertainty about future technologies'' (p. 256).

Offsetting the incentives to reduce information asymmetry is the proprietary cost hypothesis (Verrecchia, 1983), which suggests that firms with high proprietary costs are less likely to disclose proprietary information. Organizational theory is silent on whether prospectors or defenders are more likely to withhold proprietary information because both benefit from withholding proprietary information from competitors. For example, prospectors are more selective about disclosing R&D activities, while defenders are more selective about disclosing proprietary technology that increases operational efficiency (Coeurderoy & Durand, 2004; Miller, 1992; Shapiro, 1989). Prospectors benefit the most from market share when leveraging proprietary technologies that competitors cannot imitate.

> As long as they [early movers/innovators] keep undisclosed the sources of their innovation, they are protected from entries by imitators . . . [where] in the case of quick and easy imitation, followers can benefit from the pioneers' incurred costs and enter more efficiently.'' (Coeurderoy & Durand, 2004, p. 584)

Defenders increase competitors' barriers to entry by keeping their proprietary technology undisclosed (Miller, 1992; Porter, 1980).

In a similar vein, ''disclosure theory . . . predicts managers will withhold bad news if there is uncertainty about managers' endowment of information'' (Chen, Matsumoto, & Rajgopal, 2011, p. 149). Consistent with these predictions, Chen et al. (2011, p. 149) find that firms stop providing guidance when they ''experience poor prior performance, increases in uncertainty, and decreases in informed investors.'' Based on these characteristics, prospectors would be more likely to withhold bad news because they are prone to poor performance and experience greater uncertainty. However, research provides mixed evidence on whether such ''silence is golden.'' For example, Kasznik and Lev (1995) find that firms that warn investors of earnings shortfalls experience lower returns than firms that withhold the bad news. However, Tucker (2007) finds opposite results after controlling for self-selection bias. Tucker (2010) finds that firms withholding bad news experience decreased analyst coverage. Thus, it is unclear ex ante whether either prospectors or defenders have greater incentives for withholding news.

The association between firms' business strategies and their information environments depends on the interactions between the need to protect the underlying advantages of their

chosen strategy, as well as the effects of their voluntary disclosure choices and coverage by external intermediaries. Thus, the effect of business strategy on firms' information asymmetry is an empirical issue. We state our third hypothesis in the null:

Hypothesis 3 (H3): The information asymmetry associated with prospectors' information environments is no different than defenders.

Research Design

Business Strategy Measure

We measure firms' business strategies using six ratios, detailed below, representing the different dimensions of Miles and Snow's (1978, 2003) business strategy typology following Bentley et al. (2013). The *ratio of R&D to sales* (*RDS5*) represents a firm's pursuit of new products and is expected to be greater for prospectors that invest extensively in R&D to locate and develop new product-market opportunities. The *ratio of selling, general and administrative expenses to sales* (*SGA5*) represents a firm's exploitation of new product-market opportunities and is expected to be greater for prospectors due to their significant investment in marketing activities. The *annual percentage change in total sales* (*REV5*) represents a firm's investment opportunities and is expected to be greater for prospectors who display rapid and sporadic growth patterns as new product-market opportunities become viable. The *ratio of the number of employees to sales* (*EMPS5*) represents a firm's production and distribution efficiency and is expected to be greater for prospectors who do not achieve maximum production efficiency because of their innovation focus. The *ratio of net property, plant and equipment to assets* (*CAP5*) represents a firm's capital/technological efficiency and is expected to be *lower* for prospectors because they have a low degree of capital intensity to maintain flexibility in their continually changing production lines. The *standard deviation of the total number of employees* (σ(*EMP5*)) represents a firm's managerial stability and is expected to be higher for prospectors because their management tenure is shorter and managers are often hired from outside the firm.

Consistent with prior research (e.g., Bentley et al., 2013; Ittner et al., 1997), we compute these measures using a rolling 5-year average. We rank each measure within each industry, and we combine the six ranked measures for each firm. Firms with higher (lower) *STRATEGY* scores represent prospector firms (defender firms).[3] Evidence from several studies validates using *STRATEGY* as a proxy for firms' business strategies.[4] We obtained similar results applying a factor analysis instead of the ranked measure (untabulated).[5]

Regression Models

Business strategy and voluntary disclosures. To examine the association between firms' business strategies and the frequency of voluntary disclosures (e.g., management earnings guidance issuance and press release issuance), we estimate Equation 1 below.

$$DISCLOSURE\_PROXY = \alpha + \beta_1 STRATEGY + \sum CONTROLS + \varepsilon. \quad (1)$$

Our first *DISCLOSURE_PROXY* is management earnings guidance frequency (*MGMT_FREQUENCY*), measured as the number of annual forecasts issued by the firm

during the year. We obtain management earnings guidance data from First Call's Company Issued Guidance database. We include all management forecasts of annual earnings per share. A positive and significant β_1 indicates a positive association between prospector firms and the number of management earnings guidance (H1a).

For our second *DISCLOSURE_PROXY*, we examine the association between business strategy and the number of firm-issued press releases during the year (*PRESS_RELEASES*) (Badertscher et al., 2013). We obtain press release data from RavenPack. A positive and significant β_1 indicates a positive association between prospectors and the number of press releases (H1b).

We estimate Equation 1 using negative binomial regression because we measure both *MGMT_FREQUENCY* and *PRESS_RELEASES* as count variables, and untabulated analyses indicate overdispersion for these variables. Negative binomial model coefficients are incident rate ratios (IRRs) that represent the ratio of expected counts with an increase in the variable of interest. Thus, larger coefficients (IRRs) indicate more management forecasts and press releases.

Business strategy and external intermediaries. To examine the association between firms' business strategies and their coverage by external intermediaries, we estimate Equation 2 below.

$$INTERMEDIARY\_PROXY = \alpha + \beta_1 STRATEGY + \sum CONTROLS + \varepsilon. \quad (2)$$

Our first *INTERMEDIARY_PROXY* is analyst following (*ANALYST_FOLLOW*), defined as the number of analysts following the firm. We obtain analyst data from the Institutional Brokers' Estimate System (I/B/E/S) database. A positive and significant β_1 in the *ANALYST_FOLLOW* regression would indicate a positive association between prospectors and analyst following (H2a).

Our second *INTERMEDIARY_PROXY* is business press coverage (*PRESS_COVERAGE*). Our sample of business press articles comes from RavenPack and consists of all *Dow Jones Newswire* and *Wall Street Journal* articles written about the firm (Drake et al., 2014). We define *PRESS_COVERAGE* as the number of days during the year the firm had at least one article written about it in the Dow Jones news archives.[6] A positive and significant β_1 indicates a positive association between prospectors and coverage in the business press (H2b). We also estimate Equation 2 using a negative binomial regression because both *ANALYST_FOLLOW* and *PRESS_COVERAGE* are count variables, and untabulated analysis suggests overdispersion.

Business strategy and information asymmetry. To investigate the association between firms' business strategies and information asymmetry (H3), we use three frequent proxies for information asymmetry. These proxies are bid-ask spreads (e.g., Bushee et al., 2010; Coller & Yohn, 1997), analyst forecast dispersion (e.g., Barron & Stuerke, 1998; Zhang, 2006), and analyst forecast accuracy (e.g., Clement, Rees, & Swanson, 2003; Lang, Lins, & Miller, 2003). We estimate the following ordinary least squares (OLS) regression with standard errors clustered by firm for each measure of information asymmetry:

$$INFO\_ASYM\_PROXY = \alpha + \beta_1 STRATEGY + \sum CONTROLS + \varepsilon. \quad (3)$$

Our first *INFO_ASYM_PROXY* is bid-ask spread (*SPREAD*). Following Chung and Zhang (2014), *SPREAD* is the average daily spread during the fiscal year. We calculate daily spreads by subtracting the bid price from the asking price, dividing this by the mean of the two, and multiplying by 100. The second *INFO_ASYM_PROXY* is the dispersion of analyst forecasts (*DISPERSION*). *DISPERSION* is the standard deviation of the individual forecasts comprising the most recent analyst forecast of annual earnings occurring before the end of the fiscal year. Finally, our third *INFO_ASYM_PROXY* is analyst forecast accuracy (*ACCURACY*), which is the absolute value of the difference between reported annual earnings and the mean consensus analyst forecast before the end of the fiscal year, scaled by stock price as of two days before the forecast and multiplied by −100. A positive (negative) and significant β_1 in the *SPREAD* and *DISPERSION* regressions and a negative (positive) and significant β_1 in the *ACCURACY* regression indicate greater (lesser) information asymmetry for prospectors than defenders.

Controls. We estimate Equations 1, 2, and 3 including controls for firm characteristics that likely affect information environments. We control for cash flow volatility, size, performance, growth opportunities, and leverage (e.g., Aboody & Lev, 2000; Barth et al., 2001; Diamond & Verrecchia, 1991; Jayaraman, 2008; Smith & Watts, 1992; Wang, 1993). To reduce the likelihood that financing issues influence our results, we control for ex ante financing needs and free cash flow (e.g., Dechow, Sloan, & Sweeney, 1996; Erickson, Hanlon, & Maydew, 2006). We control for whether the firm has a Big N auditor as recent research finds that the external auditor affects management's voluntary disclosures and investors' activities (Blau, Brough, Smith, & Stephens, 2013; Schroeder, 2016). We also control for institutional ownership because of positive associations between institutional ownership and R&D, growth firms (e.g., Wahal & McConnell, 2000), analyst following, and other disclosure mechanisms (e.g., Bushee & Noe, 2000). Finally, prior research finds associations between innovation-related proxies such as R&D intensity and sales growth and the information environment (e.g., Allee, Badertscher, & Yohn, 2015; Lang et al., 2003). While both R&D and sales growth serve as inputs into the *STRATEGY* measure, we explicitly test whether *STRATEGY* provides incremental contribution above these firm characteristics by estimating all our models both with and without these controls. We also include industry and year fixed effects in our models. All variables are defined in the appendix.

Data

We present our sample selection 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 nonmissing historical Standard Industrial Classification (SIC) codes. We then delete utilities and financial industries (SIC 4900-4999 and 6000-6999) because of regulations in these industries. All data used to construct *STRATEGY* requires a 5-year rolling average. This leaves us with a sample of 44,754 firm-year observations during our sample period of 1997 to 2009 with sufficient data to calculate *STRATEGY*.

Because several of our tests rely on analyst forecast data, we require actual earnings and a consensus analyst forecast issued within 90 days before the end of the fiscal year from I/B/E/S. We also require at least three analysts following the firm to measure analyst forecast dispersion. Next, we eliminate observations with missing data from Compustat or The Center for Research in Security Prices (CRSP) or a stock price lower than US$2.00 to

Table 1. Sample Selection and Industry Composition.

Panel A: Sample selection.

Description	Observations
Firm-years between 1997 and 2009 with sufficient Compustat data necessary to calculate the strategy 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 without necessary Compustat/CRSP data	(1,920)
Firm-years not found in First Call	(1,602)
Final sample	15,005

Panel B: Industry composition.

	Full sample		Prospectors		Defenders	
Industry	(*n* = 15,005)		(*n* = 1,122)		(*n* = 582)	
Consumer nondurables	1,128	7.5%	34	3.0%	19	3.3%
Consumer durables	520	3.5%	13	1.2%	18	3.1%
Manufacturing	2,302	15.3%	208	18.5%	127	21.8%
Energy	960	6.4%	61	5.4%	48	8.2%
Chemicals	576	3.8%	3	0.3%	130	22.3%
Business equipment	3,684	24.6%	297	26.5%	47	8.1%
Telecom	380	2.5%	19	1.7%	24	4.1%
Wholesale and retail	2,346	15.6%	147	13.1%	28	4.8%
Health care	1,478	9.9%	264	23.5%	20	3.4%
Other	1,631	10.9%	76	6.8%	121	20.8%

Note. Industry groupings are based on the Fama and French 12-industry classification scheme. I/B/E/S = Institutional Brokers' Estimate System; CRSP = The Center for Research in Security Prices.

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 both by First Call and I/B/E/S (Ajinkya, Bhojraj, & Sengupta, 2005). The final sample consists of 15,005 firm-year observations from 1997 to 2009.[7] The sample selection process is detailed in Panel A of Table 1, while Panel B presents the composition of the final sample of industries.[8]

Results

Descriptive Statistics and Univariate Tests

Table 2 presents descriptive statistics for the overall sample of observations (n = 15,005), as well as for prospectors (n = 1,122) and defenders (n = 582). *STRATEGY* is a discrete scale measure from 6 to 30 with higher (lower) scores indicating prospector (defender) firms.[9] We observe firm-level characteristics of prospectors and defenders consistent with prior research (e.g., Bentley et al., 2013; Hambrick, 1983; Miles & Snow, 1978, 2003).

Table 2. Descriptive Statistics and Univariate Tests.

	Full sample					Prospectors		Defenders	
	(*n* = 15,005)					(*n* = 1,122)		(*n* = 582)	
Variable	Mean	Median	*SD*	First quartile	Third quartile	Mean	Median	Mean	Median
STRATEGY	18.471	18.000	3.418	16.000	21.000	**25.121**	**25.000**	**11.127**	**11.000**
MGMT_FREQUENCY	1.527	0.000	2.282	0.000	3.000	**1.330**	**0.000**	**1.066**	**0.000**
PRESS_RELEASES	81.862	44.000	133.349	24.000	80.000	**73.727**	**46.000**	**53.539**	**38.000**
ANALYST_FOLLOW	9.750	8.000	6.636	5.000	13.000	**9.486**	**7.000**	**7.005**	**6.000**
PRESS_COVERAGE	45.486	36.000	38.744	20.000	60.000	**44.538**	35.000	**40.347**	33.000
SPREAD	0.723	0.297	0.921	0.126	0.982	**0.678**	**0.295**	**0.984**	**0.394**
DISPERSION	0.048	0.020	0.076	0.010	0.050	**0.045**	**0.020**	**0.067**	**0.040**
ACCURACY	−0.572	−0.166	1.333	−0.468	−0.056	−0.661	**−0.175**	−0.751	**−0.281**
CF_VOL	0.048	0.039	0.035	0.026	0.057	0.054	0.039	0.051	0.041
LN_ASSETS	7.008	6.888	1.589	5.871	8.012	**6.465**	**6.376**	**6.944**	**6.888**
LOSS	0.335	0.000	0.472	0.000	1.000	**0.572**	**1.000**	**0.354**	**0.000**
ROA	0.037	0.052	0.108	0.013	0.090	**−0.025**	**0.027**	**0.033**	**0.043**
BTM	0.487	0.408	0.366	0.251	0.628	**0.421**	**0.339**	**0.552**	**0.481**
LEVERAGE	0.221	0.200	0.203	0.038	0.335	**0.212**	**0.173**	**0.322**	**0.290**
EXT_FINANCE	0.029	0.000	0.167	0.000	0.000	0.052	0.000	0.043	0.000
FREE_CASH	0.150	0.141	0.319	0.019	0.281	**0.053**	**0.074**	**0.183**	**0.135**
BIG_N	0.935	1.000	0.246	1.000	1.000	**0.918**	1.000	**0.944**	1.000
INSTIT_OWN	0.636	0.702	0.283	0.497	0.846	**0.579**	**0.652**	**0.639**	**0.726**
HORIZON	13.798	14.000	2.009	12.000	15.000	13.838	14.000	13.833	14.000
SALES_GROWTH	0.129	0.093	0.258	0.003	0.207	**0.229**	**0.149**	**0.073**	**0.050**
R&D_INTENSITY	0.053	0.005	0.096	0.000	0.068	**0.143**	**0.083**	**0.010**	**0.000**

Note. See the appendix for variable definitions. Means and medians presented in bold indicates a significant difference at the $\alpha = .05$ level, using a two-tailed *t* test of means and Wilcoxon's test of medians.

Prospectors are less profitable (*LOSS, ROA*), more growth oriented (*BTM; SALES_GROWTH*), and have greater R&D expenditures (*R&D_INTENSITY*) compared to defenders. Univariate tests indicate that voluntary disclosure and external intermediary coverage differ significantly across strategies consistent with our hypotheses. Prospectors issue more management guidance and press releases, have more analyst following, and receive greater press coverage compared with defenders ($p < .05$). We also find that prospectors have lower bid-ask spreads (*SPREAD*) and analyst forecast dispersion (*DISPERSION*) than defenders ($p < .05$), as well as greater analyst forecast accuracy (*ACCURACY*) than defenders (only the median value is significant at $p < .05$).

Table 3 presents correlations. We find positive associations between *STRATEGY* and *MGMT_FREQUENCY, PRESS_RELEASES*, and *ANALYST_FOLLOW*; all significant at the 5% level. *STRATEGY* is negatively correlated with *SPREAD* and *DISPERSION* and positively correlated with *ACCURACY*, suggesting that prospector firms have less information asymmetry than defender firms.

Multivariate Regressions

The results from estimating Equations 1, 2, and 3 are presented in Tables 4, 5, and 6 respectively. We present the results first omitting and then including firm innovation

Table 3. Correlation Matrix.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. *STRATEGY*		**.03**	**.02**	**.08**	.00	**−.05**	**−.10**	.01	**.03**	**−.08**	**.13**	**−.14**	**−.07**	**−.11**	**.01**	**−.07**	−.02	**−.04**	−.01	**.12**	**.33**
2. *MGMT_FREQUENCY*	**.03**		**.13**	**.10**	**.15**	**−.26**	**−.16**	**.13**	**−.10**	**.22**	**−.20**	**.14**	**−.07**	.00	**−.09**	**.14**	**.03**	**.18**	**−.02**	**−.03**	**−.09**
3. *PRESS_RELEASES*	**.05**	**.13**		**.41**	**.70**	**−.16**	**.02**	**.05**	**−.04**	**.50**	**−.03**	**.05**	**−.11**	.01	**−.03**	**.09**	**.09**	−.01	**.03**	**−.03**	**.07**
4. *ANALYST_FOLLOW*	**.09**	**.12**	**.39**		**.45**	**−.21**	**.02**	**.16**	**−.10**	**.61**	**−.12**	**.15**	**−.22**	**−.03**	**−.02**	**.16**	**.16**	**.07**	**.02**	**.04**	**.05**
5. *PRESS_COVERAGE*	.00	**.14**	**.71**	**.40**		**−.24**	**.11**	**.06**	**−.10**	**.54**	**−.12**	**.11**	**−.15**	**.04**	**−.03**	**.12**	**.09**	**.09**	**.02**	**.03**	.01
6. *SPREAD*	**−.04**	**−.28**	**−.40**	**−.34**	**−.43**		**.05**	**−.17**	−.01	**−.25**	**.08**	**−.09**	**.22**	**.16**	**.13**	**−.22**	**.03**	**−.35**	.00	−.01	**−.11**
7. *DISPERSION*	**−.13**	**−.21**	**.06**	.01	**.11**	**.05**		**−.34**	**−.03**	**.18**	**.11**	**−.14**	**.14**	**.18**	**.10**	**−.05**	**.03**	**−.03**	.00	−.01	**−.08**
8. *ACCURACY*	**.05**	**.22**	**.05**	**.27**	**.10**	**−.19**	**−.37**		**−.11**	**.11**	**−.29**	**.35**	**−.24**	**−.17**	**−.13**	**.22**	**.03**	**.11**	−.01	**.09**	**−.03**
9. *CF_VOL*	−.01	**−.09**	**−.04**	**−.08**	**−.10**	**−.02**	**−.08**	**−.11**		**−.33**	**.22**	**−.17**	**−.10**	**−.19**	**.08**	**−.11**	**−.09**	**−.04**	−.01	**−.14**	**.29**
10. *LN_ASSETS*	**−.08**	**.19**	**.50**	**.62**	**.48**	**−.35**	**.19**	**.18**	**−.33**		**−.17**	**.13**	**−.03**	**.27**	**−.07**	**.19**	**.25**	**.12**	.01	**−.10**	**−.22**
11. *LOSS*	**.12**	**−.21**	**.03**	**−.13**	**−.12**	**.13**	**.10**	**−.31**	**.16**	**−.16**		**−.55**	**.16**	**.09**	**.15**	**−.33**	**−.04**	**−.11**	−.01	**−.05**	**.31**
12. *ROA*	**−.07**	**.15**	**−.03**	**.17**	**.13**	**−.19**	**−.18**	**.36**	**.08**	**.05**	**−.59**		**−.24**	**−.18**	**−.24**	**.45**	**.03**	**.12**	**.06**	**.17**	**−.38**
13. *BTM*	**−.08**	**−.07**	**−.11**	**−.24**	**−.17**	**.18**	**.18**	**−.30**	**−.14**	**−.03**	**.12**	**−.41**		−.01	**.04**	**−.21**	**−.03**	**−.04**	**−.05**	**−.16**	**−.13**
14. *LEVERAGE*	**−.12**	**.03**	**.10**	**.04**	**.10**	**.13**	**.24**	**−.11**	**−.34**	**.37**	**.05**	**−.26**	**.05**		**.16**	**−.07**	**.08**	**−.05**	−.01	**−.03**	**−.21**
15. *EXT_FINANCE*	.01	**−.10**	**−.03**	**−.02**	**−.03**	**.10**	**.12**	**−.11**	**.03**	**−.07**	**.15**	**−.18**	.02	**.13**		**−.54**	**−.04**	**−.09**	.01	**.04**	**.10**
16. *FREE_CASH*	**−.04**	**.20**	**.08**	**.21**	**.17**	**−.28**	**−.13**	**.29**	**−.04**	**.21**	**−.38**	**.56**	**−.30**	**−.05**	**−.29**		**.04**	**.13**	.01	**.14**	**−.19**
17. *BIG_N*	**−.02**	**.03**	**.10**	**.18**	**.08**	**−.02**	**.03**	**.07**	**−.07**	**.25**	**−.04**	**.02**	**−.03**	**.09**	**−.04**	**.05**		**.06**	.00	**−.05**	**−.02**
18. *INSTIT_OWN*	**−.03**	**.19**	**.13**	**.15**	**.16**	**−.46**	**−.03**	**.11**	.00	**.15**	**−.09**	**.08**	−.01	**−.03**	**−.09**	**.15**	**.07**		−.01	**−.04**	**−.02**
19. *HORIZON*	−.01	**−.02**	**.07**	**.02**	**.03**	**−.09**	**.01**	**−.03**	**−.02**	.01	−.01	**.05**	**−.06**	−.01	.01	.00	.00	.00		**.09**	.00
20. *SALES_GROWTH*	**.11**	−.01	**−.02**	**.06**	**.07**	**−.06**	**−.10**	**.14**	**−.16**	**−.11**	**−.12**	**.26**	**−.22**	**−.08**	.00	**.19**	**−.04**	.00	**.10**		**.02**
21. *R&D_INTENSITY*	**.26**	**−.03**	**.15**	**.03**	**.02**	**−.11**	**−.15**	**.04**	**.15**	**−.16**	**.21**	**−.09**	**−.19**	**−.31**	**−.04**	**−.10**	−.01	−.01	.00	.01	

Note. 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 (values above diagonal are from Pearson test and values below diagonal are from Spearman test).

Table 4. Negative Binomial Regression Results for Business Strategy and Voluntary Disclosures (H1).

Variable	*MGMT_FREQUENCY*		*PRESS_RELEASES*	
INTERCEPT	−3.199***	−3.155***	1.077***	1.075***
	(.001)	(.001)	(.001)	(.001)
STRATEGY	**0.019*** **	**0.031*** **	**0.014*** **	**0.010***
	(.007)	**(.001)**	**(.005)**	**(.051)**
CF_VOL	−2.943***	−2.643***	3.226***	3.139***
	(.001)	(.001)	(.001)	(.001)
LN_ASSETS	0.154***	0.153***	0.476***	0.477***
	(.001)	(.001)	(.001)	(.001)
LOSS	−0.388***	−0.354***	0.210***	0.204***
	(.001)	(.001)	(.001)	(.001)
ROA	1.172***	0.706***	−0.682***	−0.573***
	(.001)	(.006)	(.001)	(.001)
BTM	−0.111*	−0.199***	−0.422***	−0.403***
	(.072)	(.001)	(.001)	(.001)
LEVERAGE	0.124	0.017	−0.303***	−0.280***
	(.364)	(.898)	(.001)	(.002)
EXT_FINANCE	−0.427**	−0.360**	−0.017	−0.038
	(.015)	(.040)	(.853)	(.690)
FREE_CASH	0.148*	0.148*	0.041	0.037
	(.087)	(.088)	(.516)	(.571)
BIG_N	0.022	0.045	−0.208***	−0.212***
	(.810)	(.616)	(.001)	(.001)
INSTIT_OWN	0.272***	0.284***	−0.010	−0.014
	(.002)	(.001)	(.886)	(.846)
SALES_GROWTH		−0.128*		0.047
		(.084)		(.494)
R&D_INTENSITY		−2.174***		0.518**
		(.001)		(.024)
Industry fixed effects	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included
Number of observations	15,005	15,005	11,036	11,036

Note. Table entries are estimates with two-tailed *p* values in parentheses. 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, Ormazabal, & Taylor, 2010; Petersen, 2009). Industry and year fixed effects are also included in the model (coefficients not reported). See the appendix for variable definitions. Bold-faced items are variables of interest.

*, **, and *** indicate statistical significance at the .10, .05, and .01 levels, respectively.

controls for sales growth (*SALES_GROWTH*) and R&D intensity (*R&D_INTENSITY*) because of their association with the components of *STRATEGY*. However, results including these variables support the incremental explanatory power of *STRATEGY* over firms' characteristics that prior research indicates affect firms' information environments.

Business strategy and voluntary disclosures. Table 4 presents the results for the frequency of firms' voluntary disclosures. The first two columns examine the association between business strategy and the frequency of management earnings guidance (*MGMT_FREQUENCY*).

The coefficients on *STRATEGY* are positive and significant ($p < .01$) in both columns. These results indicate that firms with higher strategy scores issue more guidance than firms with lower strategy scores. An economic interpretation of the *STRATEGY* coefficient indicates that the rate of issuing management guidance increases by a factor of 12.38 at the cutoff for prospectors and defenders.[10] Semipartial correlations indicate that *STRATEGY* provides a greater model contribution than the R&D intensity and sales growth proxies. Collectively, these results provide support for H1a.

The last two columns of Table 4 examine the association between business strategy and the number of firm press releases (*PRESS_RELEASES*). The coefficient on *STRATEGY* is positive and significant ($p < .01$) in the third column and significant ($p < .10$) in the fourth column, after controlling for firms' R&D intensity and sales growth. The coefficient on *STRATEGY* indicates that the rate of press releases increases by a factor of 12.12 for prospectors compared with defenders. These results suggest that prospectors issue more press releases than defenders, consistent with H1b. Untabulated results suggest that *STRATEGY* contributes significantly to the explanatory power of both the management guidance and press release models ($p < .01$).

Business strategy and external intermediaries. Table 5 presents the results for coverage by external intermediaries. The first two columns examine the association between business strategy and the number of analysts following the firm (*ANALYST_FOLLOW*). The coefficients on *STRATEGY* are positive and significant ($p < .01$) in both columns, indicating that prospectors have greater analyst following than defenders. Untabulated results suggest that *STRATEGY* contributes to the explanatory power of these models ($p < .01$). Hence, we find evidence in support of H2a.

The last two columns in Table 5 examine the association between business strategy and the press coverage firms receive (*PRESS_COVERAGE*). The coefficient on *STRATEGY* is positive and significant ($p < .05$) in the third column but not significant in the fourth column after controlling for firms' sales growth and R&D intensity. Thus, we find limited support for H2b.

Business strategy and information asymmetry. Table 6 presents results from estimating Equation 3. The first two columns present results for the bid-ask spread models (*SPREAD*). The *STRATEGY* coefficients are negative and significant ($p < .01$) in both columns, indicating that prospectors have lower bid-ask spreads than defenders. Economically, the coefficient on *STRATEGY* indicates that prospectors have an average daily bid-ask spread that is about 10.8% lower than defenders.[11]

The third and fourth columns in Table 6 provide results for our analyst forecast dispersion model (*DISPERSION*). The *STRATEGY* coefficients are negative and significant ($p < .01$) in both columns, indicating that prospectors have lower analyst forecast dispersion than defenders. Further, semipartial correlations reveal that business strategy provides a greater contribution than the R&D intensity and sales growth proxies.

The last two columns in Table 6 provide results for our analyst forecast accuracy model (*ACCURACY*). The *STRATEGY* coefficients are positive and significant at the $p < .01$ and $p < .05$ levels (in the fifth and sixth columns, respectively). These results indicate that prospectors have higher analyst forecast accuracy than defenders. Untabulated results suggest that *STRATEGY* contributes significantly to the explanatory power of the *SPREAD* and *DISPERSION* models ($p < .01$) and contributes marginally to the *ACCURACY* model ($p < .10$).

Table 5. Negative Binomial Regression Results for Business Strategy and External Intermediaries (H2).

Variable	*ANALYST_FOLLOW*		*PRESS_COVERAGE*	
INTERCEPT	0.179***	0.157**	2.055***	2.044***
	(.008)	(.019)	(.001)	(.001)
STRATEGY	**0.019*** **	**0.013*** **	**0.007** **	**0.002**
	(.001)	**(.001)**	**(.046)**	**(.515)**
CF_VOL	0.944***	0.833***	0.443	0.650**
	(.001)	(.001)	(.162)	(.044)
LN_ASSETS	0.278***	0.280***	0.279***	0.285***
	(.001)	(.001)	(.001)	(.001)
LOSS	0.004	−0.010	0.007	−0.004
	(.784)	(.477)	(.743)	(.851)
ROA	0.107	0.310***	−0.214**	−0.196*
	(.122)	(.001)	(.023)	(.058)
BTM	−0.334***	−0.300***	−0.378***	−0.352***
	(.001)	(.001)	(.001)	(.001)
LEVERAGE	−0.481***	−0.434***	−0.306***	−0.290***
	(.001)	(.001)	(.001)	(.001)
EXT_FINANCE	0.204***	0.166***	0.053	0.009
	(.001)	(.001)	(.469)	(.905)
FREE_CASH	0.052**	0.040	0.015	−0.014
	(.033)	(.106)	(.697)	(.704)
BIG_N	0.060**	0.049*	−0.129***	−0.126***
	(.039)	(.087)	(.004)	(.005)
INSTIT_OWN	0.170***	0.168***	0.092*	0.091*
	(.001)	(.001)	(.071)	(.075)
SALES_GROWTH		0.073***		0.226***
		(.001)		(.001)
R&D_INTENSITY		0.840***		0.344**
		(.001)		(.013)
Industry fixed effects	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included
Number of observations	15,005	15,005	11,036	11,036

Note. Table entries are estimates with two-tailed *p* values in parentheses. 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. Bold-faced items are variables of interest.
*, **, and *** indicate statistical significance at the .10, .05, and .01 levels, respectively.

Altogether, results in Table 6 suggest that prospectors have lower levels of information asymmetry than defenders, thus rejecting H3. We conclude that business strategy affects firms' information asymmetry after controlling for other factors that prior research finds to be associated with information asymmetry.

Additional Analysis

Results in Table 6 suggest that prospectors have less information asymmetry than defenders despite prospectors having attributes associated with greater information asymmetry (e.g.,

Table 6. OLS Regression Results for Business Strategy and Information Asymmetry (H3).

Variable	*SPREAD*		*DISPERSION*		*ACCURACY*	
INTERCEPT	2.381***	2.424***	0.015	0.012	−0.631***	−0.631***
	(.001)	(.001)	(.127)	(.204)	(.001)	(.001)
STRATEGY	**−0.014*** **	**−0.009*** **	**−0.002*** **	**−0.002*** **	**0.013*** **	**0.008** **
	(.001)	**(.001)**	**(.001)**	**(.001)**	**(.001)**	**(.031)**
CF_VOL	1.156***	1.145***	0.075***	0.083***	−2.406***	−2.647***
	(.001)	(.001)	(.002)	(.001)	(.001)	(.001)
LN_ASSETS	−0.117***	−0.121***	0.007***	0.007***	0.072***	0.073***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
LOSS	0.044**	0.057***	0.010***	0.010***	−0.315***	−0.324***
	(.011)	(.001)	(.001)	(.001)	(.001)	(.001)
ROA	0.084	−0.071	−0.066***	−0.061***	2.206***	2.449***
	(.235)	(.358)	(.001)	(.001)	(.001)	(.001)
BTM	0.483***	0.449***	0.017***	0.019***	−0.548***	−0.519***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
LEVERAGE	0.606***	0.569***	0.016***	0.017***	−0.827***	−0.778***
	(.001)	(.001)	(.002)	(.001)	(.001)	(.001)
EXT_FINANCE	0.097	0.151**	0.007	0.003	−0.050	−0.082
	(.111)	(.013)	(.351)	(.631)	(.683)	(.506)
FREE_CASH	−0.097***	−0.076***	0.004	0.002	0.102*	0.102*
	(.001)	(.001)	(.418)	(.638)	(.053)	(.057)
BIG_N	0.031	0.037	0.003	0.003	−0.025	−0.040
	(.242)	(.159)	(.294)	(.309)	(.606)	(.422)
INSTIT_OWN	−0.273***	−0.272***	−0.006	−0.006	0.320***	0.317***
	(.001)	(.001)	(.119)	(.122)	(.001)	(.001)
HORIZON			0.000	0.000	−0.013***	−0.013***
			(.186)	(.291)	(.010)	(.007)
SALES_GROWTH		−0.143***		0.011***		0.010
		(.001)		(.002)		(.857)
R&D_INTENSITY		−0.721***		0.030***		0.909***
		(.001)		(.009)		(.001)
Industry fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Number of observations	15,005	15,005	15,005	15,005	15,005	15,005
Adjusted R^2	61.5%	61.9%	18.0%	18.2%	19.6%	19.8%

Note. Table entries are estimates with two-tailed *p* values in parentheses. All continuous variables are winsorized at the first and 99th percentiles. Models were estimated using White's (1980) heteroscedasticity robust standard errors clustered by firm. See appendix for variable definitions. Bold-faced items are variables of interest. OLS = ordinary least squares.

*, **, and *** indicate significance at the .10, .05, and .01 levels, respectively.

R&D, growth options). We suggest these results relate to prospectors' greater access to both internal and external sources of disclosures compared with defenders. To test this proposition, we use structural equation modeling to determine whether disclosure mediates the negative association between firms' business strategies and information asymmetry.[12] We test the association between *STRATEGY* and each of the information asymmetry proxies while including firm disclosure as a mediating variable.[13] *DISCLOSURE* is a factor score using two disclosure variables, *MGMT_FREQUENCY* and *ANALYST_FOLLOW*, representing voluntary disclosure and external intermediary coverage, respectively.[14]

Panel A of Table 7 presents the mediation results for the *SPREAD* model: *STRATEGY* is a positive determinant of disclosure ($p < .01$), and disclosure is a negative determinant of bid-ask spreads ($p < .01$). The indirect effect is −0.003 ($p < .01$) and is 98.5% of the total effect, while the direct effect of *STRATEGY* on spreads is not significant. These results suggest that firm disclosure *fully* mediates the association between firm strategy and bid-ask spreads. Panel B of Table 7 presents the mediation results for the *DISPERSION* model: *STRATEGY* is a positive determinant of disclosure ($p < .01$), and disclosure is a negative determinant of forecast dispersion ($p < .01$). The indirect (direct) effect is −0.0004 (–0.0015) and is 22.1% (77.9%) of the total effect (all effects significant at $p < .01$). Finally, Panel C of Table 7 presents the mediation results for the *ACCURACY* model: *STRATEGY* is a positive determinant of disclosure ($p < .01$), and disclosure is a positive determinant of forecast accuracy ($p < .01$). The indirect (direct) effect is 0.0019 (0.0064), which is significant at $p < .01$ ($p < .05$) and is 22.4% (77.6%) of the total effect. These results suggest that disclosure partially mediates the association between strategy and analyst forecast dispersion and between firm strategy and analyst forecast accuracy.

Overall, these tests demonstrate an inverse association between business strategy and information asymmetry because of the mediating effects of firm disclosure. We find that the negative association between firm strategy and bid-ask spreads is *fully* explained by disclosure as a mediating variable. Similarly, the negative (positive) association between analyst forecast dispersion (accuracy) and firm strategy is partially explained by disclosure as a mediating variable. These results suggest that prospector firms disclose information more frequently to the market, which lowers information asymmetry. Interestingly, we find that disclosure relating to management guidance and analyst coverage serve as significant mediating variables between firm strategy and information asymmetry. However, the direct effects of *STRATEGY* and analyst forecast dispersion and accuracy are significant even after accounting for enhanced firm disclosure. These results suggest that there are other information effects influencing this association. For example, while we represent voluntary disclosure using the *frequency* that firms disclose information to the market, the *quality* of the disclosed information can also affect the association between firms' business strategies and information asymmetry.

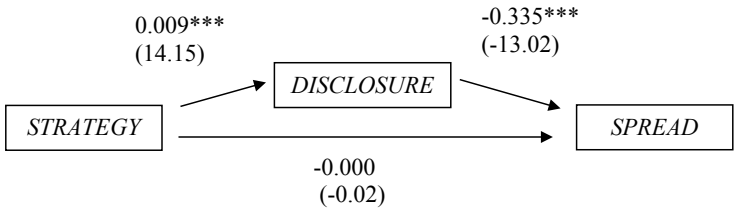
Untabulated Sensitivity Tests

We next consider several alternative explanations for our results. First, if prospectors engage in more acquisitions and new ventures than defenders and these activities generate more news, this can lead to greater analyst and press coverage. These activities can also result in more press releases and management earnings guidance. Second, prior research (e.g., Chalmers & Kadlec, 1998; Chiang & Venkatesh, 1988; Coller & Yohn, 1997) documents that bid-ask spreads are negatively related to trading volume. Because prospectors tend to have higher volume, differences in trading volume between the two groups could influence results. Finally, Matsunaga and Zhang (2013) use unexpected earnings as a proxy for proprietary costs beyond the traditional measures of R&D and market-to-book. To ensure our results do not relate to additional economic news about the firm, trading volume, or proprietary costs, we control for market-adjusted returns, share turnover, and unexpected earnings in untabulated tests, and all results hold.

Next, we test whether our strategy measure is stable over time consistent with organizational theory (e.g., Hambrick, 1983; Snow & Hambrick, 1980). Similar to Bentley et al. (2013), we find that prospectors (defenders) exhibit consistently high (low) *STRATEGY*

Table 7. Mediation Analysis for Information Asymmetry Models.

Panel A: Mediation Model for *SPREAD*.

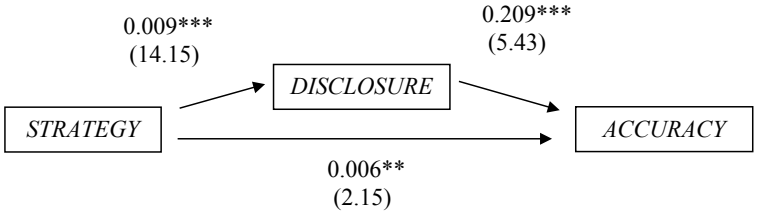


Effect of *STRATEGY* on *SPREAD*	Effect coefficient	*t* statistics	Effect percentage
Direct effect	−0.0000	−0.02	1.5%
Indirect effect	−0.0030	−9.58	98.5%
Total effect	−0.0030	−1.52	100.0%

Panel B: Mediation Model for *DISPERSION*.

Effect of *STRATEGY* on *DISPERSION*	Effect coefficient	*t* statistics	Effect percentage
Direct effect	−0.0015	−8.39	77.9%
Indirect effect	−0.0004	−11.69	22.1%
Total effect	−0.0019	−10.69	100.0%

Panel C: Mediation Model for *ACCURACY*.



Effect of *STRATEGY* on *ACCURACY*	Effect coefficient	*t* statistics	Effect percentage
Direct effect	0.0064	2.15	77.6%
Indirect effect	0.0019	5.07	22.4%
Total effect	0.0082	2.79	100.0%

Note. Panels A to C show the coefficients (*t* statistics) from structural equation modeling examining the direct and indirect association between business *STRATEGY* and each of the information asymmetry proxies (*SPREAD, DISPERSION, ACCURACY*, respectively). The *DISCLOSURE* mediation variable is a factor score of *MGMT_FREQUENCY* and *ANALYST_FOLLOW*. The information asymmetry models include the following control variables: *CF_VOL, LN_ASSETS, LOSS, ROA, BTM, LEVERAGE, EXT_FINANCE, FREE_CASH, BIG_N, INSTIT_OWN, SALES_GROWTH*, and *R&D_INTENSITY*. Refer to the appendix for variable definitions. The mediation effect tables (shown below each diagram) present the total effect of business *STRATEGY* on each of the information asymmetry proxies, divided into direct and indirect effects (via *DISCLOSURE*).

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively, based on two-tailed tests.

scores year-to-year over the sample period, with no evidence of firms switching between the two strategies. We also consider whether business strategy is a firm-level effect. Consistent with Hoi, Wu, and Zhang (2013), we average our *STRATEGY* measure over the sample period, producing one observation per firm. While our sample size is significantly reduced, our results continue to hold in this analysis. Finally, we next test whether executive turnover affects our results and find that all our results continue to hold after controlling for top executive turnover.

Conclusion

In this study, we use organizational theory to examine whether information environments vary across firms following different business strategies. First, we find evidence that innovation-oriented prospector strategy firms issue more management earnings guidance and press releases and attract greater levels of analyst coverage compared with efficiency-oriented defender strategy firms. Next, we find that prospectors have lower information asymmetry than defenders. These results suggest that prospectors' greater access to both internal and external sources of information ultimately result in decreased levels of information asymmetry compared with defenders. We provide further support for this proposition using mediation analysis.

Our research is subject to several caveats. First, while we rely on organizational theory and prior empirical research to create our business strategy measure, a limitation of our study is the extent to which measurement error leads to misclassifying some firms' business strategies. However, we rely on a strategy measure validated in prior studies, and any misclassification should add noise, rather than bias, to our tests. We are also unable to model the original decision to pursue a business strategy or to examine the effect of changes in a firm's business strategy on their information environment.

Our study makes several contributions. First, because firms' business strategies are stable over time, identifying firms' business strategies serves as a useful context for understanding the numerous interdependencies related to firms' information environments. Second, our study provides insights into how firms' strategic objectives likely minimize or encourage more frequent voluntary disclosures. Finally, by linking organizational theory to firms' disclosures and their overall information environments, we provide a framework for understanding why business strategy is an underlying determinant of firms' information environments.

Appendix

Variable	Description
ACCURACY	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 2 days before the forecast and multiplied by −100.
ANALYST_FOLLOW	The number of analysts following the firm.
BIG_N	An indicator variable set equal to 1 if the firm's financial statements are audited by a Big N auditor and 0 otherwise.
BTM	Book-to-market ratio, calculated as total common equity outstanding divided by market capitalization.
CF_VOL	Cash flow volatility, calculated as the standard deviation of the firm's cash flows from operations over the past 10 years divided by total assets.

(continued)

Appendix continued

Variable	Description
DISCLOSURE	A factor score of the following disclosure variables: *MGMT_FREQUENCY* and *ANALYST_FOLLOW*. Refer to Footnote 14 for additional explanation.
DISPERSION	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.
EXT_FINANCE	An indicator variable set equal to 1 if the firm's variable *FREE_CASH* is less than −0.5 and 0 otherwise.
FREE_CASH	Cash from operations minus average capital expenditures, scaled by current assets.
HORIZON	The number of days between the consensus analyst forecast date and the fiscal year end.
INSTIT_OWN	The number of shares held by institutional investors, scaled by total shares outstanding.
LEVERAGE	Total debt scaled by total assets.
LN_ASSETS	The natural logarithm of total assets.
LOSS	An indicator variable set equal to 1 if income before extraordinary items was negative in the prior year and 0 otherwise.
MGMT_FREQUENCY	The total number of annual earnings guidance issued by the firm for the fiscal year.
PRESS_COVERAGE	The number of days during the year that the firm had at least one article in the Dow Jones news archives.
PRESS_RELEASES	The number of press releases issued by the firm during the year.
R&D_INTENSITY	Research and development intensity, calculated as R&D expense divided by sales.
ROA	Return on assets, calculated as income before extraordinary items divided by total assets.
SALES_GROWTH	Sales growth, calculated as the yearly change in sales, divided by prior year sales.
SPREAD	The average daily bid-ask spread during the fiscal year, calculated 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.
STRATEGY	Our primary measure of business strategy calculated following Bentley, Omer, and Sharp (2013), ranging from 6 (*defender*) to 30 (*prospector*).

Authors' Note

Data are obtained from public sources except where noted.

Acknowledgments

The authors thank the editor (Bharat Sarath) and an anonymous reviewer for their helpful comments. The authors also thank Phillip Brown, Greg Clinch, Jeff Coulton, Carlin Dowling, Sigi Goode, Andrew Jackson, Todd Kravet, Brian Rountree, Baljit Sidhu, Teri Yohn, and seminar participants at the 2013 AAA Annual Meeting Conference; University of Melbourne; University of Queensland; and University of New South Wales (UNSW), Australia for helpful comments.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: K.A.B.-G is grateful to UNSW, Australia, for financial support. T.C.O acknowledges financial support from the Delmar Lienemann, Sr. Chair of Accounting at the University of Nebraska–Lincoln. B.J.T is grateful to Indiana University for financial support.

Notes

1. Business-level strategies define how firms compete within their industry and thus are the source of *intra*-industry variation in firms' strategies (Beard & Dess, 1981; Hambrick, 1983).
2. Miles and Snow (1978, 2003) identify a third viable strategy: hybrid firms labeled ''analyzers,'' which are neither as innovative as prospectors nor as efficient as defenders.
3. Consistent with Bentley, Omer, and Sharp (2013, p. 810), we reverse-scored *CAP5* such that ''observations in the lowest (highest) quintile are given a score of 5 (1) because defenders are more capital-intensive than prospectors.''
4. *STRATEGY* is shown to be a separate construct from traditional complexity, size, and risk measures using canonical correlation and redundancy index tests (Bentley-Goode, Newton, & Thompson, 2017; Bentley et al., 2013). Additional component analyses suggest that the collective *STRATEGY* measure represents a construct that is ''greater than the sum of its parts'' (see Bentley et al., 2013, p. 805). Finally, Bentley (2012) compares survey responses from executives who classify their firms' business strategies to that of the *STRATEGY* measure and finds that they are significantly correlated.
5. The advantage of a factor-based measure of strategy is that it utilizes weights on the six components based on their factor loadings rather than applying equal weights to each component. Following Bentley et al. (2013), we create the factor scores by industry-year. We find that all six raw *STRATEGY* components load on one factor (untabulated), which suggests that the six components relate to one underlying construct.
6. This approach is consistent with prior studies (Barber & Odean, 2008; Chan, 2003). We also require a RavenPack relevance score of 90 or above when calculating *PRESS_COVERAGE*.
7. In our models analyzing press coverage and press release issuance, our sample is further reduced to 11,036 firm-years because our sample period for these variables begins in 2000.
8. We note that the restrictiveness in the sample selection (e.g., CRSP, I/B/E/S, First Call) shows some unevenness in the industry proportions of prospectors and defenders. However, for *STRATEGY*, the full range of firms in Compustat is used, and we obtain industry percentages of prospectors and defenders consistent with Bentley et al. (2013) (refer to their Panel A of Table 3).
9. To better identify prospectors and defenders, we follow Bentley et al. (2013) and define firms with the highest values of *STRATEGY* as prospectors (scores $\geq$ 24) and firms at the lowest values of *STRATEGY* as defenders (scores $\leq$ 12). Analyzers are in the middle of the continuum and provide a benchmark for the two strategy extremes.
10. In interpreting the economic magnitude of the *STRATEGY* coefficient, we use the incidence rate ratio (IRR) because the models use negative binomial regressions. We then multiply the IRR by 12 which is the difference between prospectors and defenders at the cutoff on the *STRATEGY* continuum (*STRATEGY* score of 24 less 12).
11. In interpreting the economic magnitude of the *STRATEGY* coefficient, we multiply the coefficient value by 12, the difference between prospector and defender firms at the cutoff on the *STRATEGY* continuum (i.e., 24 less 12).
12. We follow the approach taken in Bentley-Goode et al. (2017) for conducting mediation tests using *STRATEGY* (they test for mediating effects between business strategy and financial restatements).

13. The three information asymmetry proxies represent unique dimensions of information asymmetry (untabulated), which is why we retain the individual measures rather than factoring them together for the mediation tests.
14. We omit the press variables (*PRESS_RELEASES, PRESS_COVERAGE*) from the *DISCLOSURE* factor for several reasons. First, the press variables constrain both the time range and the sample size significantly. Second, *PRESS_COVERAGE* does not exhibit a significant association with business strategy (Table 5), which we continue to find using structural equation modeling, and there is only a *marginal* significant association between *STRATEGY* and *PRESS_RELEASES* (Table 5). These weaker results could relate to sample size constraints; therefore, to increase the power of our tests, we omit the press variables from the *DISCLOSURE* factor in the tabulated mediation tests. However, we do find similar (but weaker) results for both the *SPREAD* and *DISPERSION* mediation models when we include press releases in the *DISCLOSURE* factor, while only the direct effect is significant in the *ACCURACY* model when we include press releases in the *DISCLOSURE* factor (untabulated).

References

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.

Allee, K. D., Badertscher, B. A., & Yohn, T. L. (2015). *Private versus public corporate ownership: Implications for future profitability* (Kelley School of Business Research Paper No. 2014-16). Retrieved from https://ssrn.com/abstract=2375916

Badertscher, B., Shroff, N., & White, H. D. (2013). Externalities of public firm presence: Evidence from private firms' investment decisions. *Journal of Financial Economics*, *109*, 682-706.

Barber, B. M., & 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.

Barron, O. E., & Stuerke, P. S. (1998). Dispersion in analysts' earnings forecasts as a measure of uncertainty. *Journal of Accounting, Auditing & Finance*, *13*, 245-270.

Barth, M. E., Kasznik, R., & McNichols, M. F. (2001). Analyst coverage and intangible assets. *Journal of Accounting Research*, *39*, 1-34.

Beard, D. W., & Dess, G. G. (1981). Corporate-level strategy, business-level strategy, and firm performance. *Academy of Management Journal*, *24*, 663-688.

Bentley, K. A. (2012). *Antecedents to financial statement misreporting: The influence of organizational business strategy, ethical culture and climate* (Doctoral dissertation). Texas A&M University, College Station.

Bentley-Goode, K. A., Newton, N. J., & Thompson, A. M. (2017). Business strategy, internal control over financial reporting, and audit reporting quality. *Auditing: A Journal of Practice & Theory*. Advance online publication. doi:10.2308/ajpt-51693

Bentley, K. A., Omer, T. C., & Sharp, N. Y. (2013). Business strategy, financial reporting irregularities, and audit effort. *Contemporary Accounting Research*, *30*, 780-817.

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting & Economics*, *50*, 296-343.

Blau, B. M., Brough, T. J., Smith, J. L., & Stephens, N. M. (2013). An examination of short-selling activity surrounding auditor changes. *Journal of Accounting, Auditing & Finance*, *28*, 348-368.

Brennan, M. J., & Subrahmanyam, A. (1995). Investment analysis and price formation in securities markets. *Journal of Financial Economics*, *38*, 361-381.

Bushee, B. J., Core, J. E., Guay, W., & Hamm, S. J. W. (2010). The role of the business press as an information intermediary. *Journal of Accounting Research*, *48*, 1-19.

Bushee, B. J., & Noe, C. F. (2000). Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research*, *38*(Suppl.), 171-202.

Byard, D., & Shaw, K. W. (2003). Corporate disclosure quality and properties of analysts' information environment. *Journal of Accounting, Auditing & Finance*, *18*, 355-378.

Chalmers, J. M. R., & Kadlec, G. B. (1998). An empirical examination of the amortized spread. *Journal of Financial Economics*, *48*, 159-188.

Chan, W. S. (2003). Stock price reaction to news and no-news: Drift and reversal after headlines. *Journal of Financial Economics*, *70*, 223-260.

Chen, S., Matsumoto, D., & Rajgopal, S. (2011). Is silence golden? An empirical analysis of firms that stop giving quarterly earnings guidance. *Journal of Accounting & Economics*, *51*, 134-150.

Chiang, R., & Venkatesh, P. C. (1988). Insider holdings and perceptions of information asymmetry: A note. *The Journal of Finance*, *43*, 1041-1048.

Chung, K. H., & Jo, H. (1996). The impact of security analysts' monitoring and marketing functions on the market value of firms. *Journal of Financial and Quantitative Analysis*, *31*, 493-512.

Chung, K. H., & Zhang, H. (2014). A simple approximation of intraday spreads using daily data. *Journal of Financial Markets*, *17*, 94-120. doi:10.1016/j.finmar.2013.02.004

Clement, M. B., Rees, L., & Swanson, E. P. (2003). The influence of culture and corporate governance on the characteristics that distinguish superior analysts. *Journal of Accounting, Auditing & Finance*, *18*, 593-618.

Coeurderoy, R., & Durand, R. (2004). Leveraging the advantage of early entry: Proprietary technologies versus cost leadership. *Journal of Business Research*, *57*, 583-590.

Coller, M., & Yohn, T. L. (1997). Management forecasts and information asymmetry: An examination of bid-ask spreads. *Journal of Accounting Research*, *35*, 181-191.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, *13*, 1-36.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance*, *46*, 1325-1359.

Drake, M., Guest, N., & Twedt, B. (2014). The media and mispricing: The role of the business press in the pricing of accounting information. *The Accounting Review*, *89*, 1673-1701.

Erickson, M., Hanlon, M., & Maydew, E. L. (2006). Is there a link between executive equity incentives and accounting fraud? *Journal of Accounting Research*, *44*, 113-143.

Frankel, R., McNichols, M., & Wilson, G. P. (1995). Discretionary disclosure and external financing. *The Accounting Review*, *70*, 135-150.

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. *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 & Economics*, *31*, 405-440.

Higgins, D., Omer, T. C., & Phillips, J. D. (2015). The influence of a firm's business strategy on its tax aggressiveness. *Contemporary Accounting Research*, *32*, 674-702.

Hoi, C. K., Wu, Q., & Zhang, H. (2013). Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities. *The Accounting Review*, *88*, 2025-2059.

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.

Jayaraman, S. (2008). Earnings volatility, cash flow volatility, and informed trading. *Journal of Accounting Research*, *46*, 809-851.

Kasznik, R., & Lev, B. (1995). To warn or not to warn: Management disclosures in the face of an earnings surprise. *The Accounting Review*, *70*, 113-134.

Kothari, S. P., Shu, S., & Wysocki, P. D. (2009). Do managers withhold bad news? *Journal of Accounting Research*, *47*, 241-276.

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.

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.

Matsunaga, S. R., & Zhang, Y. (2013). *How competitive costs and board reputation concerns affect disclosure: Evidence from performance targets* (Working paper). Retrieved from https://ssrn.com/abstract=2319216

McDaniel, S. W., & Kolari, J. W. (1987). Marketing strategy implications of the Miles and Snow strategic typology. *Journal of Marketing*, *51*(4), 19-30.

Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, *42*, 483-510.

Miles, R. E., & Snow, C. C. (1978). *Organizational strategy, structure and process*. New York, NY: McGraw-Hill.

Miles, R. E., & Snow, C. C. (2003). *Organizational strategy, structure, and process*. Stanford, CA: Stanford University Press.

Miller, D. (1992). The generic strategy trap. *The Journal of Business Strategy*, *13*(1), 37-41.

Nagar, V., Nanda, D., & Wysocki, P. (2003). Discretionary disclosures and stock-based incentives. *Journal of Accounting & Economics*, *34*, 283-309.

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*. New York, NY: The Free Press.

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*(S1), 127-141.

Schroeder, J. H. (2016). The impact of audit completeness and quality of earnings announcement GAAP disclosures. *The Accounting Review*, *91*, 677-705.

Shapiro, C. (1989). The theory of business strategy. *RAND Journal of Economics*, *20*, 125-137.

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 of 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*(1), 38-60.

Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, *32*, 263-292.

Snow, C. C., & Hambrick, D. C. (1980). Measuring organizational strategies: Some theoretical and methodological problems. *The Academy of Management Review*, *5*, 527-538.

Thomas, S. (2002). Firm diversification and asymmetric information: Evidence form analysts' forecasts and earnings announcements. *Journal of Financial Economics*, *64*, 373-396.

Tucker, J. W. (2007). Is openness penalized? Stock returns around earnings warnings. *The Accounting Review*, *82*, 1055-1087.

Tucker, J. W. (2010). Is silence golden? Earnings warnings and subsequent changes in analyst following. *Journal of Accounting, Auditing & Finance*, *25*, 431-456.

Verrecchia, R. E. (1983). Discretionary disclosure. *Journal of Accounting & Economics*, *5*, 179-194.

Wahal, S., & McConnell, J. J. (2000). Do institutional investors exacerbate managerial myopia? *Journal of Corporate Finance*, *6*, 307-329.

Wang, J. (1993). A model of intertemporal asset prices under asymmetric information. *The Review of Economic Studies*, *60*, 249-282.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48*, 817-838.

Zhang, X. F. (2006). Information uncertainty and analyst forecast behavior. *Contemporary Accounting Research*, *23*, 565-590.