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Citation

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Internal Controls and Conditional Conservatism

Abstract

This study examines the relation between internal controls and conditional conservatism ("conservatism"), also referred to as timely loss recognition. Using a sample of firms that disclose material weaknesses (MWs) in internal controls under the Sarbanes Oxley Act (SOX), we find a positive relation between internal control quality and conservatism. Specifically, firms with MWs exhibit lower conservatism than firms without such weaknesses. Further, firms that disclose MWs and subsequently remediate these weaknesses exhibit greater conservatism than firms that continue to have MWs. Overall, these results are consistent with strong internal controls acting as a mechanism that facilitates conservatism. Our study contributes to the literature on the reporting effects of strong versus weak internal controls.

I. INTRODUCTION

In 2002, the U.S. Congress passed the Sarbanes-Oxley Act (SOX) to improve the quality of financial reporting and to restore investor confidence in the reliability of financial statements. An important aspect of SOX is its internal control reporting requirements, which allow investors to be informed about the quality of a firm's internal controls. Specifically, Section 302 of the Act requires management to evaluate and report the effectiveness of disclosure and control procedures (SEC 2002), while Section 404 requires the auditor to form an opinion on the effectiveness of internal controls (SEC 2003).[1] Using these internal control disclosures, studies have investigated whether the quality of internal controls affects accruals quality (Doyle et al. 2007a; Ashbaugh-Skaife et al. 2008), a firm's cost of capital (Ogneva et al. 2007; Beneish et al. 2008; Ashbaugh-Skaife et al. 2009), and the accuracy of management guidance (Feng et al. 2009). Given the importance of the internal control provisions as a means to improve the governance of firms, our study extends the literature on the reporting effects of strong versus weak internal controls by examining how the quality of internal controls is related to conservatism in financial reporting.

We focus on conservatism because it has been argued to provide several governance benefits, such as reducing agency conflicts and improving managerial investment decisions (Holthausen and Watts 2001; Watts 2003; Ball and Shivakumar 2005), enhancing the efficiency of debt contracts (Ahmed et al. 2002; Zhang 2008), and reducing litigation costs (Watts 2003). Following Basu (1997), we define conservatism as the higher degree of verification to recognize good news as gains than to recognize bad news as losses. That is, earnings reflect bad news more quickly than good news leading to timelier loss recognition.

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[1] In Endnote 59 of the SEC's (2002) Release on "*Final Rule: Certification of Disclosure in Companies' Quarterly and Annual Reports*," internal control is defined as "a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the reliability of financial reporting."

The literature generally refers to this as conditional conservatism (Beaver and Ryan 2005; Ball and Shivakumar 2005), which we simply refer to as "conservatism" in this study.[2]

Within the agency framework of positive accounting theory that recognizes the contracting benefits of conservatism, it is plausible to expect that strong internal controls facilitate conservative financial reporting. First, firms with a strong internal control environment (e.g., strong tone at the top and/or good internal control culture) are more likely to understand the role of conservatism in contracting and in reducing agency conflicts. Consequently, these firms are more likely to favor its implementation. Further, to the extent that firms are committed to produce conservative reports, strong internal controls can facilitate this process by providing reliable accounting information. Weak internal controls can cause estimation errors in accounting numbers (Doyle et al. 2007a; Ashbaugh-Skaife et al. 2008), making the contractible variables less reliable for contracting and monitoring purposes. This can reduce the effectiveness of conservatism as a governance mechanism and, hence, the incentives to implement conservatism. Finally, weak internal controls could impede the timely recognition of losses, thereby leading to lower conservatism. We develop these arguments on the positive relation between internal control quality and conservatism more fully in Section II.

Moving away from the agency framework of positive accounting theory that argues the contracting benefits of conservatism, it becomes less clear why one would expect a positive relation between internal control quality and conservatism. First, it has been argued that conservatism can increase earnings management (Levitt 1998; Penman and Zhang 2002), which can exacerbate agency conflicts. Under this view, if strong internal controls serve as an effective monitoring mechanism that can mitigate agency problems (Jensen 1993), then we

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[2] Another form of reporting conservatism, referred to as "unconditional conservatism," manifests itself in a systematic undervaluation of the firm's net assets. Ball and Shivakumar (2005) argue that unconditional conservatism cannot yield contracting efficiency because it can be observed and hence, can be "undone" by users of the financial statements. Accordingly, we do not consider unconditional conservatism in our context.

should instead expect strong internal controls to provide a disincentive for firms to produce conservative reports. Second, it is controversial whether conservatism is a desirable attribute of financial reporting. Barth (2008) argues that conservatism is not a qualitative characteristic under the conceptual framework of IASB, which specifies that accounting information should be unbiased. Conservatism, by promoting the deliberate understatement of book value and/or earnings, would render financial statements not neutral. Under this investor value relevance framework that emphasizes that accounting numbers should be neutral inputs to investment decisions, the argument that strong internal controls would promote conservative accounting seems tenuous.

Given the above arguments and corresponding tension, we empirically test the relation between internal control quality and conservatism using firms' internal control disclosures under SOX. We obtain a sample of firms that disclosed at least one material weakness (MW) from January 2003 to November 2005 and deem these firms (hereafter referred to as "MW firms") to have low internal control quality due to the presence of MWs.[3] We apply three measures of conservatism that are commonly used in the literature to capture the asymmetric timeliness in the recognition of economic losses: (1) the persistence of earnings changes measure in Basu (1997), (2) the accrual-based loss recognition measure in Ball and Shivakumar (2005), and (3) the timeliness of earnings to news measure in Basu (1997). To afford stronger inferences to be made about the effects of internal controls on conservatism, we further conduct intertemporal tests of changes in the status of internal controls.

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[3] According to Auditing Standards No. 2 (PCAOB 2004), which was in effect during the time period of our study, a MW is "a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the financial statements will not be prevented or detected." A significant deficiency is "a control deficiency, or combination of control deficiencies, that adversely affects the company's ability to initiate, authorize, record, process, or report external financial data reliably in accordance with generally accepted accounting principles such that there is more than a remote likelihood that a misstatement of the company's annual or interim financial statements that is more than inconsequential will not be prevented or detected."

Specifically, we examine whether MW firms that subsequently remediate their weaknesses exhibit different levels of conservatism from MW firms that continue to have these weaknesses.

Results using all three measures of conservatism are consistent with a positive relation between internal control quality and conservatism. Specifically, we find that MW firms exhibit lower conservatism than control firms without such weaknesses. Further, we find that MW firms that subsequently remediate their weaknesses (i.e., show an improvement in internal control quality) exhibit greater conservatism than MW firms that continue to have these weaknesses. These results are robust to a battery of checks, which include controlling for the self-selection bias in the MW firms sample, controlling for the self-selection bias in the improvement of internal control quality, and using alternative conservatism measures suggested by Khan and Watts (2009) and by Givoly and Hayn (2000). Taken together, our results are consistent with strong internal controls serving as a mechanism that facilitates conservatism.

Doyle et al. (2007a) and Ashbaugh-Skaife et al. (2008) find a positive relation between internal control quality and accruals quality, which is measured by the extent to which accruals are realized as cash flows or the size of abnormal accruals. Our study differs from their studies by examining conservatism, which is a form of accounting bias towards reporting low book values of stockholder equity, *conditional on firms experiencing contemporaneous economic losses* (Ball and Shivakumar 2005).[4] In both Doyle et al. (2007a) and Ashbaugh-Skaife et al. (2008), the authors conjecture that their findings could be due to weak internal

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[4] Ball and Shivakumar (2006) argue that conventional accruals models assume that the relation between accruals and cash flows are linear and do not take into account of the asymmetry in the gain and loss recognition role of accruals. Hence, these models misspecify the accounting accrual process and misestimate discretionary accruals, resulting in incorrect inferences about earnings quality. By examining the timely loss recognition property of earnings, our study takes into consideration the gain and loss recognition role of accruals and the nonlinearity implied by the asymmetry therein. This addresses the concerns in the use of the linear accrual models.

controls (1) causing unintentional (poor estimation ability) errors, or (2) failing to limit intentional income-increasing earnings management. However, Ashbaugh-Skaife et al. (2008) find that firms that report internal control weaknesses have significantly larger positive and larger negative abnormal accruals relative to control firms, which suggests that the first factor is more plausible. Nonetheless, these two factors need not necessarily result in lower conservatism *per se*.

First, the unintentional estimation errors caused by weak internal controls should affect the recognition of bad news and good news in an unbiased and symmetrical manner. Accordingly, these estimation errors are not likely to cause conservatism *per se*, which results from the asymmetric response of earnings to bad versus good economic news. Second, even if weak internal controls fail to limit earnings management, the presence of income-increasing earnings management is not necessarily consistent with the presence of lower conservatism. Givoly et al. (2010, 221) argue that earnings management is situational or episodic, occurring when unmanaged earnings fail to meet an important reporting objective (e.g., meeting analysts' forecasts). Further, earnings management tends to be small-scale in nature due to the short supply of the needed positive accruals. Hence, if the company's accounting is generally conservative, earnings management will only temporarily interrupt this observed reporting pattern but will not obscure the presence of the more prevalent phenomenon of conservatism. The implication is that earnings management and conservatism can co-exist within a firm.[5] Hence, our study complements Doyle et al. (2007a) and Ashbaugh-Skaife et al. (2008) by providing insights into how internal control quality is associated with the phenomenon of conservatism.

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[5] Consistent with this line of reasoning, Givoly et al. (2010) find that public equity firms report more conservatively than their private equity counterparts but at the same time, public equity firms have a greater propensity to manage income. The authors also conduct two tests to show that earnings management and conservative reporting may independently exist in their data.

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Overall, our study extends the literature on the reporting effects of strong versus weak internal controls (e.g., Doyle et al. 2007a; Ogneva et al. 2007; Ashbaugh-Skaife et al. 2008; Beneish et al. 2008). We show that strong internal controls can create an incentive for and facilitate conservative reporting. Our study also contributes to the literature that shows that conservatism is shaped, in part, by a firm's contracting and governance environment (e.g., Ball et al. 2000, Basu et al. 2001; Ball et al. 2003; Ball and Shivakumar 2005; Bushman and Piotroski 2006; Ahmed and Duellman 2007; LaFond and Roychowdhury 2008).

Section II develops the hypotheses, Section III explains the research design, Section IV presents the empirical results, Section V describes additional analyses, and Section VI concludes.

II. HYPOTHESIS DEVELOPMENT

In an attempt to restore investor confidence in firms' financial reporting, SOX requires firms to assess and disclose, and auditors to certify, the effectiveness of internal controls over financial reporting (SEC 2002, 2003). Presumably, regulators hope that these requirements can improve the quality of internal controls and enhance the reliability of financial reporting. Indeed, studies have shown that effective internal controls can enhance financial reporting quality, proxied by accruals quality and the size of abnormal accruals (Doyle et al. 2007a; Ashbaugh-Skaife et al. 2008). Further, Beneish et al. (2008) and Ashbaugh-Skaife et al. (2009) find that effective internal controls result in reduced information risk, which can lower a firm's cost of equity. However, Ogneva et al. (2008) fail to find a significant relation between internal control weaknesses and cost of equity after controlling for primitive firm characteristics and analyst forecast bias. Finally, Feng et al. (2009) find a positive relation between internal control quality and the accuracy of management guidance, consistent with

ineffective internal controls causing errors in internal management reports. Our study extends this stream of research by examining how the quality of internal controls affects conservatism in financial reporting.

Conservatism has been argued to play an important governance role in mitigating agency conflicts and enhancing contracting efficiency within the firm (Holthausen and Watts 2001; Watts 2003; Ball and Shivakumar 2005). The reasoning is that conservatism reduces managers' ability and incentives to overstate earnings and net assets by requiring higher verification standards for gain recognition and reduces managers' ability to withhold information on expected losses. Thus, it prevents overcompensation of managers that is costly to recover *ex post* because of managers' limited liability and tenure.[6] Similarly, in a debt contracting setting, conservatism reduces managers' ability to loosen or avoid dividend restrictions and transfer wealth from bondholders to shareholders, thereby mitigating deadweight losses and increasing firm value (Ahmed et al. 2002; Zhang 2008). According to Ball and Shivakumar (2005), conservative accounting effectively limits the control rights of managers and transfers those rights back to the providers of finance earlier. Finally, Watts (2003) asserts that conservatism can also reduce a firm's expected litigation costs.

Existing studies suggest that the incentives for or against conservative reporting are shaped, in part, by a firm's contracting and governance environment (e.g., Ball et al. 2000; Basu et al. 2001; Ball 2001; Ball et al. 2003; Ball and Shivakumar 2005; Bushman and Piotroski 2006; Ahmed and Duellman 2007; LaFond and Roychowdhury 2008; LaFond and Watts 2008; Nikolaev 2010). For instance, Ahmed et al. (2002) argue that conservatism evolves as an efficient contracting mechanism to mitigate dividend policy conflicts between

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[6] Conservative accounting reduces the tendency of managers with short-term horizons to invest in negative Net Present Value (NPV) projects, making managers aware that they will not be able to defer the recognition of losses to the future (Ball and Shivakumar 2005) and imposing greater costs to biasing financial reports upwards (Guay and Verrecchia 2006).

shareholders and bondholders. They find that the more severe such conflicts are (i.e., the higher the leverage), the more conservative the firm's accounting choices become. LaFond and Roychowdhury (2008) hypothesize and find that when managerial ownership is low, the severity of the agency problem increases, driving a demand for greater conservatism. Ball and Shivakumar (2005) find that private firms are less conservative than public firms and attribute this finding partly to the differences in governance structures and monitoring mechanisms between these two types of firms. Given that the internal control system plays an important governance role within the firm to monitor managers' behavior and to minimize agency costs (Fama and Jensen 1983; Jensen 1993), we conjecture a potential link between the quality of internal controls and conservative reporting.

Within the agency framework of positive accounting theory that recognizes the contracting benefits of conservatism, strong internal controls could therefore create an incentive for conservative accounting reports. According to the *Internal Control—Integrated Framework* (Committee of Sponsoring Organizations of the Treadway Commission 1992), the internal control environment is an important component of internal controls. We argue that firms with a strong tone at the top (e.g., an effective board of directors that protects the interests of shareholders) and good internal control culture (e.g., a corporate culture that has a wealth maximization orientation) are better able to understand the benefits of conservatism in reducing agency conflicts and deadweight loss, in contracting with shareholders and/or debtholders, and in reducing the litigation risks for directors, auditors, and managers. Consequently, these firms are more likely to favor the implementation of conservatism and promote an environment that emphasizes the adherence to conservative reporting.

To the extent that firms understand the benefits of conservatism and are committed to produce conservative reports, strong internal controls can facilitate the use of conservatism in

the contracting process by providing reliable accounting information. This is because the financial reporting system, by emphasizing verifiable outcomes, supplies a rich set of variables that can be used for contracting purposes (Watts and Zimmerman 1986; Bushman and Smith 2001; Armstrong et al. 2010). For instance, financial covenants used in debt contracts to limit managerial discretion with respect to dividend distributions (Ahmed et al. 2002) are often defined in terms of accounting numbers. Similarly, managers' compensation can be tied to changes in book value (or earnings).

As mentioned earlier, weak internal controls can cause unintentional errors in accrual estimations to occur and impact the reported book value or earnings. For instance, the failure to have appropriate reconciliations and reviews in place allow for procedural errors in accrual estimations (Doyle et al. 2007a), and the lack of adequate policies, training, or diligence by company employees can affect the noise and magnitude of abnormal accruals (Ashbaugh-Skaife et al. 2008). Although these estimation errors cannot cause lower conservatism *per se*, they can make the contractible variables noisy and less reliable, providing a poor signal to the board of directors that conservatism has been used effectively in contracting and reducing the usefulness of conservatism in monitoring managers.[7] In sum, by enhancing the ability to use accounting numbers effectively in contracts, strong internal controls can create an incentive for firms to use conservatism as a governance mechanism.

Finally, weak internal controls could also impede the timely recognition of losses, thereby leading to lower conservatism. For instance, the lack of proper policies and procedures to regularly value a firm's inventory or fixed assets prevents asset impairment

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[7] One may question why a firm would not ensure internal controls are effective or remediate internal control weaknesses promptly if the firm views strong internal controls as important in ensuring conservative reports. This could be due to several reasons. First, the firm may fail to constantly invest in internal controls to keep up with the growth of the firm. Second, managers may not be willing to invest in the time and resources to ensure effective internal controls because such actions divert attention away from the core business. Third, firms may face strained financial resources. Fourth, firms may have complex operations, such as multiple operating segments, making it difficult to implement effective internal controls.

from being discovered early and, hence, delays the recognition of losses. Unqualified accounting staffs may lack the expertise to estimate the future cash flows of assets such as goodwill and fixed assets, and identify any reduction in future cash flows that would trigger early recognition of impairment losses. Weak internal controls in the monitoring of the firm's investment decisions can also provide the incentive for managers to avoid timely loss recognition in investment projects. One example is the lack of a proper process to provide the board of directors with timely information on the firm's investments for oversight and review, which could make it easier for managers to invest in or avoid divesting negative NPV projects. Further, control weaknesses over the computation of the present value of future profits of acquired businesses can result in potential loss-making projects not being discovered and terminated early. The Appendix provides some examples of MWs disclosed by firms that could potentially impede the timely recognition of losses.

The above arguments suggest a positive effect of conservative accounting reports in terms of contracting efficiency. However, moving away from the agency framework of conservatism as a beneficial governance mechanism, it becomes less clear why one would expect a positive link between internal controls and conservatism. First of all, it is questionable whether conservatism is beneficial to firms and their shareholders. For instance, Penman and Zhang (2002) contend that conservative accounting can create unrecorded reserves that provide managers with the flexibility to report more income in the future. The increased ability to manage earnings can adversely affect the predictive ability of current earnings for future earnings. In addition, three of the five financial reporting problems highlighted by former SEC Chair Arthur Levitt deal with the understatement of assets–big bath charges, creative acquisition accounting and cookie jar reserves (Levitt 1998). If so, conservative accounting reporters may actually have greater ability to smooth or manipulate

earnings, which could exacerbate, rather than mitigate, agency problems. If strong internal controls serve as an effective monitoring mechanism to reduce agency conflicts (Jensen 1993), then the claim that strong internal controls promote conservatism would become untenable. Instead, strong internal controls could provide no incentive or even a disincentive for firms to produce conservative accounting reports.

Further, regulators and standard setters do not necessarily view conservatism as a desirable attribute of financial reporting. For instance, Barth (2008) points out that conservatism is not a qualitative characteristic of accounting information under the conceptual framework of the International Accounting Standards Board (IASB). The framework specifies that accounting information should be unbiased, and freedom from bias is an essential characteristic of reliability and of neutrality (IASB 2001, ¶31, 36). Conservatism, by allowing the deliberate understatement of assets or income and/or the deliberate overstatement of liabilities or expenses, renders financial statements not neutral and, therefore, jeopardizes the quality of reliability and unbiasdness desired by the conceptual framework.

The Financial Accounting Standards Board (FASB) asserts that the best interest of users is served by neutral reporting accompanied by appropriate disclosure of "the nature and extent of the uncertainty surrounding events and transactions reported to stockholders and others" (see SFAC No. 2, FASB 1980, ¶93; FASB 2000, ¶96, 97).[8] Consistent with this perspective, the FASB is shifting its focus towards fair value accounting, lessening the asymmetric treatment of bad and good news in financial statements. If the objective of

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[8] For example, in SFAC No. 2 (1980) Paragraph 93, the FASB states, "Conservatism in financial reporting should no longer connote deliberate, consistent understatement of net assets and profits…" The FASB also states in the same paragraph that conservatism "…became deeply ingrained and is still in evidence despite efforts over the past 40 years to change it." In the joint exposure draft by FASB and IASB on Conceptual Framework for Financial Reporting (2008), Paragraph BC2.21 states that "the boards concluded that describing *prudence* or *conservatism* as a qualitative characteristic or a desirable response to uncertainty would conflict with the quality of neutrality because …an admonition to be prudent is likely to lead to a bias in the reported financial position and financial performance…. Accordingly, the proposed framework does not include *prudence* or *conservatism* as desirable qualities of financial reporting information."

financial reporting is to provide information useful for making economic decisions (IASB 2001, ¶12), having strong internal controls that ensure that the financial reports are unbiased would satisfy investors' demand for neutral information. Hence, within this investor value-relevance framework, the argument that strong internal controls would promote conservative financial reports (which are essentially biased) seems tenuous.

Given these potentially conflicting perspectives, we empirically test the relation between internal controls and conservatism and test the null hypothesis that internal control quality is unrelated to conservatism. In order to further ascertain the nature of any relation between internal controls and conservatism, we perform intertemporal tests, as in Ashbaugh-Skaife et al. (2008), to determine whether firms with weak internal controls that subsequently show an improvement in internal controls exhibit different levels of conservatism from firms that fail to do so. This would help strengthen our finding on the relation between internal controls and conservatism. The null hypotheses we test are as follows:

H1: There is no relation between internal control quality and conservatism.

H2: Firms with weak internal controls that subsequently show an improvement in internal controls (i.e., remediate their internal control weaknesses) exhibit no difference in conservatism from firms that fail to do so.

III. RESEARCH DESIGN

Measures of accounting conservatism

Persistence of earnings changes (Basu 1997)

Our first measure to capture the differential timeliness of loss versus gain recognition is the persistence of earnings changes in Basu (1997). Basu shows that, relative to good news periods, conservatism results in lower persistence of earnings in bad news periods. The

deferred recognition of relatively good news results in positive changes in income being less likely to reverse than negative earnings changes. This is because, from a time series perspective, the bad news reflected in current earnings will appear as a transitory shock in the earnings process, whereas the effects of a current positive shock will be spread over the earnings of several future periods as anticipated gains are realized. The following model from Basu (1997) is used to estimate this relation:

$$\Delta NI_t = \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1}*\Delta NI_{t-1} + \varepsilon, \tag{1}$$

where firm i subscripts are omitted. ΔNI_t (ΔNI_{t-1}) is the change in net income before extraordinary items for firm i in fiscal year t (t-1) deflated by beginning-of-year total assets, and $D\Delta NI_{t-1}$ is an indicator variable that equals 1 if ΔNI_{t-1} is less than zero, and 0 otherwise.

The negative coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}$ is consistent with timely loss recognition. We further develop model (1) into model (2) to test H1, where MW is an indicator variable that equals 1 if the firm has at least one MW in internal controls, and 0 otherwise. If MW firms report less (more) conservatively than firms without such weaknesses, then the coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$ will be positive (negative); that is, MW firms have a reduced (increased) tendency to reverse negative earnings changes in the following period.

$$\begin{aligned}\Delta NI_t &= \alpha_0 + \alpha_1 D\Delta NI_{t-1} + \alpha_2 \Delta NI_{t-1} + \alpha_3 D\Delta NI_{t-1}*\Delta NI_{t-1} + \alpha_4 MW + \alpha_5 D\Delta NI_{t-1}*MW + \\ &\quad \alpha_6 \Delta NI_{t-1}*MW + \alpha_7 D\Delta NI_{t-1}*\Delta NI_{t-1}*MW + \alpha_8 MB_t + \alpha_9 D\Delta NI_{t-1}*MB_t + \alpha_{10}\Delta NI_{t-1}*MB_t + \\ &\quad \alpha_{11} D\Delta NI_{t-1}*\Delta NI_{t-1}*MB_t + \alpha_{12}LEV_t + \alpha_{13}D\Delta NI_{t-1}*LEV_t + \alpha_{14}\Delta NI_{t-1}*LEV_t + \alpha_{15}D\Delta NI_{t-1}* \\ &\quad \Delta NI_{t-1}*LEV_t + \alpha_{16}SIZE_t + \alpha_{17}D\Delta NI_{t-1}*SIZE_t + \alpha_{18}\Delta NI_{t-1}*SIZE_t + \alpha_{19}D\Delta NI_{t-1}* \\ &\quad \Delta NI_{t-1}*SIZE_t + \alpha_{20}LIT_t + \alpha_{21}D\Delta NI_{t-1}*LIT_t + \alpha_{22}\Delta NI_{t-1}*LIT_t + \alpha_{23}D\Delta NI_{t-1}*\Delta NI_{t-1}*LIT_t + \\ &\quad + \alpha_{24}IND_j + \alpha_{25}D\Delta NI_{t-1}*IND_j + \alpha_{26}\Delta NI_{t-1}*IND_j + \alpha_{27}D\Delta NI_{t-1}*\Delta NI_{t-1}*IND_j + \varepsilon, \qquad (2)\end{aligned}$$

where firm i subscripts are omitted.

Model (2) controls for firm characteristics that are used in prior research to proxy for the demand for conservatism. We include MB, the market value of equity divided by the book value of equity at the end of the fiscal year t, to control for the demand of conservatism arising from information asymmetry associated with a firm's growth option (LaFond and

Watts 2008), and because studies document a negative association between conditional and unconditional conservatism (Givoly et al. 2007; Roychowdhury and Watts 2007). Firms with high levels of leverage tend to have greater bondholder and shareholder conflicts that, in turn, increase the contractual demand for conservatism (Ahmed et al. 2002; Zhang 2008). Hence, we include *LEV*, the sum of long-term debt and current liabilities deflated by total assets at the end of the fiscal year *t*.

LaFond and Watts (2008) argue that large firms produce more public information and have less information asymmetry, reducing the demand for conservative accounting. Hence, we control for firm size (*SIZE*) using the natural log of total assets at the end of the fiscal year *t*.[9] We also control for litigation risk because it can increase managers' incentive to recognize losses in a more timely manner than gains (Basu 1997; Watts 2003). Following Francis et al. (1994), we define an indicator variable *LIT* that equals 1 if a firm operates in a litigious industry, and 0 otherwise.[10] Finally, Givoly et al. (2007) contend that the degree of conservatism varies across different industries. Hence, we include industry indicators (IND_j) following the industry classification in Frankel et al. (2002).[11]

H2 tests whether MW firms that remediate their MWs will exhibit different levels of conservatism from MW firms that continue to have these weaknesses. Following Ashbaugh-Skaife et al. (2008), we deem an unqualified SOX 404 opinion by the external auditor to

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[9] We mean-adjust all the continuous control variables in our regression models (i.e., *MB*, *LEV*, and *SIZE*) to reduce the problems with multicollinearity among the interaction terms (Neter et al. 1989; Aiken and West 1991). This procedure helps to make the magnitude of the coefficients more comparable to prior work.

[10] Consistent with Francis et al. (1994), firms with primary SIC codes of 2833-2836 (biotechnology), 3570-3577 (computer equipment), 3600-3674 (electronics), 5200-5961 (retailing), and 7370-7374 (computer services) are considered to be operating in a litigious industry.

[11] Following Frankel et al. (2002), industry membership is determined by the following SIC codes: agriculture (AGR, 0100-0999), mining and construction (MIN, 1000-1999, excluding 1300-1399), food (FOO, 2000-2111), textiles and printing/publishing (TEX, 2200-2799), chemicals (CHE, 2800-2824, 2840-2899), pharmaceuticals (PHA, 2830-2836), extractive (EXT, 2900-2999, 1300-1399), durable manufacturers (DUR, 3000-3999, excluding 3570-3579 and 3670-3679), transportation (TRA, 4000-4899), utilities (UTI, 4900-4999), retail (RET, 5000-5999), financial (SIC 6000-6999), services (SER, 7000-8999, excluding 7370-7379) and computers (COM, 3570-3579, 3670–3679, 7370-7379).

objectively and unambiguously show that the firm has fully remediated its MWs. We test H2 using the sample of MW firms and replace *MW* with *FIXED* in model (2), where *FIXED* is an indicator variable that equals 1 if a MW firm receives an unqualified second SOX 404 report, and 0 otherwise. A negative (positive) coefficient on *DΔNI$_{t-1}$*ΔNI$_{t-1}$*FIXED* indicates that MW firms that remediate their weaknesses exhibit greater (lower) conservatism than MW firms that still have weaknesses.

Accrual-based loss recognition (Ball and Shivakumar 2005)

Ball and Shivakumar (2005) develop a model to describe the differential timeliness of gain and loss recognition that relies on the correlation between accruals and contemporaneous cash flows.[12] In their regression, as shown in model (3) below, the authors predict a positive coefficient on *DCFO*CFO* for accounting conservatism.

$$ACCRUAL = \gamma_0 + \gamma_1 DCFO + \gamma_2 CFO + \gamma_3 DCFO*CFO, \tag{3}$$

where firm *i* and time *t* subscripts are omitted. *ACCRUAL* is net income before extraordinary items minus operating cash flows for firm *i* in fiscal year *t* deflated by beginning-of-year total assets. *CFO* is operating cash flows for firm *i* in fiscal year *t* deflated by beginning-of-year total assets. *DCFO* is an indicator variable that equals 1 if *CFO* is less than zero, and 0 otherwise. To examine H1, we develop model (4) as shown below. If MWs in internal controls result in lower (greater) accounting conservatism, the accruals can less (more) effectively and timely reflect the future expectation of the negative change of cash flows; the coefficient on *DCFO*CFO*MW* is predicted to be negative (positive).

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[12] The authors assert a positive but asymmetric correlation between accruals and contemporaneous cash flows. This positive correlation arises because cash flow revisions in the current period tend to be positively correlated with the current revisions for expected future cash flows. Timely recognition of unrealized gains and losses is based on expected, not realized, cash flows, and is therefore accomplished through accruals. Consequently, timely gain and loss recognition will produce a positive correlation between accruals and current period cash flows. This correlation is asymmetric because losses, under conservative reporting, are likely to be recognized on a timelier basis than gains.

$$ACCRUAL = \gamma_0 + \gamma_1 DCFO + \gamma_2 CFO + \gamma_3 DCFO*CFO + \gamma_4 MW + \gamma_5 DCFO*MW + \gamma_6 CFO*MW + \gamma_7 DCFO*CFO*MW + \gamma_8 MB + \gamma_9 DCFO*MB + \gamma_{10} CFO*MB + \gamma_{11} DCFO*CFO*MB + \gamma_{12} LEV + \gamma_{13} DCFO*LEV + \gamma_{14} CFO*LEV + \gamma_{15} DCFO*CFO*LEV + \gamma_{16} SIZE + \gamma_{17} DCFO*SIZE + \gamma_{18} CFO*SIZE + \gamma_{19} DCFO*CFO*SIZE + \gamma_{20} LIT + \gamma_{21} DCFO*LIT + \gamma_{22} CFO*LIT + \gamma_{23} DCFO*CFO*LIT + \gamma_{24} IND_j + \gamma_{25} DCFO*IND_j + \gamma_{26} CFO*IND_j + \gamma_{27} DCFO*CFO*IND_j + \varepsilon, \tag{4}$$

where firm i and time t subscripts are omitted and all variables are as previously defined. We

replace *MW* in model (4) with *FIXED* to test H2. If the remediation of MWs is associated

with greater (lower) conservatism, then the coefficient on *DCFO*CFO*FIXED* is predicted to

be positive (negative).

Timeliness of earnings to news (Basu 1997)

Our third measure of conservatism is a firm's timeliness of earnings to news (Basu

1997). As shown in model (5) below, the timeliness of earnings is inferred from the

responsiveness of accounting income to the change in market values. Negative (positive)

market-adjusted stock returns are used as proxies for bad (good) news. The asymmetric

recognition of economic losses relative to gains is captured by a positive coefficient on *DR*R*.

$$NI = \beta_0 + \beta_1 DR + \beta_2 R + \beta_3 DR*R + \varepsilon, \tag{5}$$

where firm i and time t subscripts are omitted. *NI* is the net income before extraordinary items

for firm i in fiscal year t, deflated by the beginning-of-year market value, *R* is the market-

adjusted stock return for firm i over the fiscal year t, and *DR* is an indicator variable that

equals 1 if *R* is less than zero, and 0 otherwise.[13]

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[13] Dietrich et al. (2007) argue that the interpretation of model (5) is valid only when the market is efficient; in particular, if market returns cause earnings, and not the reverse. The authors also show that partitioning a regression sample with one of the regressors (*R*) may lead to biased inferences. However, Ryan (2006) notes that two well-known empirical results, the low R^2s observed in contemporaneous returns-earnings regressions (Collins et al. 1997; Ely and Waymire 1999; Francis and Schipper 1999) and a large literature showing that returns typically reflect information on a timelier basis than earnings, indicate that the concern mentioned by Dietrich et al. is likely to induce a very tiny bias in the estimation of conservatism. Ryan (2006) recommends measuring returns over the fiscal year to partially remove the impact of the annual earnings announcement over stock prices, which occurs approximately three months after closing. He also recommends the use of market-

To test H1, we develop model (6). A negative (positive) coefficient on *DR*R*MW* indicates that MW firms exhibit lower (higher) conservatism than firms without such weaknesses; that is, the MW firms have lower (higher) incremental timeliness of earnings to bad news than to good news. To test H2, we replace *MW* with *FIXED* in model (6). A positive (negative) coefficient on *DR*R*FIXED* would suggest that MW firms that remediate their weaknesses exhibit greater (lower) conservatism than MW firms that fail to do so.

$$
\begin{aligned}
NI = \ & \beta_0 + \beta_1 DR + \beta_2 R + \beta_3 DR{*}R + \beta_4 MW + \beta_5 DR{*}MW + \beta_6 R{*}MW + \beta_7 DR{*}R{*}MW \\
& + \beta_8 MB + \beta_9 DR{*}MB + \beta_{10} R{*}MB + \beta_{11} DR{*}R{*}MB + \beta_{12} LEV + \beta_{13} DR{*}LEV + \\
& \beta_{14} R{*}LEV + \beta_{15} DR{*}R{*}LEV + \beta_{16} SIZE + \beta_{17} DR{*}SIZE + \beta_{18} R{*}SIZE + \beta_{19} DR{*}R{*}SIZE + \\
& \beta_{20} LIT + \beta_{21} DR{*}LIT + \beta_{22} R{*}LIT + \beta_{23} DR{*}R{*}LIT + \beta_{24} IND_j + \beta_{25} DR{*}IND_j + \\
& \beta_{26} R{*}IND_j + \beta_{27} DR{*}R{*}IND_j + \varepsilon,
\end{aligned}
\tag{6}
$$

where firm *i* and time *t* subscripts are omitted and all variables are as previously defined.

Givoly et al. (2007) point out the importance of controlling for the information or disclosure environment when using the Basu's (1997) timeliness measure. The control variables in our regressions partially address this issue.[14] Nonetheless, to further mitigate this concern, we control for other factors that are likely to proxy for the amount or quality of information disclosed by a firm—the annual frequency of management forecasts, the number of days from management forecast to fiscal year end date, audit quality (proxied by audit firm size), analyst following, and analyst forecast accuracy. The interpretation of our results for

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adjusted returns, defined as raw returns minus the value-weighted CRSP market return, to create the partitioning dummy variable *DR* in the Basu regression. Hence, to mitigate the concerns of Dietrich et al. (2007), we measure returns over the fiscal year and use market-adjusted returns instead of raw returns.

[14] First, Givoly et al. (2007) contend that the timeliness measure is understated for firms where the information environment is characterized by a smooth and frequent arrival of news relative to firms for which the news arrive less frequently. The information environment of larger firms is more likely to conform to the former characterization. In this aspect, controlling for firm size addresses this concern. Second, Givoly et al. caution that if a highly litigious environment prompts management to preempt bad news by disclosing it early, the Basu's timeliness measure will under-estimate the degree of conservatism. Our inclusion of *LIT* as control in the regression mitigates this concern. Third, Givoly et al. point out that Basu's (1997) measure of conservatism is likely to be negatively related to unconditional conservatism. Hence, we include market-to-book value for control of unconditional conservatism. Fourth, Givoly et al. highlight that the information environment can vary across industries, which will affect the timeliness measure. We address this concern through the inclusion of industry dummy variables as controls.

Basu's (1997) timeliness measure (untabulated) is not affected by the inclusion of these variables.

Sample selection

Using the sample firms in Doyle et al. (2007a), we identify 1,098 firms that, under either SOX 302 or SOX 404, disclose at least one MW from January 2003 to November 2005.[15] We focus on firms that disclosed MWs because the reporting of MWs is mandatory, whereas the reporting of significant deficiencies and control deficiencies is not (Doyle et al. 2007a).[16] We deem a firm to have weak internal controls (i.e., low internal control quality) so long as it has at least one MW.

Table 1, Panel A summarizes the sample selection procedure for the descriptive statistics and for testing H1. We choose the fiscal years 2000 and 2001 to test H1 because these years just precede the enactment of SOX and hence avoid any confounding effects due to SOX. Our assumption is that MWs exist within the firm even before their disclosures from January 2003 to November 2005 (Doyle et al. 2007a). Based on the sample firms from Doyle et al. (2007a), we identify 1,230 (6,835) firm-year observations for the MW firms (control firms with no MW disclosures from January 2003 to November 2005) that have available data in Compustat and CRSP for fiscal years 2000 and 2001. Then we remove 84 (434) outlier observations for all the continuous variables at the top and bottom 0.5% levels, leaving us

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[15] We thank Jeffrey Doyle, Weili Ge, and Sarah McVay for sharing the data. The data can be found at: http://faculty.washington.edu/geweili/ICdata.html.

[16] Although both MWs and significant deficiencies are deficiencies in the design or operation of internal controls, significant deficiencies are less severe and are not required to be publicly disclosed under SOX 302 (SEC 2004). Hence, the disclosure of significant deficiencies is clearly voluntary. On the other hand, under SOX 302, if management identifies a MW in their controls, they are precluded from reporting that the controls are effective and must disclose the identified MW. Hence, the disclosure of MWs is effectively mandatory. According to Doyle et al. (2007b), there is some ambiguity regarding whether SOX 302 certifications require the public disclosure of MWs and whether some firms might interpret the MW disclosure requirement under SOX 302 as voluntary. The authors' conclusion, from reading most of the SEC guidance, is that most firms are treating the disclosure as mandatory.

with 1,146 (6,401) firm-year observations for the MW firms (control firms) sample.[17] In total, we have 7,547 firm-year observations for the descriptive statistics and H1 tests.

Table 1, Panel B summarizes the sample selection procedure for testing H2, our remediation test. We focus on the MW sample because remediation is not applicable to the control sample. Based on an initial 1,098 MW firms, we remove 473 firms that have no second SOX 404 opinions; that is, we are not sure whether the MWs are remediated. These firms are either non-accelerated filers that are not required to file SOX 404 opinions (289 firms) or they have terminated registration of their securities (184 firms). We also remove 109 firms with missing data in Compustat and CRSP. This procedure yields a final sample of 516 firms for the H2 tests, with 366 unqualified opinions and 150 adverse opinions.

<INSERT TABLE 1 ABOUT HERE>

IV. RESULTS

Descriptive statistics

Table 2, Panel A presents the descriptive statistics for the sample used to test H1, which is based on the firm-year observations for the fiscal years 2000 and 2001. Consistent with Doyle et al. (2007b) and Ashbaugh-Skaife et al. (2007), the table shows that MW firms are smaller, financially weaker, and more leveraged than the control firms. The MW firms are also more likely to operate in a litigious industry, and have more negative change in net income in year *t-1* and more negative accruals than the control firms. We do not observe any differences in the change in net income in year *t*, stock returns, cash flow from operations, stock return, and market-to-book ratio between the MW and control firms. Table 2, Panel B

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[17] Because we use the same sample for the descriptive statistics and for all the H1 tests (based on the three different conservatism measures), an outlier observation is removed from all the H1 tests, rather than from just the test to which it applies.

presents both Pearson and Spearman correlation statistics; we do not find any unusual correlations among the independent variables in our regressions that warrant concern.

<center><INSERT TABLE 2 ABOUT HERE></center>

Multivariate regression results

Regression results for H1

Table 3 presents the regression results of H1 based on the persistence of earnings changes measure. We first run a baseline regression model without the MW and its related terms. This allows us to assess the incremental explanatory power of internal control quality on conservatism once the MW terms are included into the estimations. The baseline regression results, presented in Column 1, show that the coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}$ is -0.368 (p < 0.01), confirming that financial reporting is conservative in general. Column 2 shows that, after including the MW and the related terms, the adjusted R^2 of the regression increases from 24.0% to 24.6%. This result suggests that internal control quality provides incremental explanatory power to conservatism in addition to factors affecting the demand for conservatism. Column 2 also reveals that the coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$ is 0.217 (p = 0.01), which implies that the MW firms have a reduced tendency to reverse negative earnings changes in the following period (i.e., are less conservative) relative to the control firms. This result is consistent with a positive relation between internal control quality and conservatism.

<center><INSERT TABLE 3 ABOUT HERE></center>

We repeat the above analyses using the accrual-based loss recognition measure and present the results in Table 4. Column 1 shows that the coefficient on $DCFO*CFO$ is 0.669 (p < 0.01), indicating the presence of reporting conservatism. Column 2 shows that the addition of MW and its related terms to the baseline regression increases the adjusted R^2 from 16.7%

<div align="right">21</div>

to 17.0%, suggesting that internal control quality provides incremental explanatory power to a firm's level of conservatism. The coefficient on *DCFO*CFO*MW* is -0.149 (p = 0.03), indicating that the MW firms accrue less unrealized losses in the cash-loss year; this result provides further support that the MW firms exhibit lower conservatism than the control firms.

<center><INSERT TABLE 4 ABOUT HERE></center>

Finally, Table 5 presents the results of the same analyses using the timeliness of earnings to news measure. Column 1 shows that the coefficient on *DR*R* is 0.402 (p < 0.01), consistent with the presence of conservative reporting. When we add the MW and its related terms to the baseline regression, the adjusted R^2 of the model increases from 28.0% to 29.0%. Column 2 further reveals that the coefficient on *DR*R*MW* is -0.072 (p = 0.06), which implies that the earnings of the MW firms reflect unexpected losses in a less timely manner than the control firms (i.e., the MW firms are less conservative). Again, this finding is consistent with the above results of a positive relation between internal control quality and conservatism.[18]

<center><INSERT TABLE 5 ABOUT HERE></center>

Our findings on the control variables are generally consistent with prior research. For instance, the coefficients on *DΔNI$_{t-1}$*ΔNI$_{t-1}$*MB* and *DR*R*MB* confirm the negative relation between conservatism and unconditional conservatism documented in other studies.[19] The

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[18] Prior research shows that conservatism is associated with governance factors such as managerial ownership (LaFond and Roychowdhury 2008) and board of director characteristics (Ahmed and Duellman 2007). Hence, we also examine whether internal control quality has an incremental effect on conservatism after controlling for these factors. We repeat the H1 tests in Tables 3-5 by further adding CEO share ownership, institutional ownership, the duality of the CEO and Chairman positions, board size, board independence, the share ownership of the independent directors, and the average outside directorships of the independent directors. The sample size for these tests is 1,920, which is much smaller than that used in the analyses in Tables 3-5. This is because we obtain the data on managerial ownership from the ExecComp database and the governance characteristics from the RiskMetrics database. Both databases provide information on S&P 1,500 companies only. Our inferences on the results for H1 (untabulated) remain unchanged. Specifically, the coefficients on *DΔNI$_{t-1}$*ΔNI$_{t-1}$*MW*, *DCFO*CFO*MW*, and *DR*R*MW* are 0.423 (p = 0.06), -0.510 (p = 0.03) and -0.089 (p = 0.07), respectively.
[19] We also use another measure of unconditional conservatism devised by Penman and Zhang (2002), which is the amount of a firm's "hidden" reserves estimated using the sum of the value of the LIFO reserve, the research

coefficients on *DΔNI_{t-1}*ΔNI_{t-1}*LEV*, *DCFO*CFO*LEV*, and *DR*R*LEV* are also consistent with prior research that shows that more highly leveraged firms exhibit more conservatism. The coefficients on *DΔNI_{t-1}*ΔNI_{t-1}*SIZE*, *DCFO*CFO*SIZE*, and *DR*R*SIZE* suggest that larger firms have lower conservatism, consistent with the aggregation effect discussed in Givoly et al. (2007) and with the information asymmetry hypothesis discussed in LaFond and Watts (2008). Finally, similar to LaFond and Roychowdhury (2008), we do not find a significant relation between the level of litigation risks and conservatism.

Regression results for H2

Table 6 reports the regression results for testing H2 using the persistence of earnings changes measure (Column 1), accrual-based loss recognition measure (Column 2), and timeliness of earnings to news measure (Column 3). For brevity, we present only the coefficients of the three-way interaction terms for the control variables. Column 1 reveals that the coefficient on *DΔNI_{t-1}*ΔNI_{t-1}*FIXED* is -0.622 (p = 0.03). This result shows that MW firms that remediate their weaknesses at the time of the second SOX 404 report exhibit greater conservatism than MW firms that continue to have weaknesses at the time of the report. The results using the other two measures of conservatism are consistent with this finding. Specifically, the coefficient on *DCFO*CFO*FIXED* in Column 2 is 0.748 (p < 0.01), and the coefficient on *DR*R*FIXED* in Column 3 is 0.186 (p = 0.07). Hence, the regression results on H2 using all three measures of conservatism strengthen our earlier finding of a positive relation between internal control quality and conservatism.

<center><INSERT TABLE 6 ABOUT HERE></center>

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and development reserve, and the advertising reserve. Using this alternative measure, we continue to find a significant and positive relation between internal control quality and conservatism, and a significant and negative relation between unconditional conservatism and our conservatism measures.

In summary, the empirical findings using all three measures of conservatism show that internal control quality provides incremental explanatory power to a firm's level of conservatism. We find consistent evidence of a positive relation between internal control quality and conservatism. Specifically, firms with MWs exhibit lower conservatism than firms without such weaknesses, and MW firms that subsequently remediate their weaknesses exhibit greater conservatism than MW firms that fail to do so. Taken together, our results show that effective internal controls act as a mechanism that facilitates conservatism, consistent with the agency framework of positive accounting theory that recognizes conservatism as a governance mechanism (Watts 2003; Ball and Shivakumar 2005). In the next section, we describe additional analyses used to test the robustness of these results.

V. ADDITIONAL ANALYSES

Self-selection of internal control quality (H1)

Prior research suggests that MW firms are likely to be systematically different from other firms (Ashbaugh-Skaife et al. 2007; Doyle et al. 2007b). This could result in potential self-selection bias in our observed samples for our H1 tests. Although the tests on the change in the status of internal controls mitigate this concern, we further econometrically control for this bias using three methods. First, we use Heckman (1979) two-stage procedure, in which the first-stage comprises a probit regression of *MW* on its determinants. These determinants largely follow those of Doyle et al. (2007b) and Ashbaugh-Skaife et al. (2007), and are detailed in Table 7.[20] From this regression that identifies the likelihood of a firm being "selected" as a MW firm, we calculate the inverse Mills ratio, *LAMBDA* (see Heckman 1979;

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[20] The first stage regression results (untabulated) show that financial health (*LOSS*), rapid growth (*EXTR_SALES*), audit quality (*BIGN*), the occurrence of a restatement (*RESTATE*), and the occurrence of an auditor change (*AUDCHANGE*) are significantly associated with the presence of MWs. Details of the results are available from the authors upon request.

Leuz and Verrecchia 2000), and include it in our main regressions to control for the likelihood of self-selection into the *MW* group.

Second, we create a matched sample based on the predicted probabilities from the first-stage probit regression. This method, known as propensity score matching (LaLonde 1986), creates a non-MW control sample with the same predicted probabilities of having a MW (i.e., it considers all predictive variables together to estimate the same propensity of having a MW). The propensity score matching produces a matched sample of 850 control firm observations, resulting in a combined sample of 1,700 firm observations.[21] Third, we include the determinants of MWs, as well as their two-way and three-way interactions with the parameters of the three conservatism measures, as additional control variables in the main regressions presented earlier. This method controls for the possibility that the factors that produce the MWs could also be driving observed differences in conservatism.

Table 7 present the results of the above three tests for the persistence of earnings changes measure. For brevity, we present only the results of the three-way interaction terms for the control variables. Column 1 shows the second-stage regression results of the Heckman two-stage procedure after controlling for *LAMBDA*. Column 2 shows the propensity score matching results and Column 3 shows the results after controlling for the determinants of MWs. In all three regressions, we find that the coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$ remains positive and significant, confirming our earlier findings in Table 3. When we repeat these analyses for the other two measures of conservatism, the results for all the three tests (untabulated) show that the coefficients on *DCFO*CFO*MW* and *DR*R*MW* remain

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[21] The search algorithm finds the propensity scores closest to our MW firm observations until the first decimal place. The algorithm is available upon request.

negative and significant (p < 0.10).[22] Taken together, we interpret these findings as suggesting that self-selection issues are not likely to drive the results of H1 that we obtained earlier.

<INSERT TABLE 7 ABOUT HERE>

Self-selection of improvement in internal control quality (H2)

It is also possible that MW firms that choose to improve their internal controls can introduce a possible self-selection bias into our tests of H2. To control for this potential bias, we use the Heckman two-stage procedure and estimate a probit regression of *FIXED* on the same determinants of MWs as above, reasoning that the characteristics that lead to the incidence of MWs are also likely to cause difficulties for these firms to remediate MWs. We also include governance characteristics because firms with better governance are more likely to remediate MWs (Goh 2009).[23] We hand-collect data on the board and audit committee characteristics from the proxy statements of the 516 MW firms used earlier to test H2, and are left with 437 firms with available data.

Table 8 reports the results after including the inverse Mills ratio, *LAMBDA*, in our previous regressions used to test H2. For brevity, we omit the results for the control variables. The results in Table 8 are similar to those when we do not control for self-selection. Specifically, the coefficients on $D\Delta NI_{t-1}*\Delta NI_{t-1}*FIXED$, $DCFO*CFO*FIXED$, and $DR*R*FIXED$ remain significant and have the same signs as those in Table 6. We continue to

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[22] To save space, we do not tabulate the results. However, these results, as well as all other results that we do not tabulate, are available from the authors upon request.

[23] These governance characteristics include board size, board independence, board meeting frequency, audit committee size, audit committee accounting financial expertise, audit committee meeting frequency, the duality of the CEO and Chairman positions, board commitment (proxied by the number of outside directorships in public companies held by the board directors), and board diligence (proxied by the proportion of directors who fail to attend more than 75 percent of the board meetings). The first stage regression results show that firm profitability, the occurrence of a restatement, board independence, and audit committee meeting frequency are significantly associated with the likelihood of the remediation of MWs. Details on the definitions of the governance characteristics and the first stage regression results are available from the authors upon request.

find similar significant results (untabulated) when we include the determinants of *FIXED*, instead of *LAMBDA* as additional control variables in the regressions. In sum, we conclude that the results for H2 are unlikely to be driven by self-selection in the improvement in internal control quality.

<center><INSERT TABLE 8 ABOUT HERE></center>

Alternative measures of conditional conservatism

Khan and Watts (2009) suggest a firm-specific measure of conservatism (*C_SCORE*) that is based on Basu's (1997) measure of asymmetric timeliness of earnings. We follow their approach and derive the *C_SCORE* measure, with higher *C_SCORE* indicating greater conservatism. The regression model and results are presented in Table 9.[24] In summary, the results using the *C_SCORE* measure confirm our earlier findings. Specifically, the coefficient on *MW* in Column 1 is -0.007 (p = 0.02), consistent with MW firms exhibiting lower levels of conservatism than the control firms. The coefficient on *FIXED* in Column 2 is 0.288 (p = 0.03), consistent with MW firms that remediate their weaknesses exhibiting greater conservatism than MW firms that continue to have weaknesses.

<center><INSERT TABLE 9 ABOUT HERE></center>

To further corroborate our findings, we use a second accrual-based measure of conservatism (*CON-ACC*) that is suggested by Givoly and Hayn (2000). This measure is

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[24] Khan and Watts (2009) show that firms with high uncertainty and long investment cycles have future gains that are less verifiable and are more susceptible to gaming, generating a higher contracting demand for conservatism. Hence, we control for information uncertainty using *STD* (defined as the standard deviation of monthly stock returns) and control for the length of the investment cycle using *CYCLE* (defined as the depreciation expenses deflated by lagged asset). We control for *AGE* (firm age in years) because younger firms tend to have larger information asymmetry which is associated with more conservatism. Finally, we include *SPREAD* (the bid-ask spread scaled by the midpoint of the spread) to proxy for information asymmetry that is positively related to conservatism (LaFond and Watts 2008).

computed as income before extraordinary items less cash flows from operations plus depreciation expense deflated by average total assets, averaged over a three-year period before year t.[25] The lower the *CON-ACC*, the more conservative the firm's accounting. Table 10 presents the results using *CON-ACC*, which is consistent with all our earlier findings. Specifically, the coefficient on *MW* in Column 1 is 0.010 (p = 0.05), implying that MW firms have larger operating accruals (i.e., lower conservatism) than the control firms. Further, the coefficient on *FIXED* in Column 2 is -0.005 (p = 0.08), which indicates that MW firms that remediate their weaknesses exhibit greater conservatism than MW firms that fail to do so. In sum, our earlier findings on H1 and H2 are robust to alternative conservatism measures suggested by Khan and Watts (2009) and Givoly and Hayn (2000).

<center><INSERT TABLE 10 ABOUT HERE></center>

Expanded sample for H2 tests

In our H2 tests in Table 6, we remove 473 firms without SOX 404 opinions; that is, firms that are either non-accelerated filers (289 firms) or have terminated the registration of their securities (184 firms). This procedure results in a loss of roughly half of our MWs observations. To recover some of these lost observations, we relax our requirements to determine the remediation of MWs by using the SOX 302 opinions for non-accelerated filers. For these non-accelerated filers, we rely on the SOX 302 opinions at the time of the second

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[25] The intuition behind this measure is that conservative accounting results in persistently negative accruals. Averaging the accruals over a number of periods ensures that the effects of any temporary large accruals are mitigated, as accruals tend to reverse within a one to 3-year period (Richardson et al. 2005). For H1 test, we measure *CON-ACC* over the three-year period before each 2000 and 2001 firm-year observations. For H2 test, we measure *CON-ACC* over the three-year period right after the year of the second SOX 404 report. In these tests, we control for firm size (*SIZE*), leverage (*LEV*), and litigation risks (*LIT*) as before. Consistent with Ahmed et al. (2002), we control for growth in sales (*SALESGROWTH*) because it will affect accruals such as inventory and receivables, which in turn affect *CON-ACC*. We control for research and development plus advertising expenditures (*RDADV*) because they are likely to capture economic rents generated by assets-in-place, growth opportunities, and GAAP mandated conservatism (Ahmed 1994). Finally, we control for profitability (*CFO*) as proxied by the operating cash flows deflated by beginning-of-year total assets, because Ahmed et al. (2002) argue that profitable firms tend to use more conservative accounting.

SOX 404 report that would have been issued if the firm had been an accelerated filer. This procedure yields larger sample sizes of 814, 800, and 651 firms with available data from Compustat and/or CRSP for the persistence of earnings changes measure, accruals-based loss recognition measure, and timeliness of earnings to news measure, respectively.[26] We then replicate the H2 tests in Table 6 using these expanded samples, and find that the inferences of our earlier results remain unchanged. Specifically, untabulated results show that the coefficients on $D\Delta NI_{t-1}*\Delta NI_{t-1}*FIXED$, $DCFO*CFO*FIXED$, and $DR*R*FIXED$ are -1.393 ($p < 0.01$), 0.557 ($p = 0.06$), and 0.607 ($p = 0.01$), respectively.

Contextual analysis of the nature of MWs

Finally, to provide a stronger link between internal controls and conservatism, we further explore the nature of the MWs. Using the arguments found in Ball (2001), we expect firms with MWs pertaining to investment and/or asset management related decisions to have a greater incentive to avoid timely loss recognition.[27] In addition, following the arguments in Doyle et al. (2007a), we expect company-level MWs to be more severe and pervasive than other types of MWs, and consequently to result in even lower conservatism.[28] Hence, we code

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[26] The significantly smaller sample size for the timeliness of earnings to news measure is due to the additional requirements for returns data from CRSP. Unlike before, we do not require that all three tests using different measures of conservatism have the same sample size. In other words, we do not impose the same data limitations to all measures of conservatism. This allows us to obtain the maximum sample size for each measure of conservatism to conduct the additional analyses on H2.

[27] Ball (2001) states that both debt contracting and corporate governance give rise to the demand for accounting conservatism, because conservatism can incorporate into financial statements adverse information about future cash flows of investment that is observable only to managers. MWs in the investment and/or asset management-related decisions can impede this governance role of conservatism. For instance, control weaknesses over the computation of the future cash flows of acquired investments and the lack of staff expertise in estimating future cash flows for asset impairment tests make it harder for the accounting system to incorporate into financial statements adverse information about future cash flows, which will lead to lower level of conservatism. The examples of MWs found in the Appendix are illustrative of these types of MWs.

[28] Following Doyle et al. (2007a), company-level MWs include override by senior management and ineffective control environment. These MWs are more severe and pervasive than account-specific MWs, which include inadequate internal controls for accounting for loss contingencies, deficiencies in the documentation of a receivables securitization program, and inadequate internal controls over the application of new accounting principles or the application of existing accounting principles to new transactions. Consistent with Doyle et al.

firms with at least one of the above types of MWs as "severe MW firms" and test whether these firms exhibit lower conservatism than the other MW firms. To conduct the analyses, we replace *MW* with *SEVERE* in the regression models (2), (4), and (6), where *SEVERE* is an indicator variable that equals 1 for severe MW firms, and 0 otherwise. Using the MW firms observations from fiscal years 2001 and 2002, the regression results (untabulated) reveal that the coefficients on $D\Delta NI_{t-1}*\Delta NI_{t-1}*SEVERE$, $DCFO*CFO*SEVERE$, and $DR*R*SEVERE$ are 0.677 (p < 0.01), -0.069 (p = 0.57) and -0.127 (p = 0.07), respectively. Hence, the contextual analysis of the nature of MWs shows some evidence that severe MW firms exhibit lower conservatism than the other MW firms. This evidence provides further empirical support of a positive relation between internal control quality and conservatism.

VI. CONCLUSION

Our results show that firms that disclose MWs exhibit lower conditional conservatism than firms without such weaknesses, and MW firms that remediate their weaknesses exhibit greater conservatism than MW firms that fail to do so. Collectively, our results are consistent with strong internal controls facilitating conservatism. These findings extend the literature on the reporting effects of strong versus weak internal controls. In addition, our study contributes to the broader literature that tests the extent to which conservatism is shaped by a firm's contracting and governance environment.

One limitation of our study is that for our tests of H2, we remove nearly half of the 1098 MW firms which do not have SOX 404 opinions due to their non-accelerated filer status and due to termination of securities registration. It is unclear how the addition of these firms would affect the results of H2. Another limitation is that our findings cannot directly shed

(2007a), we also consider firms that have at least three account-specific MWs to have company-level MWs. We would like to thank Jeffrey Doyle, Weili Ge, and Sarah McVay for sharing the data on the classification of MWs.

light on the current debate over the costs and benefits of SOX. Our study informs only of the value of internal control quality, but not of the effectiveness of the internal control reporting requirements under SOX.

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TABLE 1
Sample Selection Procedure

Panel A: Sample selection for H1

	Observations
MW sample	
Observations with available Compustat and CRSP data for 2000 and 2001	1,230
less: outlier observations for all continuous variables at the top and bottom 0.5% levels	(84)
Total MW firm observations	1,146
Control sample	
Observations with available Compustat and CRSP data for 2000 and 2001	6,835
less: outlier observations for all continuous variables at the top and bottom 0.5% levels	(434)
Total control firm observations	6,401
Total firm-year observations used in descriptive statistics and testing H1	7,547

Panel B: Sample selection for H2

	Observations
Identified MW firms from 2003 to 2005	1,098
less: firms without SOX 404 auditor opinions due to non-accelerated filers status	(289)
less: firms without SOX 404 auditor opinions due to termination of securities registration	(184)
less: firms with missing data in Compustat and CRSP	(109)
Total firm-year observations used in testing H2	516*

*Among the 516 firms with a second SOX 404 opinion, 366 received an unqualified auditor report and 150 received an adverse report.

TABLE 2
Descriptive Statistics and Correlation Analysis

Panel A: Distributional properties of variables

MW firms (n = 1,146 observations in 2000 and 2001)

	Mean	Median	Std. Dev	Q1	Q3
ΔNI_t	-0.02	0.00	0.16	-0.06	0.03
ΔNI_{t-1}	-0.04**	0.01	0.12	-0.18	0.04
ACCRUAL	-0.08**	-0.06*	0.14	-0.13	-0.01
CFO	0.05	0.06**	0.16	-0.01	0.13
NI	-0.06*	0.02**	0.24	-0.07	0.07
R	0.18	0.03*	0.84	-0.37	0.47
MB	2.69	1.64	3.69	0.94	3.06
LEV	0.19**	0.13**	0.20	0.01	0.32
SIZE-ACTUAL	1811.17***	274.01*	6882.37	87.76	915.60
LIT	0.38***	0.00***	0.49	0.00	1.00

Control firms (n = 6,401 observations in 2000 and 2001)

	Mean	Median	Std. Dev	Q1	Q3
ΔNI_t	-0.02	0.00	0.14	-0.04	0.03
ΔNI_{t-1}	-0.03**	0.00	0.36	-0.14	0.04
ACCRUAL	-0.07**	-0.05*	0.13	-0.11	-0.01
CFO	0.05	0.07**	0.17	0.00	0.13
NI	-0.05*	0.03**	0.23	-0.05	0.08
R	0.19	0.06*	0.78	-0.31	0.48
MB	2.68	1.66	3.90	0.92	3.06
LEV	0.18**	0.12**	0.19	0.00	0.30
SIZE-ACTUAL	3073.94***	301.64*	10489.78	74.01	1457.23
LIT	0.30***	0.00***	0.46	0.00	1.00

This panel shows the distribution of the MW firms and the control firms with no MWs. ΔNI_t is the change in net income before extraordinary items for firm i in fiscal year t deflated by beginning-of-year total assets. ΔNI_{t-1} is the change in net income before extraordinary items for firm i in fiscal year $t-1$ deflated by beginning-of-year total assets. ACCRUAL is net income before extraordinary items minus operating cash flows (Data308) for firm i in fiscal year t deflated by beginning-of-year total assets. CFO is operating cash flows at the end of the fiscal year deflated by beginning-of-year total assets. NI is the net income before extraordinary items (Data123) for firm i in fiscal year t deflated by the beginning-of-year market value of equity (Data199*Data25). R is the market-adjusted stock return for firm i over the fiscal year t. MB is the market value of equity (Data199*Data25) divided by the book value of equity (Data60) at the end of the fiscal year t. LEV is the firm's leverage, measured by the sum of long-term debt (Data9) and debt in current liabilities (Data34) deflated by market value of equity at the end of the fiscal year t. SIZE is the natural log of the total assets at the end of the fiscal year t. We use SIZE as the control variable in the regressions but for the descriptive statistics, we report the untransformed value of total assets (SIZE-ACTUAL). LIT is an indicator variable that equals 1 if a firm operates in a litigious industry, and 0 otherwise. Consistent with Francis et al. (1994), firms with primary SIC codes of 2833-2836 (biotechnology), 3570-3577 (computer equipment), 3600-3674 (electronics), 5200-5961 (retailing), and 7370-7374 (computer services) are considered to be operating in a litigious industry.

***, **, and * denote, respectively, significant differences between the MW sample and the control sample at the 1, 5, and 10 percent levels, based on two-tailed tests. Differences in means (medians) are assessed using a t-test (Wilcoxon rank sum test).

Panel B: Pearson correlations (top) and Spearman correlations (bottom)

	ΔNI_t	ΔNI_{t-1}	ACCRUAL	CFO	NI	R	MB	LEV	SIZE	LIT
ΔNI_t	1.00	-0.18*	0.48*	0.31*	0.44*	0.32*	0.04*	0.04*	0.05*	-0.12*
ΔNI_{t-1}	-0.06*	1.00	0.18*	0.24 *	0.25*	0.05*	0.03*	0.04*	0.08*	-0.06*
ACCRUAL	0.31*	0.13*	1.00	-0.07*	0.40*	0.11*	-0.05*	0.04*	0.09*	-0.16*
CFO	0.30*	0.27*	-0.28*	1.00	0.48*	0.24*	-0.03*	0.10*	0.28*	-0.18*
NI	0.41*	0.24*	0.46*	0.43*	1.00	0.27*	0.08*	0.07*	0.24*	-0.19*
R	0.22*	0.03*	0.11*	0.13*	0.26*	1.00	0.23*	0.01	0.02	-0.07*
MB	0.17*	0.15*	0.00	0.17*	-0.05*	0.30*	1.00	-0.07*	0.03*	0.16*
LEV	0.04*	0.01	0.01	0.09*	0.19*	0.08*	-0.11*	1.00	0.33*	-0.27*
SIZE	0.06*	0.08*	0.07*	0.25*	0.23*	0.12*	0.14*	0.42*	1.00	-0.18*
LIT	-0.09*	-0.03*	-0.14*	-0.13*	-0.27*	-0.15*	0.17*	-0.30*	-0.19*	1.00

This panel shows the correlations among the key variables (identified in Panel A) used in the empirical analyses. Pearson and Spearman correlations are found, respectively, above and below the diagonal. * indicates significance at the 5 percent levels, two-tailed.

TABLE 3
Regression Results of H1 using the Persistence of Earnings Changes Measure

Independent variables	Pred. Sign	Baseline regression (1)		Full regression (2)	
		Coeff.	p-value	Coeff.	p-value
$INTERCEPT$	?	-0.042***	< 0.01	-0.043***	< 0.01
$D\Delta NI_{t-1}$	?	-0.026***	< 0.01	-0.025***	< 0.01
ΔNI_{t-1}	?	-0.145***	0.01	-0.099*	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}$	-	-0.368***	< 0.01	-0.412***	< 0.01
MW	?			0.007	0.26
$D\Delta NI_{t-1}*MW$	?			-0.009	0.36
$\Delta NI_{t-1}*MW$	?			-0.246***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$	?			**0.217***	**0.01**
MB_t	?	0.005***	< 0.01	0.005***	< 0.01
$D\Delta NI_{t-1}*MB_t$	?	-0.008***	< 0.01	-0.008***	< 0.01
$\Delta NI_{t-1}*MB_t$	?	-0.017***	< 0.01	-0.016***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*MB_t$	?	0.024***	< 0.01	0.023***	< 0.01
LEV_t	?	0.086***	< 0.01	0.085***	< 0.01
$D\Delta NI_{t-1}*LEV_t$	?	0.006	0.47	0.007	0.39
$\Delta NI_{t-1}*LEV_t$	?	0.395***	< 0.01	0.406***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*LEV_t$	-	-0.374***	< 0.01	-0.385***	< 0.01
$SIZE_t$	?	0.005***	< 0.01	0.004***	< 0.01
$D\Delta NI_{t-1}*SIZE_t$	?	0.002	0.31	0.002	0.27
$\Delta NI_{t-1}*SIZE_t$	?	-0.096***	< 0.01	-0.092***	< 0.01
$D\Delta NI_{t-1}\Delta NI_{t-1}*SIZE_t$	+	0.149***	< 0.01	0.144***	< 0.01
LIT_t	?	-0.010	0.14	-0.010	0.16
$D\Delta NI_{t-1}*LIT_t$	?	-0.045***	< 0.01	-0.046***	< 0.01
$\Delta NI_{t-1}*LIT_t$	?	-0.177**	0.02	-0.187***	0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*LIT_t$	-	0.137	0.15	0.147	0.13
$INDUSTRY\ EFFECTS$		Not reported		Not reported	
Adjusted R^2		24.0%		24.6%	
Number of observations		7,547		7,547	

This table reports the regression results of H1 using the persistence of earnings changes measure of conservatism in Basu (1997). Column 1 (Column 2) shows the results without (with) the MW and it related terms. The dependent variable is ΔNI_t, which is the change in net income before extraordinary items for firm i in fiscal year t deflated by beginning-of-year total assets. MW is an indicator variable that equals 1 if the firm has at least one MW in internal controls, and 0 otherwise. The other variables are as previously defined. A positive (negative) coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$ indicates that MW firms exhibit lower (greater) conservatism than the control firms.

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 4
Regression Results of H1 using the Accrual-based Loss Recognition Measure

Independent variables	Pred. Sign	Baseline regression (1)		Full regression (2)	
		Coeff.	p-value	Coeff.	p-value
INTERCEPT	?	-0.020***	0.01	-0.014*	0.09
DCFO	?	0.002	0.86	-0.026*	0.10
CFO	-	-0.502***	< 0.01	-0.534***	< 0.01
DCFO*CFO	+	0.669***	< 0.01	0.643***	< 0.01
MW	?			-0.013*	0.07
DCFO*MW	?			-0.006	0.64
CFO*MW	?			0.048	0.34
DCFO*CFO*MW	?			**-0.149**	**0.03**
MB	?	0.003***	< 0.01	0.003***	< 0.01
DCFO*MB	?	-0.004***	< 0.01	-0.004***	0.01
CFO*MB	?	0.000	1.00	0.000	0.95
DCFO*CFO*MB	?	0.000	0.98	0.000	0.93
LEV	?	-0.023	0.11	-0.021	0.15
DCFO*LEV	?	0.004	0.88	-0.006	0.82
CFO*LEV	?	-0.232**	0.03	-0.241**	0.03
DCFO*CFO*LEV	+	0.455***	< 0.01	0.438***	< 0.01
SIZE	?	0.003**	0.03	0.003**	0.03
DCFO*SIZE	?	0.000	0.97	0.000	0.97
CFO*SIZE	?	0.006	0.56	0.005	0.59
DCFO*CFO*SIZE	-	-0.070***	< 0.01	-0.070***	< 0.01
LIT	?	-0.009	0.40	-0.008	0.46
DCFO*LIT	?	-0.024	0.16	-0.023	0.17
CFO*LIT	?	0.046	0.58	0.041	0.62
DCFO*CFO*LIT	+	0.083	0.42	0.104	0.31
INDUSTRY EFFECTS		Not reported		Not reported	
Adjusted R^2		16.7%		17.0%	
Number of observations		7,547		7,547	

This table reports the regression results of H1 using the accrual-based loss recognition measure of conservatism in Ball and Shivakumar (2005). Column 1 (Column 2) shows the results without (with) the MW and it related terms. The dependent variable is *ACCRUAL*, which is net income before extraordinary items minus operating cash flows for firm i in fiscal year t deflated by beginning-of-year total assets. The other variables are as previously defined. A negative (positive) coefficient on *DCFO*CFO*MW* indicates that MW firms exhibit lower (greater) conservatism than the control firms

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 5
Regression Results of H1 using the Timeliness of Earnings to News Measure

Independent variables	Pred. Sign	Baseline regression (1)		Full regression (2)	
		Coeff.	p-value	Coeff.	p-value
INTERCEPT	?	-0.011*	0.07	-0.009	0.13
DR	?	0.049***	< 0.01	0.052***	< 0.01
R	?	0.011**	0.05	0.013**	0.03
*DR*R*	+	0.402***	< 0.01	0.414***	< 0.01
MW	?			-0.010	0.39
*DR*MW*	?			-0.017	0.41
*R*MW*	?			-0.011	0.29
DR*R*MW	?			**-0.072***	**0.06**
MB	?	0.001	0.37	0.001	0.37
*DR*MB*	?	-0.004**	0.05	-0.004*	0.06
*R*MB*	?	-0.001	0.23	-0.001	0.22
*DR*R*MB*	?	-0.020***	< 0.01	-0.020***	< 0.01
LEV	?	-0.037	0.12	-0.033	0.15
*DR*LEV*	?	0.018	0.67	0.017	0.69
*R*LEV*	?	0.032	0.19	0.030	0.22
*DR*R*LEV*	+	0.372***	< 0.01	0.378***	< 0.01
SIZE	?	0.010***	< 0.01	0.009***	< 0.01
*DR*SIZE*	?	-0.005	0.21	-0.004	0.23
*R*SIZE*	?	-0.001	0.84	-0.001	0.79
*DR*R*SIZE*	-	-0.077***	< 0.01	-0.076***	< 0.01
LIT	?	-0.063***	< 0.01	-0.062***	< 0.01
*DR*LIT*	?	0.011	0.57	0.012	0.55
*R*LIT*	?	0.013	0.22	0.014	0.19
*DR*R*LIT*	+	-0.034	0.32	-0.033	0.34
INDUSTRY EFFECTS		Not reported		Not reported	
Adjusted R^2		28.0%		29.0%	
Number of observations		7,547		7,547	

This table reports the regression results of H1 using the timeliness of earnings to news measure of conservatism in Basu (1997). Column 1 (Column 2) shows the results without (with) the MW and it related terms. The dependent variable is *NI*, which is the net income before extraordinary items for firm *i* in fiscal year *t* deflated by the beginning-of-year market value of equity. The other variables are as previously defined. A negative (positive) coefficient on *DR*R*MW* indicates that MW firms exhibit lower (greater) conservatism than the control firms.

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 6
Regression Results of H2

	Pred. Sign	Persistence of earnings changes $A = D\Delta NI_{t-1}$ $B= \Delta NI_{t-1}$ (1)		Accrual-based loss recognition $A = DCFO$ $B= CFO$ (2)		Timeliness of earnings to news $A = DR$ $B= R$ (3)	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	?	-0.004	0.85	-0.020	0.28	-0.017	0.56
A	?	-0.004	0.91	-0.111***	< 0.01	-0.003	0.95
B	?	-0.553***	< 0.01	-0.803***	< 0.01	0.046	0.39
A*B	-, +, +	0.160	0.54	0.436*	0.10	0.281***	< 0.01
FIXED	?	0.014	0.59	0.016	0.40	0.039	0.19
A*FIXED	?	-0.018	0.63	0.097***	< 0.01	0.069	0.11
B*FIXED	?	0.240	0.29	0.205	0.17	-0.002	0.97
A*B*FIXED	**?**	**-0.622****	**0.03**	**0.748****	**< 0.01**	**0.186***	**0.07**
A*B*MB	?	0.050	0.15	-0.041***	0.01	0.013	0.16
A*B*LEV	-, +, +	2.082**	0.05	0.397	0.38	0.391*	0.07
A*B*SIZE	+, -, -	0.021	0.85	-0.201***	0.01	0.036	0.24
A*B*LIT	-, +, +	-0.700**	0.05	-0.393	0.17	-0.241***	0.04
INDUSTRY EFFECTS		Not reported		Not reported		Not reported	
Adjusted R^2		30.7%		43.1%		33.6%	
Number of observations		516		516		516	

This table reports the regression results of H2 using the persistence of earnings changes measure (Column 1), accrual-based loss recognition measure (Column 2), and timeliness of earnings to news measure (Column 3). The dependent variables for Columns 1, 2, and 3 are ΔNI_t, $ACCRUAL$, and NI, respectively. $FIXED$ is an indicator variable that equals 1 if a MW firm receives an unqualified second SOX 404 report, and 0 otherwise. All the other variables are as previously defined. For brevity, we present only the coefficients of the three-way interaction terms of the control variables. A negative (positive, positive) coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*FIXED$ ($DCFO*CFO*FIXED$, $DR*R*FIXED$) indicates that MW firms that remediate their weaknesses at the time of the second SOX 404 report exhibit greater conservatism than MW firms that fail to do so. A positive (negative, negative) coefficient on $D\Delta NI_{t-1}*\Delta NI_{t-1}*FIXED$ ($DCFO*CFO*FIXED$, $DR*R*FIXED$) indicates that MW firms that remediate their weaknesses at the time of the second SOX 404 report exhibit lower conservatism than MW firms that fail to do so.
***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 7
Regression Results of H1 using the Persistence of Earnings Changes Measure and after Controlling for Self-selection of Internal Control Quality

	Pred. Sign	Heckman second-stage regression (1)		Propensity score matching (2)		Controlling for determinants of MWs (3)	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
$INTERCEPT$	?	-0.086***	< 0.01	-0.047***	< 0.01	-0.033***	0.01
$D\Delta NI_{t-1}$	?	-0.022***	0.01	-0.038*	0.08	-0.037*	0.06
ΔNI_{t-1}	?	-0.014	0.82	-0.286***	< 0.01	0.128	0.37
$D\Delta NI_{t-1}*\Delta NI_{t-1}$	-	-0.718***	< 0.01	0.143	0.36	-0.384*	0.08
MW	?	0.016**	0.02	0.014	0.25	0.011*	0.10
$D\Delta NI_{t-1}*MW$	?	-0.016	0.15	0.003	0.86	-0.008	0.47
$\Delta NI_{t-1}*MW$	?	-0.422***	< 0.01	-0.141*	0.06	-0.346***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*MW$	?	**0.503***	< 0.01**	**0.276***	0.01**	**0.445***	< 0.01**
$D\Delta NI_{t-1}*\Delta NI_{t-1}*MB_t$	?	0.023***	0.01	-0.024**	0.02	0.012	0.17
$D\Delta NI_{t-1}*\Delta NI_{t-1}*LEV_t$	-	-0.553***	< 0.01	-0.839***	< 0.01	-0.444***	< 0.01
$D\Delta NI_{t-1}\Delta NI_{t-1}*SIZE_t$	+	0.045**	0.05	0.208***	< 0.01	0.014	0.59
$D\Delta NI_{t-1}*\Delta NI_{t-1}*LIT_t$	-	0.154	0.16	-0.761***	< 0.01	0.088	0.37
$LAMBDA$	?	0.025***	< 0.01				
$D\Delta NI_{t-1}*\Delta NI_{t-1}*AGE_t$	?					0.035	0.47
$D\Delta NI_{t-1}*\Delta NI_{t-1}*LOSS_t$	?					-0.485***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*SEGMENT_t$	?					-0.026	0.21
$D\Delta NI_{t-1}\Delta NI_{t-1}*FOREIGN_t$	?					-0.223***	0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*MA_t$	?					0.549*	0.10
$D\Delta NI_{t-1}*\Delta NI_{t-1}*RESTR_t$	?					2.079***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*EXTR\_SALES_t$	?					0.283***	< 0.01
$D\Delta NI_{t-1}*\Delta NI_{t-1}*BIGN_t$	?					0.121	0.30
$D\Delta NI_{t-1}*\Delta NI_{t-1}*RESTATE_t$	?					0.824***	< 0.01

$D\Delta NI_{t-1}*\Delta NI_{t-1}*AUDCHANGE_t$	?			-0.143*	0.08
INDUSTRY EFFECTS		Not reported	Not reported	Not reported	
Adjusted R^2		27.3%	17.2%	32.7%	
Number of observations		5,439	1,700	5,439	

This table reports the results of the regressions that control for self-selection of internal control quality using the persistence of earnings changes measure. The dependent variable is ΔNI_t, which is the change in net income before extraordinary items for firm i in fiscal year t deflated by beginning-of-year total assets. For brevity, other than *MW*, we present only the coefficients of the three-way interaction terms of the control variables. Column 1 presents the second stage results of the Heckman (1979) two-stage procedure, after controlling for *LAMBDA*. *LAMBDA* is the inverse Mill ratio calculated from the first stage regression in which we regress *MW* on its determinants. Column 2 presents the results of the propensity score matching approach. Column 3 presents the results after controlling for the determinants of MWs. We use the following determinants of MWs. Firm size is measured by the log of market capitalization, which is share price (Data25) multiplied by number of shares outstanding (Data199). Because we have already controlled for *SIZE*, we do not add market capitalization as further control in Column 3. *AGE* is firm age, the number of years since the firm appears in CRSP database. *LOSS* is an indicator variable that equals 1 if net income before extraordinary items (Data123) in years t and $t-1$ sum to less than zero, and 0 otherwise. *SEGMENT* is the log of the sum of the number of operating and geographic segments reported by the Compustat Segments database for the firm in year t. *FOREIGN* is an indicator variable that equals 1 if the firm has a non-zero foreign currency translation (Data150), and 0 otherwise. *MA* is an indicator variable that equals 1 if the firm has a non-zero merger and acquisition activity (Data360). *RESTR* is the aggregate restructuring charges [Data376 x (-1)] in years t and $t-1$, scaled by the firm's market capitalization at the end of the fiscal year. *EXTR_SALES* is an indicator variable that equals 1 if year-over-year industry-adjusted sales growth (Data12) falls into the top quintile, and 0 otherwise. *BIGN* is an indicator variable that equals 1 if the firm engaged one of the largest four audit firms, and 0 otherwise. Largest four audit firms include PWC, Deloitte & Touche, Ernst & Young, and KPMG. *RESTATE* is an indicator variable that equals 1 if the firm had a restatement in the twelve months period before the disclosure of MWs, and 0 otherwise. *AUDCHANGE* is an indicator variable that equals 1 if the firm changed auditor during the twelve month period before the disclosure of MWs, and 0 otherwise. The other variables are as previously defined.

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

	Pred. Sign	Persistence of earnings changes $A = D\Delta NI_{t-1}$ $B = \Delta NI_{t-1}$ (1)		Accrual-based loss recognition $A = DCFO$ $B = CFO$ (2)		Timeliness of earnings to news $A = DR$ $B = R$ (3)	
		Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
INTERCEPT	?	0.004	0.88	-0.010	0.65	0.014	0.89
A	?	0.000	0.99	-0.102***	< 0.01	0.100	0.41
B	?	0.522***	< 0.01	-0.496***	< 0.01	0.132	0.45
*A*B*	-, +, +	0.230	0.37	0.457*	0.09	0.455	0.11
FIXED	?	0.009	0.73	0.005	0.78	0.049	0.63
*A*FIXED*	?	-0.001	0.98	0.088***	< 0.01	0.166	0.24
*B*FIXED*	?	0.348	0.13	0.055	0.69	-0.031	0.87
*A*B*FIXED*	**?**	**-0.905****	**0.01**	**0.664****	**< 0.01**	**0.893****	**0.01**
LAMBDA	?	-0.021	0.35	-0.042***	< 0.01	-0.144**	0.05
CONTROL VARIABLES		Not reported		Not reported		Not reported	
INDUSTRY EFFECTS		Not reported		Not reported		Not reported	
Adjusted R^2		24.6%		49.4%		23.1%	
Number of observations		437		437		437	

This table reports the results of the regressions that control for self-selection in the remediation of MWs. The results are from the second stage regression of the Heckman (1979) two-stage procedure, after controlling for *LAMBDA*. *LAMBDA* is the inverse Mill ratio calculated from the first stage regression in which we regress *FIXED* on the determinants of MW remediation. The determinants of MW remediation include the determinants of MWs and the governance characteristics detailed in footnote 23. For brevity, we do not report the results for the control variables. Columns 1, 2, and 3 present the results using the persistence of earnings changes measure, accrual-based loss recognition measure, and the timeliness of earnings to news measure, respectively. In Column 1, the dependent variable is ΔNI_t, which is the change in net income before extraordinary items for firm *i* in fiscal year *t* deflated by beginning-of-year total assets. In Column 2, the dependent variable is *ACCRUAL*, which is net income before extraordinary items minus operating cash flows for firm *i* in fiscal year *t* deflated by beginning-of-year total assets. In Column 3, the dependent variable is *NI*, which is the net income before extraordinary items for firm *i* in fiscal year *t* deflated by the beginning-of-year market value of equity. All the other variables are as previously defined.

 ***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 9
Regression Results using the Firm-specific Conservatism Measure in Khan and Watts (2009)

H1: $C\_SCORE = \lambda_0 + \lambda_1 MW + \lambda_2 SIZE + \lambda_3 LEV + \lambda_4 MB + \lambda_5 STD + \lambda_6 CYCLE + \lambda_7 AGE + \lambda_8 SPREAD + \varepsilon$
H2: $C\_SCORE = \lambda_0 + \lambda_1 FIXED + \lambda_2 SIZE + \lambda_3 LEV + \lambda_4 MB + \lambda_5 STD + \lambda_6 CYCLE + \lambda_7 AGE + \lambda_8 SPREAD + \varepsilon$

	Pred. Sign	Test of H1 (1)		Test of H2 (2)	
		Coeff.	p-value	Coeff.	p-value
INTERCEPT	?	0.484***	< 0.01	1.408*	0.07
MW	?	**-0.007****	**0.02**		
FIXED	?			**0.288****	**0.03**
SIZE	-	-0.067***	< 0.01	-0.184	0.14
LEV	+	0.233***	< 0.01	1.847***	< 0.01
MB	?	-0.001**	0.02	-0.025**	0.03
STD	+	0.063***	< 0.01	1.373	0.26
CYCLE	-	-0.340***	< 0.01	-6.569***	< 0.01
AGE	-	0.000	0.64	-0.008	0.19
SPREAD	+	-0.011**	0.02	2.086***	0.01
INDUSTRY EFFECTS		Not reported		Not reported	
Adjusted R^2		73.8%		7.0%	
Number of observations		5836		500	

This table reports the results of the regressions that examine H1 and H2 using the firm-specific conservatism measure, *C_SCORE*, in Khan and Watts (2009). The dependent variable is *C_SCORE*, with higher *C_SCORE* indicating greater conservatism. *STD* is the standard deviation of monthly stock returns. *CYCLE* is defined as depreciation expenses deflated by the beginning-of-year total assets, which is a decreasing measure of the length of the investment cycle. *AGE* is firm age, the number of years since the firm appears in CRSP database. *SPREAD* is the bid-ask spread scaled by the midpoint of the spread, obtained from CRSP. The other variables are as previously defined.

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

TABLE 10
Regression Results using the Accrual-based Conservatism Measure in Givoly and Hayn (2000)

H1: CON-ACC = $\theta_0 + \theta_1 MW + \theta_2 SIZE + \theta_3 SALESGROWTH + \theta_4 RDADV + \theta_5 CFO + \theta_6 LEV + \theta_7 LIT + \varepsilon$
H2: CON-ACC = $\theta_0 + \theta_1 FIXED + \theta_2 SIZE + \theta_3 SALESGROWTH + \theta_4 RDADV + \theta_5 CFO + \theta_6 LEV + \theta_7 LIT + \varepsilon$

	Pred. Sign	Test of H1 (1)		Test of H2 (2)	
		Coeff.	**p-value**	**Coeff.**	**p-value**
INTERCEPT	?	-0.079***	< 0.01	-0.021***	< 0.01
MW	**?**	**0.010****	**0.05**		
FIXED	**?**			**-0.005***	**0.08**
SIZE	+	0.007***	< 0.01	0.002**	0.03
SALESGROWTH	+	-0.003	0.38	0.005*	0.10
RDADV	+	-0.012***	< 0.01	0.000	0.63
CFO	-	0.068***	< 0.01	0.052***	< 0.01
LEV	-	-0.009	0.45	-0.010	0.18
LIT	-	-0.029***	< 0.01	-0.008**	0.04
INDUSTRY EFFECTS		Not reported		Not reported	
Adjusted R^2		3.5%		10.4%	
Number of observations		7,634		407	

This table reports the results of the regressions that examine H1 and H2 using the accrual-based conservatism measure in Givoly and Hayn (2000). The dependent variable is *CON-ACC*, which is income before extraordinary items less cash flows from operations plus depreciation expense deflated by average total assets, and averaged over a 3-year period. The lower the *CON-ACC*, the greater the conservatism. *SALESGROWTH* is the percentage of annual growth in total sales (Data12). *RDADV* is research and development expenditures plus advertising expense divided by sales. The other variables are as previously defined.

***, **, and * denote, respectively, significance at the 1, 5, and 10 percent levels, based on two-tailed tests.

APPENDIX
EXAMPLES OF MATERIAL WEAKNESSES THAT COULD IMPEDE THE TIMELY RECOGNITION OF LOSSES

NEOMAGIC CORP (28 April, 2005)
NeoMagic Corporation has a material weakness as of January 31, 2005 related to its process of evaluating long-lived assets for impairment, including insufficient controls over the review and documentation of key assumptions used in preparing forecasted cash flows used to support NeoMagic Corporation's impairment analyses. This material weakness resulted in an audit adjustment that was recorded by NeoMagic Corporation to recognize the impairment of intangible assets.

OPENTV CORP (16 March, 2005)
We did not have sufficient internal personnel and technical expertise to properly apply accounting principles to certain non-routine matters; in particular, we applied certain provisions of Statement of Financial Accounting Standards No. 142 Goodwill and Other Intangibles (SFAS No. 142) in an incorrect manner when conducting our annual analysis for potential impairment of goodwill, which led to an error that was identified and subsequently corrected.

CLEARONE COMMUNICATIONS INC (18 August, 2005)
We have a material weakness related to the tracking and valuation of inventory, including controls to identify and properly account for obsolete inventory. Our accounting policies and practices over tracking and valuation of inventory, including controls to identify and properly account for slow moving, obsolete inventory were inconsistent with GAAP. This material weakness resulted in errors in recording inventories at the lower of cost or market, and errors for inventory shrinkage.

We have a material weakness in accounting for non-routine transactions, which include business combinations, discontinued operations, sale of a business unit (other than discontinued operations), and evaluation and recognition of impairment charges. This material weakness resulted in improper purchase price allocations in business combinations, improper amortization and depreciation of long-lived assets, improper identification and recording of activities related to discontinued operations, improper recording and reporting the sale of business units, improper evaluation of triggering events associated with impairment of long-lived assets (including annual impairment tests for goodwill), and; improper calculating and recording of impairment charges.

ASCONI CORP (27 May 2004)
We lacked controls to insure that agreements, contracts and other documents relating to investments in subsidiaries or investees were provided to and reviewed by accounting and financial reporting personnel on a timely basis to insure that the financial reporting and disclosure implications of such transactions could be considered and reflected in the financial statements in the proper periods.

FINANCIAL INDUSTRIES CORP (10 June, 2003)
Management identified a significant number of internal control weaknesses in several key areas that had resulted in material misstatement of financial results. These include weaknesses in the following areas, among others: deferred policy acquisition costs; present value of future profits of acquired businesses; investment accounting; consolidation process; purchase accounting; and intercompany accounting.