Business Strategy, Internal Control Over Financial Reporting, and Audit Reporting Quality

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Abstract: This study examines whether a company's business strategy is an underlying determinant of the strength of its internal control over financial reporting (ICFR) and the quality of auditors' attestation reports concerning ICFR. Organizational theory suggests that companies following an innovative "prospector" strategy are likely to have weaker internal controls than companies following an efficient "defender" strategy. Consistent with theory, we find that firms with greater prospector-like characteristics are more likely to report and less likely to remediate material weaknesses, incremental to known determinants of material weaknesses. We also find that auditors' internal control reporting quality is lower among clients with greater prospector-like characteristics when measured using the timeliness of reported material weaknesses. Our findings indicate that business strategy is a useful summary indicator for evaluating companies' internal control strength and suggest that internal control reporting is an important area for audit quality improvement among prospector-like clients.

Keywords: business strategy; internal control; material weakness; audit quality

JEL classification: D21, L21, M41

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I. INTRODUCTION

The Sarbanes-Oxley Act of 2002 requires management of U.S. listed companies to review and report annually on the effectiveness of the company's internal control over financial reporting (ICFR) and to obtain an auditor attestation on internal controls. Prior research finds that internal control disclosures and audit reports are informative to stakeholders (Gupta and Nayar 2007; Beneish, Billings, and Hodder 2008; Hammersley, Myers, and Shakespeare 2008) and links ineffective internal control to lower quality accruals and greater debt and equity costs (Doyle, Ge, and McVay 2007a; Ashbaugh-Skaife, Collins, Kinney Jr., and LaFond 2008; Ashbaugh-Skaife, Collins, Kinney Jr., and LaFond 2009; Dhaliwal, Hogan, Trezevant, and Wilkins 2011; Kim, Song, and Zhang 2011). However, U.S. regulators repeatedly raise concerns that managers and auditors fail to detect and/or report material weaknesses to stakeholders in a timely manner (Besch 2009; Hanson 2013; PCAOB 2013, 2015; Croteau 2015), and prior research provides support for these concerns (Rice and Weber 2012; DeFond and Lennox 2015; Newton, Persellin, Wang, and Wilkins 2016). In this study, we draw upon organizational theory which posits that the strength of a company's internal controls is based, in part, on its business strategy. We propose that one explanation for auditors' challenges with ICFR reporting is that a client's business strategy impacts the difficulty of evaluating internal controls and identifying control deficiencies. We study this topic by investigating the association between business strategy and 1) the existence of material weaknesses in ICFR and 2) the quality of auditors' ICFR reports to stakeholders.[1]

[1] Although both managers and auditors report on ICFR, we focus on auditor reporting quality because managers are not independent of their internal control systems and have incentives to avoid reporting a material weakness (Rice and Weber 2012). Further, approximately 75 percent of internal control deficiencies are detected by auditors rather than by managers (Bedard and Graham 2011). Auditors are also more likely than managers to detect severe and

We focus on business strategy as a determinant of ICFR strength and reporting quality for two reasons. First, organizational theory predicts that the design and strength of the company's internal control environment should be based on the company's business strategy.[2] Specifically, innovative "prospector" companies (e.g., first-to-market companies) evolve frequently to pursue new product-market opportunities, resulting in rapid growth, greater firm complexity, frequent internal control modifications, and profit volatility (Miles and Snow 1978, 2003; Hambrick 1983; Simons 1987). Conversely, companies following an efficiency-oriented "defender" strategy (e.g., cost-leadership companies) produce a stable set of products and exhibit stable growth patterns within existing product lines (Miles and Snow 1978, 2003; Hambrick 1983). Prior research concludes that a company's business strategy should be one of the primary components in the design of an accounting control system (e.g., Govindarajan and Gupta 1985; Simons 1987; Abernethy and Lillis 1995; Davila 2000; Agbejule and Jokipii 2009) and predicts that prospectors likely have weaker internal controls than defenders. Thus, business strategy is likely to be a significant determinant of the strength and quality of a company's ICFR, and therefore, the likelihood that the company and auditor report material weaknesses in ICFR.

Second, prior research and professional standards indicate that business strategy should be an important component of audit planning and auditor evaluation of internal controls. Business-risk auditing proposes that the auditor's understanding of the client's business strategy is a key component of risk assessment and audit planning via the audit risk model (Bell, Marrs, Solomon, and Thomas 1997; Bell, Peecher, and Solomon 2002; Peecher, Schwartz, and Solomon

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pervasive deficiencies (Bedard and Graham 2011). Thus, we expect that the auditor's internal control evaluation and testing process is the primary mechanism through which material weaknesses are reported to stakeholders.

[2] Strategy is a broad concept where a firm's strategy can be distinguished at the business level and corporate level. Business-level strategy involves determining how the company expects to compete *within* a given industry whereas corporate-level strategy involves determining in which area of business the firm should be involved and is the source of strategy variation *between* industries (Beard and Dess 1981; Hambrick 1983; Dent 1990; Bruggeman and Van der Stede 1993). We focus on business-level strategy.

2007; Knechel 2007). Furthermore, prevailing Public Company Accounting Oversight Board (PCAOB) standards governing ICFR audits direct auditors to adopt a top-down, risk-based approach to evaluating internal controls, which includes considering business strategy indicators such as the client's operating characteristics, organizational structure, and complexity (PCAOB 2007, Auditing Standard No. 5). However, despite regulator and audit firm intentions to assimilate business strategy into audit planning, prospector companies' decentralized and flexible control systems likely make auditors' ICFR assessment and reporting more difficult for prospector clients than for defender clients, whose operations and control systems are relatively stable. For these reasons, internal control reporting quality is likely to be lower among prospector companies than among defender companies.

Using the archival measure of business strategy developed by Bentley, Omer, and Sharp (2013), we first examine the association between business strategy and the likelihood that management and the auditor report a material weakness, incremental to known determinants of material weaknesses. Consistent with theory, we find that greater prospector-like characteristics are associated with a higher likelihood of reporting material weaknesses. We also find that greater prospector-like characteristics are associated with a lower likelihood of remediation. This result is consistent with prospector companies being more likely to outgrow their control systems, reducing the benefits of remediating outdated processes.

We then explore the association between business strategy and the quality of auditors' reporting on ICFR by adapting Rice and Weber (2012), which is consistent with the PCAOB's (2015) audit quality indicator for material weakness reporting. In this framework, the auditor's objective is to provide stakeholders with timely warning of internal control weaknesses that could lead to material misstatements. Timely material weakness disclosure implies that the

auditor detected the material weakness and disclosed it in the audit report. In contrast, untimely material weaknesses are not detected until the control deficiency led to a restatement. Thus, material weaknesses reported in conjunction with a restatement are considered to be untimely and evidence of lower audit quality than material weaknesses reported in the absence of a restatement, which are considered to be timely. We find that greater prospector characteristics are positively associated with untimely material weaknesses, indicating that strategy is associated with internal control reporting quality. This finding suggests that auditors inadequately adjust their procedures for risks related to their clients' business strategy.

This study makes several contributions to the financial reporting and auditing literatures on internal control attestation. First, our study indicates that business strategy is a significant predictor of material weaknesses *incremental* to known determinants and provides a significant increase in the explanatory power of a material weakness prediction model. These findings are consistent with Kinney's (2000) assertion that understanding a firm's business strategy is a critical input to gaining insights into the quality of the firm's internal control system. We also provide a cohesive theory-based explanation for why certain company-level characteristics identified in prior literature predict material weaknesses. With respect to the auditing literature, we show that business strategy is a significant determinant of auditors' ICFR reporting quality and conclude that incorporating business strategy into audit planning by way of internal control evaluation and testing is an important area for audit quality improvement, particularly among clients with greater prospector-like characteristics.

Second, we contribute to recent research that suggests that companies following a prospector strategy are riskier audit and tax clients (Bentley et al. 2013; Higgins, Omer, and Phillips 2015). From a conceptual and practice standpoint, our paper provides a substantial

contribution beyond these studies by identifying internal controls as an area of heightened risk for clients with greater prospector-like characteristics and documenting lower audit quality with respect to internal control reporting among these firms. While weak internal controls provide opportunities for management to misrepresent financial information (consistent with the fraud risk conclusions in Bentley et al. (2013)), weak controls also allow *unintentional* material misstatements to occur without detection and/or prevention. This can lead to an increased likelihood of restatements and other material errors among clients with greater prospector-like characteristics for reasons unrelated to fraud, which are far more common than irregularities and fraud (Hennes, Leone, and Miller 2008; Scholz 2008). Thus, our findings indicate that audit risk among prospector firms is broader than previously documented because prospectors have weaker internal controls *in addition to* higher fraud risk and greater tax avoidance.[3]

Next, a recent ICFR synthesis report calls for researchers to identify ways to evaluate the quality of ICFR reporting (Asare, Fitzgerald, Graham, Joe, Negangard, and Wolfe 2013). Our study addresses their call by demonstrating that business strategy signals the potential quality of ICFR reporting, thereby providing useful information to stakeholders who rely on internal control reports for decision making. Because a company's business strategy is observable to outsiders (e.g., a focus on innovation versus cost leadership), it is likely easier for stakeholders to assess the probable strength of a firm's internal controls based on business strategy than by evaluating the individual determinants of material weaknesses documented in the prior

[3] Bentley et al. (2013) emphasize that their results are driven by client business risk (a component of inherent risk in the audit risk model) rather than financial reporting risk (which includes control risk). Because their only test that incorporates ICFR is to *control for* material weaknesses, their study does not address whether strategy is associated with the strength of the company's controls. We re-examine their findings using mediation analysis and conclude that strategy affects financial reporting quality through inherent risk and control risk.

literature.[4] Finally, this information may be useful to audit clients when planning and performing their required internal control evaluations under SOX 302 and 404 and when communicating news regarding internal control weaknesses to investors.

The rest of our paper is organized as follows. Section 2 presents the literature review and develops our hypotheses. Sections 3 details our research design while section 4 describes our empirical results. Sections 5 and 6 present our additional and sensitivity analyses, respectively. The final section offers our conclusions.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Companies follow different business strategies to compete within their chosen industries. While there are numerous business strategy taxonomies, we focus on the Miles and Snow (1978, 2003) typology throughout this paper because it has been widely used in academic literature (e.g., Hambrick 1983; Ghoshal 2003; DeSarbo, Di Benedetto, Song, and Sinha 2005).[5] The Miles and Snow (1978, 2003) typology is based on the rate of change that a company alters its product-market mix. Three viable strategies emerge within a particular industry (Miles and Snow 1978, 2003; Miles, Snow, Meyer, and Coleman 1978; Hambrick 1983). Companies at one end of the strategy continuum frequently/rapidly change their product mix (prospectors) while companies at the other end rarely/gradually change their product mix (defenders).[6] Occupying the middle of the strategy continuum, analyzers compete on the basis of a hybrid strategy where they focus on

[4] Although individual investors and other stakeholders are unlikely to calculate the empirical proxy for strategy used in this paper, a company's position within the industry distribution of innovation versus cost-leadership should be transparent to investors based on a company's disclosures. For example, in the U.S. grocery store industry, Whole Foods is historically a prospector firm while Walmart is historically a defender.

[5] Burton, Lauridsen, and Obel (2002, 1465) indicate that the Miles and Snow typology has been "studied, tested, and supported in several hundred studies." Bentley et al. (2013, 782–783) discuss how the Miles and Snow typology aligns with other commonly used strategy typologies (e.g., Porter 1980).

[6] Business strategy is the process of aligning the firm to its market (Miles and Snow 1994). Each type of business strategy has relative advantages and disadvantages and no one strategy is necessarily ideal. For prospectors, their primary advantage is market innovation while their primary disadvantage is a tendency to overextend resources and hence risk lower profitability. For defenders, their primary advantage is efficiency and stability while their primary disadvantage is the risk of obsolescence due their inability to rapidly respond to market shifts.

efficiency in some divisions and innovation in others.[7] Thus, analyzers share some characteristics with prospectors or defenders depending on their use of technology, marketing, and management capabilities (DeSarbo et al. 2005). Because prospectors and defenders are the most distinguishable in terms of organizational characteristics, the empirical strategy-control literature typically focuses on the prospector and defender endpoints of the strategy distribution (e.g., see Simons 1987; Fisher 1995; Langfield-Smith 1997; Chenhall 2003). We include prospectors, defenders, and analyzers in our empirical analyses but focus our discussion on prospectors and defenders for consistency with prior literature. We expect that analyzer firms that are closer to the prospector (defender) endpoint will display greater "prospector-like" ("defender-like") attributes.

Strategy theorists hypothesize that control systems vary among companies depending on the strategy of the company (Miles and Snow 1978, 2003; Miller and Friesen 1978; Porter 1980). Miles and Snow (1978, 2003) predict that the control structures of prospectors are decentralized and flexible to adapt quickly to changing market conditions. Chenhall (2003) notes that prospector-like firms lack standardized procedures because of complex coordination among diverse projects. Prospectors' need for flexible controls is integral to their success, without which they would be unable to respond rapidly to changing market domains to exploit new opportunities.[8] In contrast, defender-like firms need centralized and formalized control systems

[7] The Miles and Snow taxonomy identifies a fourth strategy, reactors, which "represent a 'residual' type of behavior in that organizations are forced into this response mode when they are unable to pursue one of the other three stable strategies" (Miles and Snow 2003, 93). A firm often becomes a reactor when their organizational structure and processes do not fit their chosen strategy (Miles and Snow 1978, 2003). The reactor strategy is not deemed sustainable in the long term because they "lack a consistent strategy and simply respond to environmental pressures when forced to do so" resulting in their "ambiguous behaviour" (McDaniel and Kolari 1987, 20). Because the reactor strategy is unstable, short term, and ultimately fails (Miles and Snow 1978, 1994, 2003), we omit reactors from further discussion in the paper.

[8] Miles and Snow (1994) argue that a company must align its organizational structure with its strategy and conclude that when either strategy and/or structure is modified "far enough to violate the organization's operating logic" (p.

in order to maximize efficiency (Chenhall 2003), and these firms are expected to use monitoring controls more intensively (Henri 2006). Finally, Simons (1987) predicts that prospectors will emphasize creativity and innovation rather than accounting controls, while defenders will have more formalized accounting procedures, especially related to controlling costs. Overall, prospectors' complexity and rate of change relative to defenders suggest that developing an adequate set of controls over financial reporting is more challenging for prospectors than for defenders. Thus, theory predicts that prospectors will maintain weaker internal controls than defenders, suggesting that prospectors should report material weaknesses more frequently than defenders.

In addition to theoretical predictions, many firm-level attributes that are linked to ICFR material weaknesses (MWs) in the financial accounting literature are characteristics of prospector firms. Specifically, prospector characteristics such as greater firm complexity, rapid growth, and lower financial performance are associated with higher likelihood of MWs (Ge and McVay 2005; Doyle et al. 2007b; Ashbaugh-Skaife, Collins, and Kinney Jr. 2007). While these studies do not attempt to measure the construct of business strategy, the significance of these characteristics in predicting MWs suggests that business strategy should be significantly associated with MWs. Furthermore, Bentley et al. (2013, 805) conclude that strategy is "greater than the sum of its parts," which suggests that considering strategy in the context of evaluating internal controls should be valuable even after considering other known determinants of MWs that are characteristics of business strategy. Finally, Kinney (2000) argues that the largest obstacle faced in internal control quality research is "our own limited knowledge [as auditing

67), the organization begins "unraveling from within" (see pp.83-93). Miles and Snow (1994, 68) emphasize that "strategy, structure, process, operating logic, and managerial ideology are closely interconnected."

researchers] of *business strategy* and organization design, management processes, risk, and risk measurement" (p.88, emphasis added).

However, it is not clear *ex ante* that the empirical data will support the theoretical prediction that business strategy is associated with ICFR strength. First, prior research in management and managerial accounting provides mixed evidence on the association between business strategy and internal controls. Studies examining performance measurement and incentive compensation find results consistent with theoretical predictions (e.g., Abernethy and Lillis 1995; Montemayor 1996; Ittner, Larcker, and Rajan 1997; Rajagopalan 1997; Lillis and van Veen-Dirks 2008; Dekker, Groot, and Schoute 2013). However, Henri (2006) observes no significant differences in monitoring activities between companies with certain prospector versus defender attributes. Other studies conclude that prospector-like firms have extensive internal control systems (Khandwalla 1972; Simons 1987; Chenhall and Morris 1995; Bouwens and Abernethy 2000) while Agbejule and Jokipii (2009) find that prospectors implement intensive controls but only in specific areas. Taken together, these empirical findings indicate that while entrepreneurial firms require some sophisticated controls (Miller and Friesen 1982; Dent 1990; Chenhall and Morris 1995; Chenhall 2003), prospectors' controls appear tailored to internal decision making rather than to control systems for externally-reported financial information. It is also possible that previously tested determinants of ICFR deficiencies could subsume the effect of business strategy. Finally, because public companies are expected to maintain effective ICFR under the Sarbanes-Oxley Act, the association between business strategy and ICFR may be weaker among public companies due to federal regulations.

Taken together, theory predicts a strong relationship between business strategy and the strength of a company's internal controls, but there are several reasons why this association may

not extend to ICFR. Accordingly, we test the following hypothesis, stated in the alternative form based on theoretical expectations:

> **H1a:** Business strategy is associated with the likelihood that a company reports a material weakness in ICFR.

Next, remediating internal control deficiencies can improve financial reporting quality and help restore investor confidence (Ashbaugh-Skaife et al. 2008; Goh 2009). Both the board and the audit committee hold a fiduciary duty to oversee and monitor the firm's internal controls and assume an important monitoring role in the remediation of MWs (Goh 2009; Johnstone, Li, and Rupley 2011). However, management may choose not to remediate detected control weaknesses based on their own cost-benefit analysis "because such efforts divert attention and resources from the core businesses" (Goh 2009, 550). Furthermore, neither the SEC nor the stock exchanges penalize companies for non-remediation (Hammersley et al. 2012). So unless those charged with governance can effectively pressure management to remediate MWs, the firm may not take corrective action or do so in a timely manner.[9]

Prior research finds that companies are *less* likely to remediate MWs (or less likely to remediate MWs in a timely manner) when they report greater numbers of deficiencies and when they exhibit lower profitability and more complex operations (Chan, Kleinman, and Lee 2009; Goh 2009; Bedard and Graham 2011; Johnstone et al. 2011; Bedard, Hoitash, Hoitash, and Westermann 2012; Hammersley, Myers, and Zhou 2012), all of which are characteristics of prospector firms. In addition, the MWs that prospectors experience may also be more difficult to remediate. Specifically, prospector characteristics are associated with higher likelihoods of MWs related to year-end adjustments, staffing, and segregation of duties (Ge and McVay 2005; Doyle

[9] Organizational theory has not proposed or identified differences in corporate governance among prospectors, analyzers, and defenders. Therefore, there is no theoretical reason to expect that the documented association between remediation and corporate governance will vary with strategy. We examine this in later sensitivity tests.

et al. 2007b), which Bedard et al. (2012) find are less likely to be remediated by the following year.[10] Furthermore, because prospector companies need to change their control systems more frequently (Simons 1987), management may be less likely to remediate deficiencies in evolving or outdated control processes. Altogether we expect that prospector managers may have greater difficulty and fewer incentives to remediate control deficiencies. We state Hypothesis 1b in the alternative form:

H1b: Business strategy is associated with the likelihood of remediating reported material weaknesses in ICFR.

Finally, we investigate the audit implications of an association between business strategy and ICFR with respect to the quality of auditors' internal control reports. Each of the major international public accounting firms has adopted business-risk auditing, which identifies business strategy as a key component of risk assessment and audit planning (Bell et al. 1997, 2002; Peecher et al. 2007; Knechel 2007). U.S. and international auditing standards also instruct auditors to consider business strategy in their evaluation of client risks (AICPA 2006; PCAOB 2007; IFAC 2009). Auditors then use this information to plan the audit engagement using the audit risk model which requires auditors to assess risks stemming from the nature of the client's business and accounts (inherent risk or IR) and risks related to the client's internal controls (control risk or CR) (AICPA 2006; PCAOB 2010). If the auditor assesses one or both of these inputs inappropriately, the planned audit procedures may be insufficient to achieve the targeted level of audit risk, leading to an increased likelihood of audit failure.[11]

[10] Bedard et al. (2012) also identify account-level MWs in the income tax and revenue processes as difficult to remediate. While strategy is associated with greater tax avoidance (Higgins et al. 2015), both Bauer (2015) and Lynch (2016) find *lower* tax avoidance among companies reporting tax MWs. Together, these studies imply that the expected association between strategy and remediation may not hold with respect to the remediation of tax-related MWs.

[11] An audit failure can also occur if the auditor assesses IR and CR appropriately but fails to design or properly execute a substantive testing program that addresses these risks. Our discussion focuses on risk assessment because auditors cannot design appropriate procedures to mitigate audit risk without appropriate risk assessment.

We suggest that business strategy is associated with both IR and CR. Hypothesis 1a implies a direct link between business strategy and CR because the likelihood of reporting a MW reflects the level of CR. Strategy is also likely associated with IR for two reasons. First, Bentley et al. (2013) find that business strategy is positively associated with financial reporting irregularities, litigation, and restatements despite greater auditor effort which they attribute to higher client business risk (a component of IR) among prospector firms. Second, although the traditional audit risk model implies that IR and CR are independent, prior research suggests knowledge-based dependence between IR and CR. Waller (1993) argues that the preventative aspect of internal controls should reduce the likelihood that a material misstatement occurs (IR), leading to a positive correlation between IR and CR. Messier and Austen (2000) find support for this formulation using experimental methods. Thus, if strategy is associated with CR as indicated by H1a, then this association likely also influences IR via dependence between IR and CR.[12]

Because an innovative business strategy creates challenges for managers to design and implement effective internal controls, prospectors' greater flexibility in internal controls and frequent control modifications may increase auditors' difficulty in evaluating whether the client has designed and implemented appropriate and effective control procedures. In contrast, the strength and stability of defender companies' internal controls should lessen the likelihood that auditors fail to properly evaluate internal controls and identify omissions in the control system. Further, auditors often have difficulty identifying a MW without evidence of a material misstatement (Kinney Jr. and Shepardson 2011; Kinney Jr., Martin, and Shepardson 2013). Prospectors' complexity and rate of change relative to defenders likely influence auditors' ability

[12] We test this assertion in Section 5.

to *detect* material misstatements in the client's financial statements, reducing the likelihood that auditors detect MWs among prospector clients.

Business strategy may also be associated with auditors' *reporting* of MWs. Under U.S. standards, auditors report only the most severe internal control weaknesses (MWs) and evaluate the severity of detected deficiencies by considering interdependencies in the client's internal controls and the future potential consequences of the internal control deficiency (PCAOB 2007). These considerations are likely more difficult as prospector-like characteristics increase because of prospectors' flexibility in internal controls and frequent internal control modifications. Furthermore, managers have incentives to classify detected deficiencies as less severe than a MW in order to avoid disclosing the deficiency to stakeholders. Because auditors often give clients the benefit of the doubt when evaluating the client's preferred position (Hackenbrack and Nelson 1996; Kadous, Kennedy, and Peecher 2003; Blay 2005), this tendency, in combination with greater difficulty evaluating severity among prospector firms, may increase the likelihood that auditors make Type II reporting errors among prospector clients.

In conclusion, if auditors face greater difficulty identifying internal control weaknesses and evaluating their severity among prospector clients than defender clients, then we expect to observe lower internal control reporting quality among prospector clients. Accordingly, we test the following hypothesis (in the alternative form):

H2: Business strategy is associated with internal control reporting quality.

III. RESEARCH DESIGN

Sample Selection

To construct our sample, we identify 37,097 internal control opinions in Audit Analytics not claiming an exemption over the period 2004-2014. We eliminate 4,562 observations missing

data in Compustat, CRSP, and Audit Analytics to calculate our control variables. We delete 9,007 observations in the financial and utility industries (SIC 4900-4999 and 6000-6999) following Bentley et al. (2013) due to the regulated nature of these industries, and 4,125 observations missing data to calculate the strategy variable. Finally, we exclude 53 Section 302 opinions where the company reported a MW but did not report a MW under Section 404.[13] Our final sample consists of 19,350 observations. The sample selection is presented in Table 1.

[Insert Table 1 here]

Multivariate Model

Strategy Measure

We follow Bentley et al. (2013) in measuring a company's business strategy based on Miles and Snow's (1978, 2003) business strategy typology. This measure uses six ratios to capture the different dimensions of business strategy: (1) research and development expense to sales (captures new product development); (2) selling, general, and administrative expenses to sales (captures marketing efforts); (3) annual percentage change in sales (captures growth patterns); (4) employees to sales (captures production efficiency); (5) net property, plant, and equipment to total assets (captures capital structure); and (6) standard deviation of total number of firm employees (captures organizational stability).

For each firm year, we calculate each of the six ratios above as the average over the prior five years.[14] We then rank each measure into quintiles for each firm-year relative to other firms

[13] Our results are robust to adding back firm-years that reported Section 302 MWs without reporting Section 404 MWs (untabulated).

[14]Constructing the strategy ratios using a five-year average measure captures firms' long-term strategic orientation and is consistent with prior research (Ittner, Larcker, and Rajan 1997; Balsam, Fernando, and Tripathy 2011; Bentley et al. 2013; Higgins et al. 2015). To reduce sample loss associated with the five-year data requirement, we follow Bentley et al. (2013) and require only three years of non-missing data for each measure as long as the company has at least six consecutive years of data in Compustat. This also helps to filter out "reactor" firms. In untabulated tests, we calculate each ratio based on a three-year average and require only four years of consecutive data in Compustat and find consistent results.

in the same industry (based on two-digit historical SIC code).[15] After ranking the six measures into quintiles, the quintile rank scores are summed across each firm-year such that firms could receive a maximum score of 30 (where the firm ranked in the top industry-quintile across all six measures) and a minimum score of 6 (where the firm ranked in the bottom industry-quintile across all six measures).[16] Firms with higher (lower) *STRATEGY* scores represent firms with greater prospector-like (defender-like) characteristics while analyzer firms constitute the middle of the *STRATEGY* continuum. Specifically, firms with higher *STRATEGY* scores (i.e., more prospector-like characteristics) have more new product development, marketing and growth activities, lower efficiency (i.e., a greater ratio of employees to sales and lower capital intensity), and less organizational stability (i.e., greater fluctuations in total employees) *relative* to industry competitors. We interpret a positive (negative) coefficient on *STRATEGY* to mean that firm characteristics more consistent with a prospector (defender) strategy are positively (negatively) associated with the dependent variable of interest. For ease of exposition, we discuss *STRATEGY* in terms of prospector-like characteristics. The *STRATEGY* measure has been validated using both archival (Bentley et al. 2013) and survey methods (Bentley 2012).[17]

Regression Model

To test H1a, we estimate a logistic regression model predicting MWs following Doyle et al. (2007b). The dependent variable in this model (*MW*) equals one if the firm receives an

[15] Because some firms operate across several industries, we check the sensitivity of our results using a strategy measure constructed among single-segment firms only. Our results are robust to this specification (untabulated).

[16] The capital intensity measure is reverse-coded so that prospector (defender) characteristics receive higher (lower) strategy scores.

[17] Bentley et al. (2013) perform factor analysis and find that all six *STRATEGY* components load on a single factor. This finding suggests that the six ratios capture one underlying construct. They also use canonical correlation analysis and redundancy index tests and find that *STRATEGY* is a different construct than complexity and risk. We perform similar tests (untabulated) and find that *STRATEGY* represents a different construct from the control measures used in our models (e.g., size, growth, complexity). Finally, Bentley (2012) concludes that firms following a *Prospector* or *Defender* strategy are properly classified using survey responses from senior executives in management and marketing positions to compare firms to the *STRATEGY* measure.

adverse ICFR report under Section 404 of the Sarbanes-Oxley Act during year *t* and equals zero if the firm receives an unqualified report. The independent variable of interest is *STRATEGY* as discussed previously. We estimate Model 1 as follows:

$$MW_{i,t} = \beta_0 + \beta_1 STRATEGY_{i,t} + \text{controls} \qquad (1)$$

We also test H1a using an alternative dependent variable where the alternative variable equals the number of MWs reported during year *t* (*MW_COUNT).* For this dependent variable, we re-estimate Model 1 as a negative binomial regression.[18]

We control for known determinants of MWs in order to test whether business strategy is predictive of material weaknesses *incremental* to these known determinants. Unless otherwise specified, all variables are measured as of the year *t* year-end balance sheet date. We control for firm size using the natural log of the market value of equity (*LnMVE*).[19] We control for firm age using the natural log of the number of years the firm has appeared in the CRSP monthly return file (*AGE*). We include two controls for firm performance. First, *AGGR_LOSS* is an indicator variable equal to one if earnings before extraordinary items summed over the prior two years is less than zero. Second, we control for financial distress using the probability of bankruptcy, following Shumway (2001) (*BANKRUPTCY*).

Doyle et al. (2007b) explore the role of complexity in MW disclosures due to the increased costs involved in aggregating information and coordinating internal controls across multiple divisions and geographic locations. Although strategy and complexity reflect different constructs (Bentley et al. 2013), both are likely associated with internal control deficiencies. For

[18] We use negative binomial regression because the count dependent variable, *MW_COUNT*, is over-dispersed (mean = 0.131, variance = 0.356) which can bias the standard errors downward in a Poisson regression (Long and Freese 2006). Negative binomial regressions include an additional error term to correct this bias.

[19] Our measure of size follows Doyle et al. (2007b). In untabulated tests, we use total assets as a measure of firm size and find consistent inferences for MW reporting and remediation. In the test of internal control reporting quality, the *STRATEGY* coefficient for untimely reporting remains positive and significant ($p<0.01$); however, the *STRATEGY* coefficient for timely reporting is significant only at $p<0.10$ using a one-tailed test.

this reason, we include three controls for business complexity following Doyle et al. (2007b): (1) the natural log of the number of special purpose entities reported in the firm's 10-K (*SPE*), (2) the natural log of the number of business and geographic segments as reported in Compustat Segment (*SEGMENTS*), and (3) *FOREIGN*, an indicator variable equal to one if the firm reports foreign currency translations during the year per Compustat.[20] In addition, firm growth is an important determinant of both business strategy and ICFR because firms can outgrow their internal controls through internal growth and acquisitions. The model includes three controls for growth following Doyle et al. (2007b): (1) *EXTREME_GROWTH*, an indicator variable equal to one if change in industry-adjusted sales growth is in the largest quintile; (2) the total dollar amount of acquisitions in the current and prior year scaled by the firm's market capitalization (*ACQ_VALUE*); and (3) total restructuring charges in the current and prior year scaled by market capitalization (*RESTRUCTURING*).

Because auditors' abilities to detect internal control deficiencies are an important dimension of audit quality, we include an indicator variable equal to one if the firm retains a Big 4 auditor and equal to zero otherwise (*BIGN*). We include an indicator variable equal to one if the firm announces a restatement in year *t* (*RESTATEMENT*) because restatements are common indicators of MWs (PCAOB 2004). We also control for management changes because prior research suggests that board and management turnover are associated with the disclosure of MWs (Li, Sun, and Ettredge 2010; Johnstone et al. 2011). In addition, prior research suggests that prospector firms experience more frequent CEO turnover than other firms (Miles and Snow 1978, 2003, Thomas and Ramaswamy 1994, 1996). We include an indicator variable equal to one if the firm experienced a change in CEO or CFO during the year (*EXEC_TURN*) or a change

[20] We collect the number of SPEs following the procedure described in Feng, Gramlich, and Gupta (2009).

in the board of directors during the year (*BOD_TURN*) as reported in the Audit Analytics Director and Officer Change module.[21] We also control for outside monitoring using the percentage of shares held by institutions as of year-end (*INST_OWN*). Finally, we include indicator variables for industry using the Fama-French 12 industry classification and cluster standard errors by firm and year to control for time-series and cross-sectional correlation (Gow, Ormazabal, and Taylor 2010).

To test H1b proposing that strategy is associated with MW remediation, we restrict the sample to firms reporting a MW in year *t*. We determine whether remediation occurred based on the types of MWs reported in years *t* and *t*+1 as classified by Audit Analytics. *REMEDIATE* equals zero if the firm's auditor reports the same type of MW in years *t* and *t*+1 and equals one if the firm's auditor reports no MWs in year *t*+1 or if the firm's auditor does not report a MW in year *t*+1 for the reasons given in year *t*. Following prior research examining material weakness remediation, the independent variables in this model are calculated as the average of the values in years *t* and *t*+1 (Goh 2009), when possible. Variables related to the original material weakness (*RESTATEMENT* and *MW_COUNT*) and variables that are not meaningful when averaged (*AGE, STRATEGY*) are included in the model at their values in year *t*. The value of *BIGN* for year *t*+1 is included to capture the auditor in the year of remediation.

To test H2, we adapt Rice and Weber's (2012) framework for identifying unreported MWs which is consistent with the PCAOB's (2015) audit quality indicator for MW reporting quality. This audit quality indicator focuses on the timeliness of reported MWs with the expectation that internal control reports should provide stakeholders with timely warning of

[21] Because Audit Analytics (AA) reviews all 8-K filings for director and officer changes, we set observations without a reported change on Form 8-K equal to zero. However, many U.S. listed foreign firms do not file 8-Ks, so we include an indicator variable (untabulated) for foreign firms with no reported changes in AA over the period 2004-2014. As a robustness test, we re-estimate our models excluding foreign filers and obtain inferences consistent with our tabulated results.

problems in the clients' internal controls that could lead to unreliable financial statements in future periods (Cunningham 2004). Because a restatement announcement implies a MW in internal control (PCAOB 2007, 2015), MWs announced in conjunction with, or in the next opinion following, a restatement are considered to be untimely because the MW was not detected or reported until the MW led to a restatement. Thus, untimely MWs reflect Type II reporting errors during the restated period and therefore lower audit quality (PCAOB 2015). MWs reported in the absence of a restatement or known error are considered to be reported on a timely basis.

We estimate a multinomial logistic regression model where the dependent variable falls into one of three categories each year: (1) no MW reported in *year t's* annual report and *year t* is not restated in the future, (2) a MW reported in *year t*'s annual report (a timely MW), or (3) a MW reported in conjunction with, or in the next audit report following, a restatement of *year t*'s financial statements when no MW was reported in *year t's* annual report (an untimely MW).[22] The control variables follow Model 1. If auditors experience difficulty adequately applying their procedures to clients with greater prospector-like characteristics, we should observe a positive coefficient on *STRATEGY* for untimely material weaknesses.

IV. DESCRIPTIVE STATISTICS AND EMPIRICAL RESULTS

Table 2, panel A presents descriptive statistics for the variables in Model 1. Our variable of interest is *STRATEGY* measured discretely from 6 to 30 where lower (higher) scores represent greater defender-like (prospector-like) characteristics. Analyzer firms occupy the middle of the

[22] Our approach differs from Rice and Weber (2012) in the following ways: their analysis is at the individual restatement level rather than the firm-year level and they exclude subsequent restatements announced by repeat restatement firms, firms that reported MWs but no restatement, and firms that never reported an MW. While these research design choices are appropriate for their research question, we expand our analysis to include non-restatement firms, non-MW firms, and repeat restatements in order to link the findings in Table 4 to the timely versus untimely reporting framework. Furthermore, we conduct our analysis at the firm-year level rather than the restatement level in order to include non-restatement observations. Our inferences are consistent when we estimate a logistic regression comparing untimely to timely MWs and when restricting the sample only to firm years that are later restated.

STRATEGY continuum and reflect more defender-like or prospector-like characteristics depending on where their score falls along the continuum. With respect to the business strategy types, 7.4 percent of observations are classified as prospectors, 5.7 percent are classified as defenders, and 86.9 percent are classified as analyzers.[23] Seven percent of audit opinions in the sample report a material weakness in internal control over financial reporting. The mean market capitalization (*LnMVE*) equals 7.05 or approximately $1.15 billion, consistent with the small-filer exclusion for internal control attestation under Section 404. Table 2, panel B presents descriptive statistics for the MW timeliness variable, which shows an increasing rate of both timely and untimely MWs as companies demonstrate greater prospector-like characteristics. Table 2, panel C presents the industry composition of the sample. Consistent with the construction of *STRATEGY* as a within-industry measure, the table shows relatively equal proportions of prospectors and defenders within each industry grouping.

[Insert Table 2 here]

Table 3 presents correlations among the variables. *STRATEGY* is positively correlated with both *MW* and *MW_COUNT* and is negatively correlated with *REMEDIATE*. Regarding control variables, *STRATEGY* is positively correlated with *LnMVE, AGGR_LOSS*, *FOREIGN*, *ACQ_VALUE* and *EXTREME_GROWTH* and negatively correlated with *AGE*, *BANKRUPTCY*, *SPE, RESTRUCTURING*, and *INST_OWN* (all significant at $p<0.05$). These correlations are consistent with organizational theory and prior empirical research. Although the correlation

[23] For the purpose of presenting descriptive statistics, we follow Bentley et al. (2013) in defining prospector firms as those having *STRATEGY* scores between 24 and 30, analyzer firms as having *STRATEGY* scores between 13 and 23, and defender firms as those having *STRATEGY* scores between 6 and 12. Our regressions use the "continuous" strategy variable to examine the association of MW reporting across the full continuum of strategy.

between *BANKRUPTCY* and *LnMVE* exceeds |0.50|, multicollinearity diagnostics confirm the stability of the coefficient estimates and indicate that these correlations are not problematic.[24]

[Insert Table 3 here]

Table 4 presents multivariate tests of H1a. Column 1 tests whether business strategy is associated with the likelihood of reporting a MW and Column 2 tests whether strategy is associated with the number of MWs. In Column 1, the coefficient for *STRATEGY* is positive and significant ($p<0.01$), indicating that firms with higher strategy scores (firms with greater prospector-like characteristics) are more likely to report a MW. In Column 2, the coefficient for *STRATEGY* is positive and significant ($p<0.01$) indicating that greater prospector-like characteristics are associated with a larger number of MWs. The sign and significance of the control variables are generally consistent with Doyle et al. (2007b).[25]

Untabulated tests indicate that *STRATEGY* significantly increases the explanatory power of the model using a likelihood ratio test ($p<0.01$), semi-partial correlation analysis ($p<0.01$), and model fit statistics based on the Bayesian Information Criterion (see Raftery (1995)). In addition, the absolute value standardized coefficient for *STRATEGY* is larger than the absolute value standardized coefficients for one-half of the determinants from Doyle et al. (2007b).[26] Regarding economic significance, the predicted likelihood of a MW at the defender cut-off score (12)

[24] The largest variance inflation factor equals 3.76 and the condition index equals 20.45. Both tests indicate that multicollinearity is not a concern in our models.

[25] The differences in coefficient sign and significance, particularly for SPEs and restructuring charges, are due to differences in time period and the addition of other control variables such as executive turnover.

[26] While these tests establish that *STRATEGY* is an important component in the empirical model, we also examine whether strategy is a different theoretical construct from the control variables established as determinants of MWs by prior studies (e.g., size, risk and complexity). Using canonical correlation and redundancy index analysis (Stewart and Love 1968) on the six components of *STRATEGY* and the control variables in our models, we find that only about 13 percent of the *STRATEGY* components' variance is explained by the control variables while only 5 percent of the control variables' variance is explained by the *STRATEGY* components. Furthermore, we perform factor analysis and find that *STRATEGY* loads on a separate factor from all of the control variables except firm growth. We conclude that *STRATEGY* and the model control variables comprise separate constructs with little overlapping variance between them.

equals 5.8 percent while the predicted likelihood of a MW at the prospector cut-off score (24) equals 8.1 percent, indicating that prospector firms are 39.8 percent more likely to report a MW than defender firms.

[Insert Table 4 here]

Table 5 presents the results of our test of H1b, which examines the association between strategy and MW remediation in year *t*+1. The coefficient for *STRATEGY* is negative and significant ($p<0.01$), indicating that greater prospector-like characteristics are associated with lower likelihood of remediating MWs reported in year *t* during year *t*+1. The predicted likelihood of remediation is 13 percent lower for firms at the prospector cut-off score than for firms at the defender cut-off score. This result is consistent with managers in prospector-like firms being either less willing or less able to improve controls over the financial reporting process even when they know of specific internal control weaknesses. This result also supports the conclusion that prospectors are riskier audit clients than defenders.

[Insert Table 5 here]

Table 6 presents the results of testing H2, which examines the timeliness of reported MWs using multinomial logistic regression. Column 1 presents the coefficient estimates comparing firms reporting a timely MW to firms reporting no MW, and Column 2 presents the coefficient estimates comparing firms reporting an untimely MW to firms reporting no MW. The coefficient for *STRATEGY* is positive and significant ($p<0.01$) in Column 2, indicating that auditors of companies with greater prospector-like characteristics are more likely to report material weaknesses on an untimely basis. This result suggests that internal control reporting quality is lower for audits of prospector-like firms than for audits of defender-like firms. The coefficient in Column 1 is also positive and significant ($p<0.05$), which indicates that auditors of

companies with greater prospector characteristics are also more likely to report *timely* MWs relative to firms reporting no MWs.[27] The predicted likelihood of a timely MW is 22 percent higher for a firm at the prospector cut-off than a firm at the defender cut-off while the predicted likelihood of an untimely MW is 71 percent higher for a firm at the prospector cut-off than a firm at the defender cut-off. These findings are consistent with auditors having greater difficulty identifying and reporting MWs on a timely basis among firms with greater prospector characteristics.

The results documented in Table 6 have several implications. First, because greater prospector characteristics are associated with higher likelihoods of untimely MWs, the absence of a MW in the audit report may be a less reliable indicator of internal control quality to the financial statement users of prospector-like firms than other companies. Second, the results in Column 1 imply that the increased likelihood of MWs among prospector-like firms is not driven solely by prospector's greater propensity for restatements (as documented in Bentley et al. (2013)) because Column 1 includes only audit engagements that disclosed a MW at the time of the audit or those that had no MW and were never restated. Finally, these results suggest that focusing on control risk assessment is an important area for improved audit quality among prospector audit clients.

[Insert Table 6 here]

V. ADDITIONAL ANALYSIS

In additional analysis, we re-examine the findings in Bentley et al. (2013) to test whether the positive association between business strategy and restatements in their paper is driven by IR

[27] We also conduct two sensitivity tests using section 302 data. First, we modify the timeliness variable to include initial reporting of section 302 MWs as timely even when a section 404 MW was not reported. Second, we modify the timeliness variable to include initial reporting of any section 302 control issues (MWs or significant deficiencies) as timely. Using either of these modified timeliness variables (untabulated) produces inferences consistent with the results in Table 6.

only (as per their conclusions) or by *both* IR and CR simultaneously. Bentley et al. (2013) find that strategy is positively associated with restatements, litigation, and AAERs *while controlling for* existing MWs (control risk). Although controlling for MWs follows the formulation of the Audit Risk Model, which assumes independence between IR and CR, prior research finds little support for this formulation (Kinney Jr. 1989; Waller 1993; Messier Jr. and Austen 2000) as discussed in our development of Hypothesis 2. Instead, our findings, in combination with knowledge-based dependence between IR and CR, suggest that the positive association between strategy and IR implied by Bentley et al. (2013) could be due, in part, to the positive association between strategy and CR implied by Tables 4-6.

We first replicate the restatement prediction model in Bentley et al. (2013) from 2004 to 2014.[28] We approximate the construct of intentional financial misreporting in Bentley et al. (2013) by including only severe restatements that require the company to reissue prior period financial statements and exclude less severe restatements that require only a revision.[29] Consistent with the findings in Bentley et al. (2013), *STRATEGY* is a significant predictor of re-issuance restatements over the period 2004-2014 ($p<0.05$). We then test whether internal control strength mediates the positive association between strategy and re-issuance restatements. In Table 7, the direct effect of *STRATEGY* on restatements equals 0.033 and is significant at $p<0.01$. Strategy is a significant determinant of MWs, ($p<0.01$) and MWs are a significant determinant of restatements ($p<0.01$). The indirect effect equals 0.076, is significant at $p<0.01$, and comprises 70 percent of the total effect, which equals 0.109. These results indicate that MWs

[28] We end our sample period for this test in 2014 for consistency with our other tests. Inferences are consistent when we limit the sample to 2004-2013 or 2004-2012 to allow additional time to observe subsequent restatement disclosures.

[29] "Revision" restatements are not sufficiently material to warrant an 8-K filing and typically correct quarterly misstatements and misstatements that are material in the aggregate but not individually material to any given year (Cheffers, Whalen, and Usvyatsky 2010). Thus, "re-issuance" restatements more closely reflect the construct studied in Bentley et al. (2013).

partially mediate the association between business strategy and re-issuance restatements. These findings are consistent with knowledge-based dependence between IR and CR and indicate that, over the period 2004-2014, the association between strategy and restatements is primarily due to the association between strategy and internal controls (CR) rather than strategy and client business risk (IR). These results also indicate that our findings are not mechanically driven by the association between strategy and restatements as shown in Bentley et al. (2013). Overall, these results are consistent with theory suggesting that business strategy is an underlying determinant of internal control strength and the quality of auditors' internal control reports.

[Insert Table 7 here]

VI. UNTABULATED SENSITIVITY TESTS

Doyle et al. (2007b) argue that firms with stronger corporate governance should have fewer internal control problems. We investigate whether stronger governance can attenuate the association between strategy and internal control issues. We interact *STRATEGY* with board characteristics (e.g., independence percentage, CEO/chair duality, number of meetings, board size, number of independent directors, board turnover, and board chair accounting expertise), audit committee characteristics (e.g., accounting expertise, number of CPA members, percentage of members with accounting experience, and number of meetings), and factor scores representing the board and audit committee characteristics. Although the main effects for several governance variables indicate that better governance improves internal controls generally, we find no evidence that governance attenuates the association between strategy and MWs.

We next investigate whether our results are driven by the extreme values for prospector and defender firms or whether firms' control structures progressively weaken as they demonstrate more characteristics from the prospector end of the *STRATEGY* continuum. We

alternately drop the following observations in our models: (1) prospectors only, (2) defenders only, and (3) both prospectors and defenders. The results are consistent with those shown in Tables 4-6 with two exceptions: the *STRATEGY* coefficient is insignificant in the remediation model when omitting defender firms, and the *STRATEGY* coefficient is insignificant when comparing "timely" MWs to firms with no reported MW when omitting defenders only or when omitting both prospectors and defenders. These results indicate that the association between strategy and internal controls among analyzer firms depends on where they fall along the *STRATEGY* continuum and provide additional evidence that firms' control structures are progressively weaker as firms display more prospector-like characteristics.

We also deconstruct the strategy measure and re-estimate our models using the six individual components of *STRATEGY*. Similar to Bentley et al. (2013, 805), some of the strategy components are not associated with the dependent variables. Further, the model Bayesian Information Criterion indicates strong support for including *STRATEGY* rather than the six components together. When combined with the canonical correlation and redundancy analysis discussed in footnotes 17 and 26, these results are consistent with *STRATEGY* being "greater than the sum of its parts" and incrementally informative beyond the strategy components and previously established determinants of MW reporting.

Finally, we examine the relative stability of a firm's strategy over time. Only one firm switches between prospector and defender in our sample.[30] Firms retain consistent *STRATEGY* scores throughout the sample period and less than 2 percent of firms change their *STRATEGY* score by more than 3 values (out of a total scale of 24) from year-to-year. These results imply

[30] Firms are reluctant to change their chosen business strategies due to the significant resources "required to develop the distinctive competencies, technologies, structures, and management processes needed to pursue a particular strategy….[hence firms] tend to *adjust* rather than *change* their strategies" (Snow and Hambrick 1980, 529, italics in text). Dent's review of the strategy literature reaffirms that "strategic reorientations appear to happen only rarely." (1990, 16–17).

that business strategy serves as one of the underlying, firm-specific characteristics that determine the firm's control structure, which aligns with theoretical expectations.

VII. CONCLUSION

This study links organizational theory to the financial reporting and auditing literatures to examine whether a company's business strategy affects the strength of its ICFR and the quality of auditors' ICFR reports. We find that business strategy is a significant determinant of the strength of a firm's ICFR, incremental to known determinants of MWs. We find that greater prospector characteristics are associated with higher likelihoods of reporting MWs and lower likelihoods of remediation. We also find that strategy is associated with a higher likelihood of untimely reporting of MWs, which suggests that auditors have greater difficulty in identifying and reporting MWs for prospector-like clients. Finally, our results suggest that internal control strength partially mediates the positive association between strategy and restatements in Bentley et al. (2013).

Our research is subject to two primary limitations. While we rely on Miles and Snow's (1978, 2003) strategy typology and prior empirical research to measure strategy, the measure is assessed with noise. Second, we cannot control for selection bias associated with the company's decision to adopt a particular strategy. Organizational theory posits that a company's business strategy is chosen early in the company's life cycle and remains relatively stable over time. Companies must align their organizational structures with their strategic objectives in order to be successful (Miles and Snow 1978, 1994, 2003). Therefore, econometric corrections for self-selection such as propensity-score matching where companies are matched on otherwise equal dimensions excluding strategy is inconsistent with theoretical expectations. Similarly, the stickiness of the strategy measure restricts the ability to define an appropriate instrument within a

two-stage regression model in order to correct for selection effects. However, because a company's business strategy is generally constant over time, identifying a company's strategy may serve as a useful context for understanding differences in the control structural arrangements and weaknesses among firms.

This study contributes to the literature in several ways. First, our study provides a cohesive theory-based explanation for why certain company-level characteristics predict MWs, indicates that business strategy is a significant predictor of MWs incremental to known determinants, and provides a significant increase in the explanatory power of a MW prediction model. Furthermore, we show that business strategy is a significant determinant of ICFR reporting quality and conclude that incorporating business strategy into audit planning by way of internal control evaluation and testing is an important area for audit quality improvement, particularly among prospector clients. Finally, these findings have important implications for stakeholders evaluating the likely strength of a firm's internal controls, auditors planning and performing financial statement audits, managers evaluating their internal controls and reporting on internal controls to stakeholders, and regulators conducting risk-based inspections.

APPENDIX
Variable Definitions

Variable	***Definition***
STRATEGY	Discrete score with values ranging from 6 to 30 where high (middle) [low] values indicate prospector (analyzer) [defender] firms, respectively, following Bentley et al. (2013).
MW	Indicator variable equal to 1 when the firm's auditor reports a material weakness under SOX Section 404 and 0 otherwise.
MW_COUNT	The number of material weaknesses reported under SOX Section 404 in year *t*.
REMEDIATE	Indicator variable equal to 0 when the firm's auditor reports the same type of Section 404 material weaknesses in years *t* and *t*+1 based on the MW classification taxonomy in Audit Analytics after having reported a material weakness in year *t*. Indicator variable equal to 1 if the firm's auditor issues an unqualified ICFR report in year *t*+1 or if the firm's auditor does not report a MWs in year *t*+1 for the reasons given in year *t*.
MW_TIMELINESS	Indicates when a MW is reported: set to 0 if year *t* is never associated with a MW, set to 1 if a MW is reported in connection with the filing of year *t*'s financial statements (considered a timely report), and set to 2 if a MW is revealed through a restated SOX section 404 disclosure or in the aftermath of a future restatement of year *t*'s financial statements (considered an untimely report).
LnMVE	The natural log of the firm's market capitalization (shares outstanding times price per share as of year-end).
AGE	The natural log of the number of years since the firm first appeared on CRSP.
AGGR_LOSS	Indicator variable equal to 1 if the sum of income before extraordinary items in years *t*-1 and *t* is negative and 0 otherwise.
BANKRUPTCY	The probability of bankruptcy, following Shumway (2001).
SPE	The natural log of the number of special purpose entities reported on Exhibit 21 of the firm's 10-k.
SEGMENTS	The natural log of the sum of the firm's business and geographic segments reported on Compustat.
FOREIGN	Indicator variable equal to 1 if the firm had foreign income and 0 otherwise.
ACQ_VALUE	The value of acquisitions in the current and prior-year scaled by the firm's market capitalization.
EXTREME_GROWTH	Indicator variable equal to 1 if change in industry-adjusted sales growth is in the largest quintile and 0 otherwise.

RESTRUCTURING	The total restructuring charges in the current and prior year scaled by the firm's market capitalization.
RESTATEMENT	Indicator variable equal to 1 if the firm announces a restatement during year *t* and 0 otherwise.
BIGN	Indicator variable equal to 1 if the company is audited by a Big 4 audit firm and 0 otherwise.
EXEC_TURN	Indicator variable equal to 1 if the firm experiences turnover of the CEO or CFO during year *t* (as indicated by Audit Analytics) and 0 otherwise.
BOD_TURN	Indicator variable equal to 1 if the firm experiences turnover on the board of directors during year *t* (as indicated by Audit Analytics) and 0 otherwise.
INST_OWN	The percentage of the firm's shares owned by institutional owners.

REFERENCES

Abernethy, M. A., and A. M. Lillis. 1995. The impact of manufacturing flexibility on management control system design. *Accounting, Organizations and Society* 20 (4): 241–258.

Agbejule, A., and A. Jokipii. 2009. Strategy, control activities, monitoring and effectiveness. *Managerial Auditing Journal* 24 (6): 500–522.

AICPA, (American Institute of Certified Public Accountants). 2006. *AU Section 311: Planning and Supervision*. New York, NY: AICPA.

Asare, S. K., B. C. Fitzgerald, L. E. Graham, J. R. Joe, E. M. Negangard, and C. J. Wolfe. 2013. Auditors' internal control over financial reporting decisions: Analysis, synthesis, and research directions. *Auditing: A Journal of Practice & Theory* 32 (Supplement 1): 131–166.

Ashbaugh-Skaife, H., D. W. Collins, and W. R. Kinney Jr. 2007. The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics* 44 (1–2): 166–192.

Ashbaugh-Skaife, H., D. W. Collins, W. R. Kinney Jr., and R. LaFond. 2008. The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review* 83: 217–250.

———. 2009. The effect of internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research* 47: 1–43.

Balsam, S., G. D. Fernando, and A. Tripathy. 2011. The impact of firm strategy on performance measures used in executive compensation. *Journal of Business Research* 64 (2): 187–193.

Bauer, A. M. 2015. Tax avoidance and the implications of weak internal controls. *Contemporary Accounting Research* 33 (2): 449–486.

Beard, D. W., and G. G. Dess. 1981. Corporate-level strategy, business-level strategy, and firm performance. *Academy of Management Journal* 24 (4): 663–688.

Bedard, J. C., and L. Graham. 2011. Detection and Severity Classifications of Sarbanes-Oxley Section 404 Internal Control Deficiencies. *The Accounting Review* 86 (3): 825–855.

Bedard, J. C., R. Hoitash, U. Hoitash, and K. Westermann. 2012. Material weakness remediation and earnings quality: A detailed examination by type of control deficiency. *Auditing: A Journal of Practice & Theory* 31 (1): 57–78.

Bell, T. B., F. O. Marrs, I. Solomon, and H. Thomas. 1997. *Auditing organizations through a strategic-systems lens: The KPMG business measurement process*. KPMG, LLP.

Bell, T. B., M. E. Peecher, and I. Solomon. 2002. The strategic-systems approach to auditing. *Cases in Strategic-Systems Auditing*: 1–34.

Beneish, M. D., M. B. Billings, and L. D. Hodder. 2008. Internal control weaknesses and information uncertainty. *The Accounting Review* 83 (3): 665–703.

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

Bentley, K. A., T. C. Omer, and N. Y. Sharp. 2013. Business strategy, financial reporting irregularities, and audit effort. *Contemporary Accounting Research* 30 (2): 780–817.

Besch, D. 2009. Remarks before the 2009 AICPA National Conference on Current SEC and PCAOB Developments December 7, Washington, DC.

Blay, A. D. 2005. Independence threats, litigation risk, and the auditor's decision process. *Contemporary Accounting Research* 22 (4): 759–789.
Bouwens, J., and M. A. Abernethy. 2000. The consequences of customization on management accounting system design. *Accounting, Organizations and Society* 25 (3): 221–241.
Bruggeman, W., and W. Van der Stede. 1993. Fitting management control systems to competitive advantage. *British Journal of Management* 4: 205–218.
Burton, R. M., J. Lauridsen, and B. Obel. 2002. Return on assets loss from situational and contingency misfits. *Management science* 48 (11): 1461–1485.
Chan, K., G. Kleinman, and P. Lee. 2009. The impact of Sarbanes-Oxley on internal control remediation. *International Journal of Accounting & Information Management* 17 (1): 53–65.
Cheffers, M., D. Whalen, and O. Usvyatsky. 2010. *Reissuance Restatements versus Revision Restatements from 2005 to 2009*. Audit Analytics.
Chenhall, R. H. 2003. Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society* 28 (2): 127–168.
Chenhall, R. H., and D. Morris. 1995. Organic decision and communication processes and management accounting systems in entrepreneurial and conservative business organizations. *Omega* 23 (5): 485–497.
Croteau, B. T. 2015. Remarks before the 2015 AICPA National Conference on Current SEC and PCAOB Developments December 9, Washington, DC.
Cunningham, L. A. 2004. Facilitating auditing's new early warning system: Control disclosure, auditor liability, and safe harbors. *Buffalo Law Review* 55: 789–814.
Davila, T. 2000. An empirical study on the drivers of management control systems' design in new product development. *Accounting, organizations and society* 25 (4): 383–409.
DeFond, M. L., and C. S. Lennox. 2015. Do PCAOB Inspections Improve the Quality of Internal Control Audits? Working paper, University of Southern California.
Dekker, H. C., T. Groot, and M. Schoute. 2013. A balancing act? The implications of mixed strategies for performance measurement system design. *Journal of Management Accounting Research* 25 (1): 71–98.
Dent, J. F. 1990. Strategy, organization and control: Some possibilities for accounting research. *Accounting, Organizations and Society* 15: 3–25.
DeSarbo, W. S., C. Anthony Di Benedetto, M. Song, and I. Sinha. 2005. Revisiting the Miles and Snow strategic framework: uncovering interrelationships between strategic types, capabilities, environmental uncertainty, and firm performance. *Strategic Management Journal* 26 (1): 47–74.
Dhaliwal, D., C. Hogan, R. Trezevant, and M. Wilkins. 2011. Internal control disclosures, monitoring, and the cost of debt. *The Accounting Review* 86 (4): 1131–1156.
Doyle, J. T., W. Ge, and S. McVay. 2007a. Accruals quality and internal control over financial reporting. *The Accounting Review* 82 (5): 1141–1170.
———. 2007b. Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics* 44 (1–2): 193–223.
Feng, M., J. D. Gramlich, and S. Gupta. 2009. Special purpose vehicles: Empirical evidence on determinants and earnings management. *The Accounting Review* 84 (6): 1833–1876.
Fisher, J. 1995. Contingency-based research on management control systems: Categorization by level of complexity. *Journal of Accounting Literature* 14: 24–53.

Ge, W., and S. McVay. 2005. The disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act. *Accounting Horizons* 19 (3): 137–158.
Ghoshal, S. 2003. Miles and Snow: Enduring insights for managers. *The Academy of Management Executive* 17 (4): 109–114.
Goh, B. W. 2009. Audit committees, boards of directors, and remediation of material weaknesses in internal control. *Contemporary Accounting Research* 26 (2): 549–579.
Govindarajan, V., and A. K. Gupta. 1985. Linking control systems to business unit strategy: impact on performance. *Accounting, Organizations and Society* 10 (1): 51–66.
Gow, I. D., G. Ormazabal, and D. J. Taylor. 2010. Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review* 85 (2): 483–512.
Gupta, P., and N. Nayar. 2007. Information content of control deficiency disclosures under the Sarbanes-Oxley Act: An empirical investigation. *International Journal of Disclosure and Governance* 4: 3–23.
Hackenbrack, K., and M. W. Nelson. 1996. Auditors' incentives and their application of financial accounting standards. *Accounting Review*: 43–59.
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 (1): 5–26.
Hammersley, J. S., L. A. Myers, and C. Shakespeare. 2008. Market reactions to the disclosure of internal control weaknesses and to the characteristics of those weaknesses under section 302 of the Sarbanes Oxley Act of 2002. *Review of Accounting Studies* 13 (1): 141–165.
Hammersley, J. S., L. A. Myers, and J. Zhou. 2012. The failure to remediate previously disclosed material weaknesses in internal controls. *Auditing: A Journal of Practice & Theory* 31 (2): 73–111.
Hanson, J. D. 2013. PCAOB Update for Those on the Front Lines of Financial Reporting presented at the 32nd Annual Current Financial Reporting Issues Conference, Financial Executives International, November 19, New York, NY.
Hennes, K. M., A. J. Leone, and B. P. Miller. 2008. The Importance of Distinguishing Errors from Irregularities in Restatement Research: The Case of Restatements and CEO/CFO Turnover. *The Accounting Review* 83 (6): 1487–1519.
Henri, J.-F. 2006. Management control systems and strategy: A resource-based perspective. *Accounting, Organizations and Society* 31 (6): 529–558.
Higgins, D., T. C. Omer, and J. D. Phillips. 2015. The Influence of a Firm's Business Strategy on its Tax Aggressiveness. *Contemporary Accounting Research* 32 (2): 674–702.
IFAC, (International Federation of Accountants). 2009. *International Standard on Auditing (ISA) 315: Identifying and Assessing the Risks of Material Misstatement Through Understanding the Entity and Its Environment*. New York, NY: IFAC.
Ittner, C. D., D. F. Larcker, and M. V. Rajan. 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72 (2): 231–255.
Johnstone, K., C. Li, and K. H. Rupley. 2011. Changes in corporate governance associated with the revelation of internal control material weaknesses and their subsequent remediation. *Contemporary Accounting Research* 28: 331–383.
Kadous, K., S. J. Kennedy, and M. E. Peecher. 2003. The effect of quality assessment and directional goal commitment on auditors' acceptance of client-preferred accounting methods. *The Accounting Review* 78 (3): 759–778.
Khandwalla, P. N. 1972. The effect of different types of competition on the use of management controls. *Journal of Accounting Research* 10 (2): 275–285.

Kim, J.-B., B. Y. Song, and L. Zhang. 2011. Internal control weakness and bank loan contracting: Evidence from SOX section 404 disclosures. *The Accounting Review* 86 (4): 1157–1188.

Kinney Jr., W. R. 1989. Achieved audit risk and the audit outcome space. *Auditing-A Journal of Practice & Theory* 8 (Supplement): 67–84.

———. 2000. Research opportunities in internal control quality and quality assurance. *Auditing: A Journal of Practice & Theory* 19 (s-1): 83–90.

Kinney Jr., W. R., R. D. Martin, and M. L. Shepardson. 2013. Reflections on a Decade of SOX 404 (b) Audit Production and Alternatives. *Accounting Horizons* 27 (4): 799–813.

Kinney Jr., W. R., and M. L. Shepardson. 2011. Do control effectiveness disclosures require SOX 404 (b) internal control audits? A natural experiment with small US public companies. *Journal of Accounting Research* 49 (2): 413–448.

Knechel, W. R. 2007. The business risk audit: Origins, obstacles and opportunities. *Accounting, Organizations and Society* 32 (4–5): 383–408.

Langfield-Smith, K. 1997. Management control systems and strategy: A critical review. *Accounting, Organizations and Society* 22: 207–232.

Li, C., L. Sun, and M. Ettredge. 2010. Financial executive quality, financial executive turnover, and adverse SOX 404 opinions. *Journal of Accounting and Economics* 50: 93–110.

Lillis, A. M., and P. M. G. van Veen-Dirks. 2008. Performance measurement system design in joint strategy settings. *Journal of Management Accounting Research* 20 (1): 25–57.

Long, J. S., and J. Freese. 2006. *Regression models for categorical dependent variables using Stata*. Second edition. Stata Press.

Lynch, D. 2016. Can strong tax-related internal controls improve tax planning effectiveness? The effects of remediating material weaknesses in internal control on tax avoidance. Doctoral dissertation, University of Wisconsin-Madison.

McDaniel, S. W., and J. W. Kolari. 1987. Marketing strategy implications of the Miles and Snow strategic typology. *The Journal of Marketing*: 19–30.

Messier Jr, W. F., and L. A. Austen. 2000. Inherent risk and control risk assessments: Evidence on the effect of pervasive and specific risk factors. *Auditing: A Journal of Practice & Theory* 19 (2): 119–131.

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

———. 1994. *Fit, failure and the hall of fame: How companies succeed or fail*. New York, NY: The Free Press.

———. 2003. *Organizational strategy, structure, and process*. Stanford, CA: Stanford University Press.

Miles, R. E., C. C. Snow, A. D. Meyer, and H. J. Coleman. 1978. Organizational strategy, structure and process. *The Academy of Management Review* 3 (3): 546–562.

Miller, D., and P. H. Friesen. 1978. Archetypes of strategy formulation. *Management Science* 24 (9): 921–933.

———. 1982. Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal* 3 (1): 1–25.

Montemayor, E. F. 1996. Congruence between pay policy and competitive strategy in high-performing firms. *Journal of Management* 22 (6): 889–908.

Newton, N. J., J. S. Persellin, D. Wang, and M. S. Wilkins. 2016. Internal control opinion shopping and audit market competition. *The Accounting Review* 91 (2): 603–623.

PCAOB, (Public Company Accounting Oversight Board). 2004. *Auditing Standard No. 2: An Audit of Internal Control Over Financial Reporting That Is Integrated with an Audit of Financial Statements*. Washington, DC: PCAOB.

———. 2007. *Auditing Standard No. 5: An Audit of Internal Control over Financial Reporting That Is Integrated with an Audit of Financial Statements and Related Independence Rule and Conforming Amendments*. Washington, DC: PCAOB.

———. 2010. *Auditing Standard No. 8: Audit Risk*. Washington, DC: PCAOB.

———. 2013. *Staff Audit Practice Alert No. 11: Considerations for Audits of Internal Control over Financial Reporting*. Washington, DC: PCAOB.

———. 2015. *Concept Release on Audit Quality Indicators*. Washington, DC: PCAOB.

Peecher, M. E., R. Schwartz, and I. Solomon. 2007. It's all about audit quality: Perspectives on strategic-systems auditing. *Accounting, Organizations and Society* 32 (4–5): 463–485.

Porter, M., E. 1980. *Competitive strategy: Techniques for analyzing industries and competitors*. New York, NY: The Free Press.

Raftery, A. E. 1995. Bayesian model selection in social research. *Sociological Methodology* 25: 111–163.

Rajagopalan, N. 1997. Strategic orientation, incentive plan adoptions, and firm performance: Evidence from electric utility firms. *Strategic Management Journal* 18 (10): 761–785.

Rice, S. C., and D. P. Weber. 2012. How effective is internal control reporting under SOX 404? Determinants of the (non-)disclosure of existing material weaknesses. *Journal of Accounting Research* 50 (3): 811–843.

Scholz, S. 2008. *The Changing Nature and Consequences of Public Company Financial Restatements 1997-2006.* The Department of the Treasury.

Shumway, T. 2001. Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business* 74 (1): 101–124.

Simons, R. 1987. Accounting control systems and business strategy: an empirical analysis. *Accounting Organizations and Society* 12 (4): 357–374.

Snow, C. C., and D. C. Hambrick. 1980. Measuring organizational strategies: Some theoretical and methodological problems. *The Academy of Management Review* 5 (4): 527–538.

Stewart, D., and W. Love. 1968. A general canonical correlation index. *Psychological bulletin* 70 (3p1): 160.

Thomas, A. S., and K. Ramaswamy. 1994. Matching managers to strategy: An investigation of performance implications and boundary conditions. *Australian Journal of Management* 19 (1): 73–93.

———. 1996. Matching managers to strategy: Further tests of the Miles and Snow typology. *British Journal of Management* 7 (3): 247–261.

Waller, W. S. 1993. Auditors' assessments of inherent and control risk in field settings. *Accounting Review*: 783–803.

TABLE 1
Sample Selection

Internal control opinions not claiming an exemption 2004-2014	37,097
Exclude firm years lacking COMPUSTAT data to construct control variables	(2,504)
Exclude firm years lacking CRSP data to construct control variables	(2,033)
Exclude firm years lacking Audit Analytics data to construct control variables	(25)
Exclude firm years from financial and regulated industries	(9,007)
Exclude firm years lacking data to construct *STRATEGY* measure	(4,125)
Exclude firm years with Sec. 302 MWs without corresponding Sec. 404 MWs	(53)
Final Sample	19,350

TABLE 2
Descriptive Statistics

Panel A: Comparative Descriptive Statistics

	Full Sample (N=19,350)					Prospectors (N=1,426)		Defenders (N=1,111)	
Variable	**Mean**	**Med.**	**Q1**	**Q3**	**Std. Dev.**	**Mean**	**Med.**	**Mean**	**Med.**
STRATEGY	18.137	18.000	16.000	21.000	3.606	**25.109**	**25.000**	**10.988**	**11.000**
MW	0.070	0.000	0.000	0.000	0.254	**0.093**	**0.000**	**0.042**	**0.000**
MW_COUNT	0.131	0.000	0.000	0.000	0.597	**0.199**	**0.000**	**0.083**	**0.000**
REMEDIATE	0.671	1.000	0.000	1.000	0.470	**0.589**	1.000	**0.775**	1.000
LnMVE	7.048	6.888	5.700	8.206	1.792	**6.787**	**6.667**	**6.592**	**6.459**
AGE	2.877	2.833	2.398	3.367	0.686	**2.559**	**2.485**	**2.882**	**2.890**
AGGR_LOSS	0.257	0.000	0.000	1.000	0.437	**0.475**	**0.000**	**0.247**	**0.000**
BANKRUPTCY	4.206	4.000	2.000	7.000	2.817	**4.619**	4.000	**4.878**	5.000
SPE	1.081	0.693	0.000	1.946	1.242	**0.791**	**0.000**	**1.231**	**1.099**
SEGMENTS	1.547	1.609	1.099	1.946	0.578	1.507	1.609	1.530	1.609
FOREIGN	0.162	0.000	0.000	0.000	0.368	0.163	0.000	0.144	0.000
ACQ_VALUE	0.051	0.001	0.000	0.037	0.161	0.052	**0.002**	0.051	**0.000**
EXTREME_GROWTH	0.171	0.000	0.000	0.000	0.377	**0.330**	**0.000**	**0.162**	**0.000**
RESTRUCTURING	0.013	0.000	0.000	0.008	0.051	**0.010**	0.000	**0.020**	0.000
RESTATEMENT	0.088	0.000	0.000	0.000	0.283	0.088	0.000	0.073	0.000
BIGN	0.859	1.000	1.000	1.000	0.348	0.846	1.000	0.850	1.000
EXEC_TURN	0.239	0.000	0.000	0.000	0.427	0.251	0.000	0.223	0.000
BOD_TURN	0.471	0.000	0.000	1.000	0.499	**0.487**	**0.000**	**0.439**	**0.000**
INST_OWN	0.596	0.707	0.353	0.871	0.337	**0.527**	0.634	**0.576**	0.666

TABLE 2
(continued)

Panel B: Descriptive Statistics for the Timeliness of Material Weakness Reporting

	Timely MWs	Untimely MWs	Total	# obs	Timely %	Untimely %
Prospectors	92	81	173	1,426	6.5%	5.7%
Analyzers	786	737	1,523	16,813	4.7%	4.4%
Defenders	33	25	58	1,111	3.0%	2.3%

Panel C: Industry Composition

Two-digit SIC code	**Industry Affiliation**	**Full Sample**		**Prospectors**		**Defenders**	
01-09	Agricultural, Forestry, and Fishing	83	0.4%	5	0.4%	9	0.8%
10-14	Mining	1305	6.7%	95	6.7%	85	7.7%
15-17	Construction	311	1.6%	18	1.3%	8	0.7%
20-39	Manufacturing	9916	51.2%	850	59.6%	592	53.3%
40-48	Transportation and Communication Services	1430	7.4%	87	6.1%	90	8.1%
50-51	Wholesale Trade	656	3.4%	39	2.7%	22	2.0%
52-59	Retail Trade	1828	9.4%	83	5.8%	40	3.6%
70-89	Services	3767	19.5%	246	17.3%	259	23.3%
99	Other	54	0.3%	3	0.2%	6	0.5%
Total		19,350	100.0%	1,426	100.0%	1,111	100.0%

Note: The appendix provides definitions of variables in this table. The descriptive statistics in panel A are shown for the full set of observations and separately for prospectors and defenders (defined as having *STRATEGY* scores between 24 to 30 and 6 to 12, respectively). The sample sizes for the variable *REMEDIATE* are 1125, 107, and 40 for the full, prospector, and defender samples. All other sample sizes are indicated in the table. Bolded means and medians are significantly different between prospectors and defenders at the 5 percent level. The total number of timely and untimely MWs in panel B is greater than the number of MWs in panel A because Panel B includes untimely MWs reported in conjunction with a restatement when the original audit report was unqualified (following Rice and Weber 2012). The industry composition in panel C is based on broad categories of two-digit SIC codes.

TABLE 3
Correlation Table

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	*STRATEGY*									
(2)	*MW*	**0.04**								
(3)	*MW_COUNT*	**0.04**	**0.80**							
(4)	*REMEDIATE*	**-0.06**	N/A	**-0.33**						
(5)	*LnMVE*	**0.05**	**-0.14**	**-0.12**	0.01					
(6)	*AGE*	**-0.14**	**-0.08**	**-0.07**	0.01	**0.28**				
(7)	*AGGR_LOSS*	**0.12**	**0.11**	**0.11**	-0.05	**-0.38**	**-0.17**			
(8)	*BANKRUPTCY*	**-0.04**	**0.13**	**0.12**	-0.05	**-0.56**	**-0.16**	**0.46**		
(9)	*SPE*	**-0.09**	**-0.06**	**-0.05**	-0.04	**0.28**	**0.18**	**-0.07**	**-0.06**	
(10)	*SEGMENTS*	0.00	-0.01	0.00	**-0.08**	**0.25**	**0.21**	**-0.07**	**-0.14**	**0.04**
(11)	*FOREIGN*	**0.03**	**0.02**	**0.02**	-0.03	**0.08**	0.00	0.00	**-0.03**	**-0.07**
(12)	*ACQ_VALUE*	**0.02**	0.01	0.00	0.01	**-0.10**	**-0.02**	**0.06**	**0.09**	**0.09**
(13)	*EXTREME_GROWTH*	**0.12**	0.00	0.00	-0.02	0.00	**-0.16**	**0.02**	**-0.07**	**-0.07**
(14)	*RESTRUCTURING*	**-0.04**	**0.03**	**0.03**	0.00	**-0.18**	**0.02**	**0.26**	**0.21**	**0.03**
(15)	*RESTATEMENT*	0.01	**0.19**	**0.20**	-0.06	**-0.06**	**-0.02**	**0.06**	**0.08**	**0.02**
(16)	*BIGN*	0.00	**-0.05**	**-0.04**	0.04	**0.33**	**0.05**	**-0.08**	**-0.10**	**0.16**
(17)	*EXEC_TURN*	0.02	**0.07**	**0.08**	-0.02	**-0.05**	**0.03**	**0.11**	**0.08**	**0.06**
(18)	*BOD_TURN*	0.01	**0.01**	**0.02**	0.02	**0.04**	**0.10**	**0.06**	0.00	**0.14**
(19)	*INST_OWN*	**-0.04**	**-0.07**	**-0.07**	**0.08**	**0.15**	**0.14**	**-0.20**	**-0.21**	**0.16**

TABLE 3
(continued)

	Variable	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(11)	*FOREIGN*	**0.18**								
(12)	*ACQ_VALUE*	0.01	-0.01							
(13)	*EXTREME_GROWTH*	**-0.04**	0.00	0.08						
(14)	*RESTRUCTURING*	**0.05**	**0.03**	**0.13**	**-0.07**					
(15)	*RESTATEMENT*	-0.01	0.00	0.01	-0.01	**0.02**				
(16)	*BIGN*	**0.10**	**0.03**	0.00	**-0.05**	**0.03**	0.01			
(17)	*EXEC_TURN*	0.00	**-0.03**	**0.04**	**-0.04**	**0.09**	**0.06**	0.00		
(18)	*BOD_TURN*	0.01	**-0.05**	**0.02**	**-0.03**	**0.06**	**0.04**	**0.03**	**0.29**	
(19)	*INST_OWN*	-0.01	**-0.07**	0.00	**-0.03**	**-0.08**	0.01	**0.12**	**0.03**	**0.13**

Note: The appendix provides definitions of variables in this table. The table shows Pearson correlations among regression variables. Bolded correlations are significant at the 5 percent level. The variable *REMEDIATE* is constructed conditional on the existence of a material weakness (MW) in year *t*, thus the correlation between these two variables is omitted.

TABLE 4
Business Strategy and the Probability of Reporting Material Weaknesses

	(1) MW		(2) MW COUNT	
	Coef.	z-stat	Coef.	z-stat
STRATEGY	0.032***	(4.151)	0.035***	(3.229)
LnMVE	-0.198***	(-5.072)	-0.263***	(-7.820)
AGE	-0.290***	(-4.052)	-0.173**	(-2.538)
AGGR_LOSS	0.115	(0.983)	0.147*	(1.754)
BANKRUPTCY	0.078**	(2.327)	0.078***	(4.660)
SPE	-0.105***	(-3.233)	-0.033	(-0.834)
SEGMENTS	0.212**	(2.460)	0.268***	(3.302)
FOREIGN	0.244**	(2.172)	0.254***	(2.729)
ACQ_VALUE	-0.117	(-0.651)	0.149	(0.797)
EXTREME_GROWTH	-0.032	(-0.272)	0.040	(0.441)
RESTRUCTURING	-0.849**	(-2.413)	-0.248	(-0.486)
RESTATEMENT	1.469***	(12.810)	1.505***	(20.560)
BIGN	-0.052	(-0.363)	-0.260**	(-2.285)
EXEC_TURN	0.434***	(3.535)	0.512***	(7.028)
BOD_TURN	-0.062	(-0.639)	0.045	(0.647)
INST_OWN	-0.453***	(-2.683)	-0.351***	(-2.938)
Industry Indicators	Yes		Yes	
Year Indicators	No		Yes	
Cluster	Firm/Year		Firm	
Observations	19,350		19,350	
Pseudo R^2	0.112		0.118	
Wald p-value			0.000	
ROC Curve	0.752			

Note: The appendix provides definitions of variables in this table. The table shows coefficients (z-statistics) from regressions examining the association of *STRATEGY* with reporting a material weakness (column 1) and the number of material weaknesses reported (column 2). Column (1) uses logistic regression, and Column (2) uses negative binomial regression. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively based on two-tailed tests.

TABLE 5
Business Strategy and the Probability of Remediating a Material Weakness

	REMEDIATE	
	Coef.	z-stat
STRATEGY	-0.041***	(-2.882)
LnMVE	-0.047	(-0.758)
AGE	-0.124	(-1.016)
AGGR_LOSS	0.002	(0.010)
BANKRUPTCY	-0.060	(-1.516)
SPE	-0.083	(-1.053)
SEGMENTS	-0.286**	(-2.236)
FOREIGN	0.051	(0.478)
ACQ_VALUE	-0.085	(-0.453)
EXTREME_GROWTH	0.019	(0.239)
RESTRUCTURING	0.956	(1.289)
RESTATEMENT	0.013	(0.113)
BIGN	0.219	(0.842)
EXEC_TURN	-0.338*	(-1.718)
BOD_TURN	-0.044	(-0.189)
INST_OWN	0.161	(0.977)
MW_COUNT	-0.495***	(-8.369)
Industry Indicators	Yes	
Year Indicators	No	
Cluster	Firm/Year	
Observations	1,125	
Pseudo R^2	0.107	
ROC Curve	0.719	

Note: The appendix provides definitions of variables in this table. The table shows coefficients (z-statistics) from a logistic regression examining the association of *STRATEGY* with the remediation of a reported material weakness (MW). The following independent variables are averaged over the remediation period (see Goh 2009)*: lnMVE, AGGR_LOSS, BANKRUPTCY, SPE, SEGMENTS, FOREIGN, ACQ_VALUE, EXTREME_GROWTH, RESTRUCTURING,* and *INST_OWN*. *BIGN, EXEC_TURN,* and *BOD_TURN* represent the appointed auditor, executive turnover or board turnover (respectively) occurring during the remediation period, and *STRATEGY*, *AGE*, *RESTATEMENT*, and *MW_COUNT* are the values as of the end of year *t* when the MW is reported. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively based on two-tailed tests.

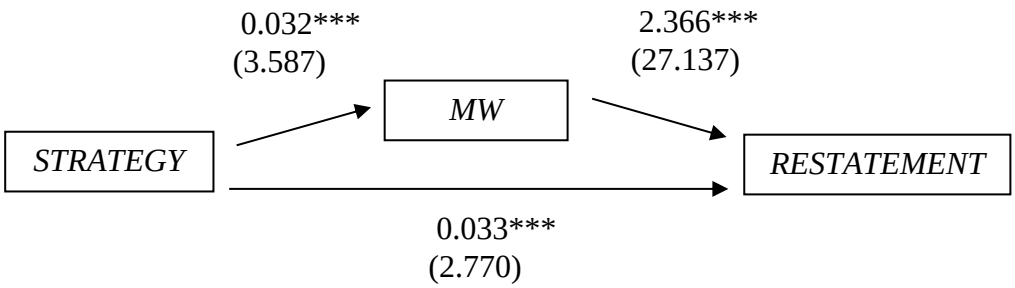
TABLE 6
Business Strategy and the Timeliness of Reporting a Material Weakness

	(1) TIMELY		(2) UNTIMELY	
	Coef.	z-stat	Coef.	z-stat
STRATEGY	0.024**	(1.966)	0.051***	(3.588)
LnMVE	-0.274***	(-7.345)	-0.223***	(-4.606)
AGE	-0.158**	(-1.965)	-0.078	(-0.888)
AGGR_LOSS	0.223**	(2.197)	0.095	(0.781)
BANKRUPTCY	0.066***	(3.536)	0.054***	(2.605)
SPE	-0.029	(-0.645)	-0.002	(-0.032)
SEGMENTS	0.268***	(3.133)	0.153	(1.387)
FOREIGN	0.395***	(3.925)	0.023	(0.198)
ACQ_VALUE	0.015	(0.075)	0.175	(1.009)
EXTREME_GROWTH	0.041	(0.405)	-0.020	(-0.185)
RESTRUCTURING	0.218	(0.428)	-0.295	(-0.364)
RESTATEMENT	1.157***	(11.827)	1.243***	(13.441)
BIGN	-0.357***	(-3.038)	0.485***	(3.055)
EXEC_TURN	0.551***	(6.654)	0.321***	(3.674)
BOD_TURN	0.074	(0.943)	0.027	(0.339)
INST_OWN	-0.304**	(-2.216)	-0.060	(-0.343)
Industry & Year Indicators	Yes			
Cluster	Firm			
Observations	19,350			
Pseudo R^2	0.131			

Note: The appendix provides definitions of variables in this table. This table presents coefficients (z-statistics) from multinomial logistic regressions examining the association between business *STRATEGY* and the timeliness of reported material weaknesses (MW). The dependent variable is *MW_TIMELINESS*. The base group includes all observations where a MW for year *t* is never reported. Column (1) compares the base group to observations where a MW is reported for year *t* at the end of year *t*, and Column (2) compares the base group to observations where a MW is revealed in association with the restatement of year *t*'s SOX 404 opinion or the restatement of financial statements in a later year. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively based on two-tailed tests.

TABLE 7
Mediation Analysis

Panel A: Mediation Model



Panel B: Mediation Effects

Effect of *STRATEGY* on *RESTATEMENT*	Effect coefficient	z-stat	Effect percentage
Direct effect	0.033	2.77	30.0%
Indirect effect	0.076	3.56	70.0%
Total effect	0.109	4.45	100.0%

Note: Panel A shows the coefficients (z-statistics) from structural equation modeling examining the direct and indirect association between restatements and business strategy. The *MW* model includes the control variables shown in Table 4. The *RESTATEMENT* model includes the following controls based on Bentley et al. (2013): size, ROA, loss, book-to-market, sales growth, M&A activity, leverage, financing, company age, Herfindahl index, litigious industry indicator, discretionary accruals, Big 4 indicator, dedicated institutional ownership, and log of non-audit fees. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively based on two-tailed tests.

Panel B shows the total effect of business *STRATEGY* on *RESTATEMENT* divided into direct effect and indirect effect (via material weaknesses).