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Mandatory Management Disclosure and Mandatory Independent Audit of Internal Controls: Evidence of Configural Information Processing by Investors

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ABSTRACT

We conduct an experiment where alumni participants from a Canadian accounting and finance undergraduate program assume they are in one of four regulatory regimes (manipulated between-subjects) and make investment potential evaluations for two firms (manipulated within-subjects): a firm disclosing no material weaknesses (No-MW disclosure firm) and a firm disclosing material weaknesses (MW disclosure firm) in internal controls over financial reporting (ICFR). We find evidence of configural information processing. For the No-MW disclosure firm, mandatory (versus voluntary) disclosure of ICFR material weaknesses and mandatory (versus voluntary) independent ICFR audit are substitutes in enhancing investment potential evaluations. However, for the MW disclosure firm, neither mandatory disclosure nor mandatory audit has any effect on investment potential evaluations. Supplementary experiments with undergraduate participants suggest that the pattern of configural information processing is a function of participants' knowledge of company disclosure incentives and the assurance value of an audit, wherein undergraduates with lower levels of knowledge are less able to perceive the effects of mandatory disclosure and mandatory audit on investment potential evaluations. Our findings have implications for regulators who are concerned about balancing the costs and benefits of different regulatory mechanisms.

Keywords: *Internal controls over financial reporting; mandatory management disclosure; mandatory independent audit; configural information processing*

Data availability: Contact the authors.

Introduction

Management disclosure of material weaknesses in internal controls over financial reporting (ICFR) is presently a salient aspect of the disclosure environment in many countries, with variations as to whether disclosure and an independent ICFR audit are voluntary or mandatory across countries, companies, and time. United States mandates both disclosure and audit for large issuers but mandates only disclosure for small issuers, on the assumption that there is an incremental benefit of having a mandatory audit that outweighs the compliance cost for large issuers (i.e., mandatory audit and mandatory disclosure have complementary effects) (SEC, 2009; SEC, 2010). Canada decided to implement only mandatory disclosure and indicated that it would consider in the future whether a mandatory audit would have an incremental benefit that outweighs its costs (CSA, 2006). We use Canadian participants in experiments to examine whether and why they, acting as investors, may consider mandatory management disclosure of ICFR material weaknesses and mandatory independent ICFR audit to be substitutory rather than complementary regulatory mechanisms in terms of impact on the investment potential evaluation of companies. Thus, we examine whether Canadian investors process ICFR disclosures under different regulatory mechanisms in a configural manner (i.e., as substitutes rather than as complements).

Our study demonstrates that at least in the context of Canadian investors evaluating the investment potential of companies, mandatory disclosure and mandatory audit are perceived to be substitutes and mandatory audit has no incremental effect. Complying with both mandatory disclosure and mandatory audit is significantly more expensive than complying with only mandatory disclosure.¹ Understanding when and why mandatory disclosure and mandatory audit

¹ A survey conducted by the U.S. Securities Exchange Commission (SEC) reported that the mean total compliance costs was \$2.33 million for companies complying with both Sections 404a (mandatory disclosure) and 404b (mandatory audit) of the

can be substitutes for investors is helpful to regulators who are concerned about balancing the costs and benefits of different regulatory mechanisms.

We expect that the effects of mandatory disclosure and mandatory audit on investment potential evaluations depend on whether a firm disclosed that it has material weaknesses (MW disclosure) or no material weaknesses (No-MW disclosure). A No-MW disclosure compared to a MW disclosure is more consistent with companies' incentives to disclose positive news, and thus may be perceived as having more potential for bias. As such, mandatory disclosure and mandatory audit are more likely to have an impact on perceived reliability and relevance of a No-MW disclosure than a MW disclosure. Therefore, we conduct our main experiment with a 2 x 2 (between-subjects) x 2 (within-subjects) mixed design, using alumni of an accounting and finance undergraduate program at a major Canadian university. We manipulated on a between-subjects basis mandatory (versus voluntary) management disclosure of ICFR material weaknesses and mandatory (versus voluntary) independent ICFR audit. Participants in each regulatory regime evaluate two firms which are manipulated within-subjects: a MW disclosure and a No-MW disclosure.² We find that mandatory disclosure and mandatory audit have substitutory rather than complementary effects on investment potential evaluation of a No-MW disclosure firm. Specifically, having both mandatory disclosure and mandatory audit does not incrementally increase investment potential evaluations beyond having each regulatory mechanism alone. With respect to investment potential evaluation of a MW disclosure firm, neither mandatory disclosure nor mandatory audit has any effects.

Sarbanes Oxley Act (of which \$0.65 million was attributed to the independent ICFR audit) and \$0.34 million for companies complying with only Section 404a (mandatory disclosure) (SEC, 2009).

² A No-MW disclosure is more common in practice than a MW disclosure. A survey by the SEC in the U.S. indicates that only about 22 percent of companies complying with mandated disclosure under Section 404a disclosed an ineffective ICFR with material weaknesses, while the remaining 78 percent disclosed an effective ICFR with no material weaknesses (SEC, 2009). A No-MW (MW) disclosure is also informationally equivalent to disclosing that the ICFR is effective (ineffective) because U.S. and Canadian regulations require companies to disclose that their ICFR is ineffective if there are one or more material weaknesses (CSA, 2009; SEC, 2003).

Additional analyses indicate that alumni participants believe that both mandatory (versus voluntary) disclosure and mandatory (versus voluntary) audit increases the reliability (i.e., free from error and bias) and the relevance (i.e., makes a difference to investors' decisions) of a No-MW disclosure. Alumni participants also believe that mandatory audit increases the reliability of a No-MW disclosure more than mandatory disclosure, but they do not believe mandatory audit increases the relevance of a No-MW disclosure more than mandatory disclosure. This may explain why alumni participants consider mandatory audit and mandatory disclosure to be substitutes. If mandating disclosure alone or mandating audit alone already increases the reliability of the No-MW disclosure above a threshold level that makes a difference to investment potential evaluations, adding the other regulatory mechanism may not further increase the relevance of the No-MW disclosure to investment potential evaluations.

In order to better understand why investors consider mandatory disclosure and mandatory audit to be substitutes, we further conduct verbal protocol analyses with additional alumni participations as well as two supplementary experiments with first-year and third-year undergraduate participants from the same accounting program as our alumni participants, all with the same design as our main experiment. Undergraduate participants do not exhibit the same configural information processing as alumni participants. Only mandatory audit but not mandatory disclosure has effects on investment potential evaluation of a No-MW disclosure firm for third-year undergraduates, while neither mandatory disclosure nor mandatory audit has any effects on investment potential evaluation for first-year undergraduates. Alumni and third-year undergraduates likely know more about the assurance value of an independent audit compared to first-year undergraduates who have not taken any auditing courses; and we speculate that this explain why mandatory audit has effects for alumni and third-year undergraduates but not for

first-year undergraduates. Consistent with the verbal protocols of additional alumni participants, we also speculate that alumni, compared to undergraduates, better understand how mandatory disclosure increases the reliability of positive disclosures of effective ICFR because they have more exposure to companies' incentives for opportunistic voluntary disclosures through their auditing/accounting work experience and experience analyzing financial performance of firms. Alumni, through their work experience, may also have more exposure to the enforcement mechanisms associated with mandatory disclosure that makes mandatory disclosure more reliable. These knowledge differences may explain why investment potential evaluations are affected by mandatory disclosure for alumni but not for third-year and first-year undergraduates. Finally, verbal protocol analyses of additional alumni participants suggest that the substitutory effects are sub-conscious in that they stated that these two mechanisms have complementary rather than substitutory roles.

Using experiments to examine the effects of mandatory disclosure and mandatory audit on investor judgments complements prior archival studies that have examined investor reactions under particular regulatory regimes or between different regimes.³ Figure 1 Panel A summarizes the various regulatory regimes in the U.S. and Canada.⁴ The voluntary disclosure and voluntary audit regime (Cell 1) first occurred in the U.S. prior to the Sarbanes-Oxley Act (SOX), and in

³ For example, Ashbaugh-Skaife, Collins, Kinney, and LaFond (2009) find that firms that disclose Section 302 material weaknesses in "disclosure controls and procedures" (DCP) show an increase in cost of equity, but cost of equity decreases when such firms subsequently disclose no Section 404b material weaknesses in ICFR. Ogneva, Subramanyam, and Raghunandan (2007) find no direct association between disclosures of Section 404b material weaknesses in ICFR and cost of equity. Beneish, Billings, and Hodder (2008) find stronger negative market reactions to Section 302 material weaknesses in DCP than Section 404b material weaknesses in ICFR. Section 302 (implemented in 2002 which preceded Section 404) required company management to evaluate and disclose the effectiveness of DCP, but DCP is distinct from ICFR. Under Section 302, there is ambiguity over whether disclosure of ICFR material weaknesses is mandatory and no independent ICFR audit is required (Ashbaugh-Skaife, Collins, & Kinney, 2007; Doyle, Ge, & McVay, 2007; SEC, 2004). Further, although some ICFR components will be included in DCP, some companies may have DCP that exclude ICFR components that pertain to the accurate recording of transactions and disposition of assets or to the safeguarding of assets (SEC, 2003).

⁴ Unlike the U.S. and Canada, many countries do not mandate ICFR disclosures and audits, but instead rely on companies following the principle of "comply-or-explain" with respect to voluntary codes (e.g., the Turnbull Guidance (2005) in the United Kingdom and Dutch Corporate Governance Code (2009) in the Netherlands). Financial Instruments and Exchange Law enacted by Japan Financial Services Agency (2007) mandates both ICFR disclosures and audits.

Canada prior to National Instrument (NI) 52-109. The mandatory disclosure and mandatory audit regime (Cell 4) was next introduced in the U.S. in 2004 for *large* issuers under SOX Sections 404a and 404b. Subsequently, the mandatory disclosure and voluntary audit regime (Cell 3) came into effect in the U.S. in 2007 for *small* issuers subject to only Section 404a but not Section 404b, and in Canada in 2008, under NI 52-109. Using archival data to compare investor reactions across regimes can be challenging when there is no available data in a particular regime (e.g., Cell 1's voluntary disclosure/voluntary audit regime, where few firms voluntarily disclose material weaknesses, or Cell 2's voluntary disclosure/mandatory audit regime which does not exist); or when different regimes are implemented for different firms, during different time periods, and in different countries (e.g., Cell 3 versus Cell 4). Experiments allow us to make comparisons between regulatory regimes and for different sets of participants with varying knowledge levels, while keeping the information content of the ICFR disclosures, firm characteristics, time period, and geographic region constant. Also, to our knowledge, prior studies tend to focus on examining disclosures of material weaknesses and no study has specifically examined whether disclosures indicating an absence of material weakness (or effective ICFR) is perceived differently by investors under different regulatory regimes. Figure 1 Panel B outlines the specific settings in each regulatory regime that our study examines.

--- Insert Figure 1 here ---

Our findings are also informative for prior research that has examined mandatory disclosure (Leuz & Wysocki, 2008) and mandatory audit (Dopuch & King, 1991) each in isolation but not their joint effects, and largely for financial statements disclosures. For example, prior research has examined the complementary nature of an audit on a voluntary disclosure (Ball, Jayaraman, & Shivakumar, 2012; Coram, Monroe, & Woodliff, 2009), but prior research has not examined

the incremental effect of an audit on a mandatory disclosure. Further, by examining other investor perceptions (e.g., management trustworthiness and ICFR quality, reliability and relevance of ICFR disclosures) in addition to investment potential evaluations as well as investors with varying knowledge levels, we provide a better theoretical understanding of how mandatory ICFR disclosures and audits influence investor judgments.

The remainder of the paper is organized as follows. We first provide background on the associated literature and develop the hypotheses. We next describe the design and results of the experiments. Finally, we conclude with a discussion of the findings and limitations of the study.

Theory and hypothesis development

Various archival studies have found that earnings quality and market reactions are more strongly and negatively associated with disclosures of unaudited material weaknesses in “disclosure controls and procedures” (DCP) under Section 302 versus audited material weaknesses in ICFR under Section 404b (Doyle et al., 2007; Beneish et al., 2008). Archival studies have also examined how Section 302 versus Section 404 affects companies’ disclosure of material weaknesses (e.g., Hermanson & Ye, 2009; Hammersley, Myers, & Zhou, 2012). Of particular interest is the study by Kinney and Shepardson (2011), which finds that compared to under Section 302, mandating both management disclosure of ICFR effectiveness (Section 404a) and an independent ICFR audit (Section 404b) for large issuers increases the disclosure rate of material weaknesses to the same extent as mandating management disclosure alone for small issuers (Section 404a). Hence, they conclude that mandating disclosure alone is as effective as mandating both disclosure and audit in terms of encouraging their sample companies to disclose material weaknesses. The findings of Kinney and Shepardson (2011) highlight the importance of examining whether investors also behave as if mandatory disclosure and mandatory audit are

substitutes just as companies do in terms of their disclosure rates.

Configural information processing of ICFR disclosures

Our study focuses on whether investor judgments are affected by two regulatory mechanisms, mandatory disclosure and mandatory audit, in a configural manner. Configural information processing refers to how people's judgments and decisions are a function of the pattern or configuration of information cues (Edgell, 1978; Slovic & Lichtenstein, 1971).

Prior accounting research on configural information processing focuses on how auditors exhibit different patterns of configural processing across different tasks (Brown & Solomon, 1990, 1991; Maletta & Kida, 1993). For example, Brown and Solomon (1991) find that auditors who are assessing the risk of misstatement for an account considered evidence from two substantive audit procedures to be substitutes, producing an ordinal interaction where the completion of either one procedure alone reduces misstatement risk, and completing both procedures does not reduce misstatement risk compared to completing only one procedure. However, the pattern of configural processing is different in another task. In this other task, auditors who are assessing the risk of misstatement for the revenue and receipts transaction cycle considered two cues from analytical procedures configurally to produce a disordinal interaction where a material increase (versus material decrease) in net accounts receivable decreases misstatement risk in the context of a material increase in gross sales but increases misstatement risk in the context of a material decrease in gross sales.

Prior research indicates that domain-specific knowledge is a necessary determinant of whether decision makers employ configural information processing and the exhibited pattern of such configurality (Brown & Solomon, 1991). For investors assessing the investment potential of firms under mandatory disclosure and/or mandatory audit regulations, we believe that

investors who have domain-specific knowledge about companies' incentives for opportunistic voluntary disclosures, impact of mandatory disclosures on companies' disclosures, and the assurance value of ICFR audits would engage in our predicted pattern of configural processing. We also expect the nature of the ICFR disclosure, which is either consistent or inconsistent with company disclosure incentives (i.e., No-MW versus MW disclosure), to affect the pattern of configural processing. In the discussion that follows, we first develop Hypothesis 1 relating to investors engaging in configural processing in that mandatory disclosure and mandatory audit are substitutes in terms of their positive effects on the assessed investment potential of a No-MW disclosure firm. We then develop Hypothesis 2 relating to neither mandatory disclosure nor mandatory audit having any effects on the assessed investment potential of a MW disclosure firm.

Firms that disclose no material weaknesses (No-MW disclosure firms)

Attribution theory and persuasion research (Eagly, Wood, & Chaiken, 1978; Kelley & Michela, 1980) predict that the extent to which investors perceive bias in the information disclosed by firms depends on whether the disclosed information is consistent with the perceived disclosure incentives of firms. As such, investors' knowledge about companies' incentives to voluntarily disclose positive news but withhold negative news is an important element to our predicted pattern of configural information processing (see Beyer, Cohen, Lys, & Walther, 2010 for review of literature on companies' voluntary disclosures). Research in accounting has documented that investors perceive incentive-consistent information from firms to have more potential for bias and is therefore less reliable than incentive-inconsistent information (Frederickson, Hodge, & Pratt, 2006; Hodge, Hopkins, & Pratt, 2006; Hirst, Koonce, & Simko, 1995). The reliability of a piece of information influences the extent to which the information

makes a difference in investor decisions (i.e., relevance).⁵ Although prior research does not directly examine a setting where regulators and auditors affect the reliability of a piece of information, the psychology theory on attribute substitution used in prior research suggests that investors' perception of whether a piece of information is likely to make a difference in their decisions is influenced by their assessment of the reliability of that information (Kadous, Koonce, & Thayer 2012; Kahneman and Frederick 2002).⁶ In other words, a piece of theoretically relevant information would be practically relevant for making a difference in investor decisions only if it is perceived as reliable. In the following discussion, we argue that mandatory disclosure and mandatory ICFR audit can increase the perceived reliability of ICFR disclosures, and higher perceived reliability in turn increases the perceived relevance of ICFR disclosures to investment potential evaluations.

Effect of mandatory versus voluntary disclosure regime on No-MW disclosure

In our study, a voluntary disclosure regime allows a firm to voluntarily issue a No-MW disclosure as a signal to investors about the positive quality of its ICFR. However, a No-MW disclosure is more consistent with companies' incentives to present themselves in a positive light and may be perceived by investors as less reliable, particularly when the disclosure is voluntary, which limits the ability of firms to use a voluntary No-MW disclosure to signal good ICFR quality. This is consistent with Crawford and Sobel's (1982) economic model that voluntary disclosure is untruthful and uninformative in equilibrium without a mechanism for the discloser

⁵ Both FASB's concept statement (SFAC No. 2) and IASB Conceptual Framework for Financial Reporting (2015) define the relevance construct as the ability of information to make a difference in a decision. Koonce, Nelson, and Shakespeare (2011) also used the phrase "makes a difference in a decision" in their question to measure relevance. See also Footnote 10 in Koonce et al. where they reported that the phrase "makes a difference in a decision" was considered the most descriptive of the relevance concept amongst other phrases (important, free from bias, can be confirmed, timely, represents what it is supposed to) by their participants.

⁶ Kadous et al. (2012) use the psychology theory on attribute substitution to argue that reliability affects relevance because people substitute the more easily accessible reliability assessment when they are making a relevance assessment. Kadous et al. conducted two experiments where the source of reliability of information was manipulated differently and their results were robust to different sources of reliability.

to credibly commit to being truthful.

Mandatory (versus voluntary) disclosure of material weaknesses could increase the reliability of a No-MW disclosure. First, mandatory disclosure may signal to investors that the disclosure contains reliable information that would be relevant for making a difference to their decisions; otherwise, regulatory authorities would not mandate the disclosure.⁷ Second, mandating disclosure allows management to commit to reliable disclosures regardless of whether the disclosures contain good news or bad news, because of the costs of violating a mandated disclosure requirement (Beyer et al., 2010; Leuz, 2010; Rock, 2002). The availability of regulatory enforcement mechanisms for the mandatory disclosure requirement and the criminal and civil liabilities associated with violation increase the reliability of the disclosures. Mandating disclosure eliminates the possibility of investors interpreting that management is selectively making only positive voluntary No-MW disclosures and increases the reliability of the No-MW disclosure. Therefore, we expect that a mandatory (versus voluntary) disclosure regime increases the reliability of a No-MW disclosure and the extent to which a No-MW disclosure makes a difference in investor decisions.

Effect of mandatory versus voluntary ICFR audit regime for No-MW disclosure

Prior literature indicates that financial statement audits provide valuable assurance to investors and creditors about the risk of material misstatement, reduce the costs of monitoring by investors and creditors, and increase their willingness to invest or lend to the firm (Allee & Yohn, 2009; Blackwell, Noland, & Winters, 1998; Lennox & Pittman, 2011; Watts & Zimmerman, 1983). Economic theory argues that a financial statement audit allows management to commit to making credible voluntary disclosures of private information such as earnings forecasts (Ball et

⁷ Frederickson et al. (2006) find that users consider mandated recognition of stock option expense to be more reliable than voluntary recognition. However, Frederickson et al. examine voluntary versus mandatory recognition of a quantifiable accounting issue, rather than voluntary versus mandatory disclosure of a qualitative accounting issue.

al., 2012; Gigler & Hemmer, 1999). This is referred to as the “confirmatory role” of audited financial statements because management is disciplined to make truthful *ex-ante* voluntary disclosures because the disclosures would be verified *ex-post* by the independent audit. Coram et al. (2009) report similar findings that an audit improves the ability of a positive voluntary non-financial disclosure to increase the stock price estimates of financial statement users.

Without an ICFR audit, auditors are only required to review management’s No-MW disclosure for material inconsistencies with the audited financial statements and they are not responsible for performing additional audit procedures to detect misstatements beyond the scope of inconsistency with the financial statement audit (AU Section 550 issued by Public Company Accounting Oversight Board (PCAOB, 2003); International Standard on Auditing (ISA) 720). A mandatory ICFR audit provides independent assurance to investors beyond that provided by the financial statement audit and should be useful for enhancing the reliability of a potentially biased No-MW disclosure. Given the significant cost of ICFR audits, voluntary ICFR audits in a voluntary audit regime is rare in practice. Therefore, we expect that a mandatory (versus voluntary) ICFR audit regime increases the reliability of a No-MW disclosure and the extent to which a No-MW disclosure makes a difference in investor decisions because of the higher likelihood of an ICFR audit being conducted in a mandatory (versus voluntary) audit regime.

Configural information processing for No-MW disclosure

We consider how investors would configurally process a No-MW disclosure in the context of a mandatory (versus voluntary) disclosure regime and a mandatory (versus voluntary) audit regime. Prior studies find that there are negative stock price reactions to disclosures of unaudited Section 302 material weaknesses because material weaknesses signal higher risks of material misstatements in a company’s financial reports and investors discount stock prices to compensate

for the greater risk (Beneish et al., 2008; Hammersley et al., 2008). Ashbaugh-Skaife et al. (2009) find that when firms which are expected to have poor quality ICFR disclose audited reports of effective ICFR, there is a significant decrease in cost of equity consistent with lower risk assessment. These prior findings imply that a disclosure of an effective ICFR with no material weaknesses signals a higher quality ICFR that increase investors' confidence about the company's financial reports and lower the risk of material misstatement in the company's financial reports, which should then improve its investment potential. In other words, all things equal, a MW disclosure signals poor quality ICFR that should decrease the perceived investment potential of a company whereas a No-MW disclosure signals better quality ICFR that should increase the perceived investment potential of a company.

The more reliable the No-MW disclosure is perceived to be, the more likely the No-MW disclosure would make a difference (i.e., be more relevant) in signaling better quality ICFR that increases the perceived investment potential of a company. As we discuss above, both a mandatory (versus voluntary) disclosure regime as well as a mandatory (versus voluntary) audit regime increases the reliability of a No-MW disclosure. Therefore, both mandatory disclosure regime alone and mandatory audit regime alone are expected to increase perceived ICFR quality and hence investment potential evaluation for a No-MW disclosure firm. Investors who are cognizant of the reliability-enhancing attributes of mandatory disclosure regime alone and mandatory audit regime alone may perceive no additional benefit from having both mandatory disclosure and mandatory audit versus having only one regulatory mechanism alone (i.e., mandatory disclosure and mandatory audit are substitutes).⁸

⁸ The key difference between our study and those of Ball et al. (2012) and Coram et al. (2009) is that we are studying the substitutory nature of mandatory audit and mandatory disclosure, whereas Ball et al. and Coram et al. are studying the complementary nature of audit and *voluntary* disclosure. Ball et al. and Coram et al. only examine *voluntary* disclosure and find that the audit is a complementary regulatory mechanism that verifies the credibility of a voluntary disclosure, which has no inherent mechanisms to verify its credibility. Our study contrasts mandatory versus voluntary disclosure. Mandatory disclosure is

Based on our discussion above, our hypothesis for how the investment potential evaluations of a No-MW disclosure firm are affected by mandatory disclosure and mandatory audit is stated in the alternative form as follows (see Figure 2, Panel A for pictorial depiction).

--- Insert Figure 2 here ---

HYPOTHESIS 1. For a No-MW disclosure firm, investors will perceive a mandatory (versus voluntary) disclosure regime and a mandatory (versus voluntary) audit regime to be substitutable regulatory mechanisms and the two regulatory mechanisms will have an ordinal interactive effect on investors' investment potential evaluations that will take the form of:

- a) Investment potential evaluation will be lower in a voluntary disclosure/voluntary audit regime than in a mandatory disclosure regime alone or in a mandatory audit regime alone.
- b) Investment potential evaluation will not be higher in a mandatory disclosure/mandatory audit regime than in a mandatory disclosure regime alone or in a mandatory audit regime alone.

Firms that disclose material weaknesses (MW disclosure firms) and configural information processing for MW disclosure

In contrast to a No-MW disclosure, a MW disclosure is generally less consistent with companies' incentives to present themselves in a positive light than a No-MW disclosure.⁹ Thus, based on attribution theory, if management voluntarily discloses material weaknesses despite incentives not to do so, investors should have less reason to doubt the reliability of a MW disclosure than that of a No-MW disclosure. Coram et al. (2009) report results consistent with attribution theory where they find that an audit increases the stock price estimates of financial statement users who receive a positive voluntary non-financial disclosure; but an audit has no effect on a negative voluntary non-financial disclosure.

Attribution theory suggests that the configural effects of mandatory disclosure and mandatory audit in Hypothesis 1 for No-MW disclosure firms would not manifest for MW

a regulatory mechanism that increases disclosure credibility and thus may be perceived by investors as a substitutable regulatory mechanism for mandatory audit. In fact, our study finds consistent results with Ball et al. and Coram et al., in that when the No-MW disclosure is voluntary, a mandatory (versus voluntary) audit regime has a positive effect on investment potential evaluations.

⁹ Although firms may have incentives to voluntarily disclose material weaknesses to signal that they are transparent (Ashbaugh-Skaife et al., 2007), there is a cost to such disclosure of material weaknesses in terms of investors' perceptions of the quality of the firm's internal control system and/or misstatement risk (Beneish et al., 2008; Hammersley et al., 2008).

disclosure firms. The reliability and hence the ability of a voluntary MW disclosure to make a difference (i.e., be relevant) to investor decisions may not be further enhanced by a mandatory disclosure regime alone, or by a mandatory audit regime alone, or by a combined mandatory disclosure and mandatory audit regime (unlike the case for No-MW disclosures).

Based on our discussion above, our hypothesis for how the investment potential evaluations of a MW disclosure firm are affected by mandatory disclosure and mandatory audit is stated in the null form as follows (see Figure 2, Panel A for pictorial depiction).

HYPOTHESIS 2. For a MW disclosure firm, a mandatory (versus voluntary) disclosure regime and a mandatory (versus voluntary) audit regime will not have any effects on investors' investment potential evaluations. Specifically,

- a) Investment potential evaluation will not be different in a voluntary disclosure/voluntary audit regime than in a mandatory disclosure regime alone or in a mandatory audit regime alone.
- b) Investment potential evaluation will not be different in a mandatory disclosure/mandatory audit regime than in a mandatory disclosure regime alone or in a mandatory audit regime alone.

Method

Experimental design and independent variables

We use a 2×2 (between-subjects) $\times 2$ (within-subjects) mixed design to test our hypotheses. The within-subjects variable consists of two firms: one disclosed that there are no material weaknesses (No-MW disclosure firm) and one disclosed that there are material weaknesses (MW disclosure firm). The two between-subjects independent variables are whether management disclosure of ICFR material weaknesses is voluntary or mandatory (*VOLDIS* versus *MANDIS*) and whether an ICFR audit is voluntary or mandatory (*VOLAUD* versus *MANAUD*). Detailed description of the manipulated variables is provided in the "Procedures" sub-section.

In practice, while firms must make an ICFR disclosure in a mandatory disclosure regime (*MANDIS*), they can choose to make an ICFR disclosure or not in a voluntary disclosure regime (*VOLDIS*). Our *VOLDIS* condition examines a voluntary disclosure regime setting where the

firm has chosen to make an ICFR disclosure. This design choice holds constant the presence of ICFR disclosures while manipulating whether the disclosure is voluntary or mandatory.

Similarly, in practice, while firms must have an ICFR audit in a mandatory audit regime (*MANAUD*), they can choose to have an ICFR audit or not in a voluntary audit regime (*VOLAUD*). Participants in our *VOLAUD* condition are told that an independent ICFR audit is voluntary and the experimental firm is silent on whether they had an ICFR audit, which is consistent with real world voluntary audit regimes.¹⁰ Participants in the *VOLAUD* condition are further told that “some companies engage in an independent auditor voluntarily and disclose that; others choose not to engage an independent auditor and are silent on this matter.” This design choice is intended to have participants in the *VOLAUD* condition not only conclude that ICFR audit is voluntary but to also increase the likelihood that they would further infer that the silent experimental firm has not hired an ICFR auditor. We believe this is the most consistent with practice where most firms in a voluntary audit regime choose not to have an independent ICFR audit and are silent on whether an independent ICFR audit has been conducted. That said, as disclosed in our manipulation check section, there are a minority of participants in the *VOLAUD* condition who believed that the silent experimental firm has voluntarily hired an ICFR auditor.

Figure 1 Panel B outlines all the possible settings that we could examine and the settings which we have chosen to examine in our study. In Figure 1 Panel A, we note that one of the conditions we examine, *VOLDIS_MANAUD*, is not observed in the real world. This condition is designed to rule out the alternative explanation that the lack of a significant incremental effect of a mandatory audit in the presence of mandatory disclosure is due to the mandatory audit itself

¹⁰ Our *VOLAUD* versus *MANAUD* manipulation focuses on whether the ICFR audit is voluntary or mandatory. We do not manipulate (nor indicate to participants) whether the firm’s choice about an ICFR audit in the *VOLAUD* condition is mandated to be disclosed or not, and we also do not manipulate (nor indicate to participants) whether the ICFR audit findings are mandated to be disclosed or not if the firm had an ICFR audit (whether the audit is voluntary or mandatory).

not having any significant positive effect on the No-MW firm's investment potential evaluation.

Participants

Participants are alumni of an accounting and finance undergraduate program at a large Canadian university. Canadian participants function in a regime where regulators have indicated that they would consider adding mandatory audit to the existing disclosure requirement based on experience in Canada and other countries. Hence, our reasoning is that they would not find it unrealistic to consider a new regime where both audit and disclosure are mandated (i.e., *MANDIS_MANAUD*).¹¹ On behalf of the researchers, the University's alumni office sent about 3,000 emails with a brief introduction of the study and a link to a website that provided access to the experimental materials if people agreed to participate. Participants who completed the study could enter their name in a random drawing for one of 20 gift cards (of a major retailer) valued at Canadian Dollars \$100 each. A total of 89 alumni participated in our experiment; 69 in the four conditions in the experiment and 20 in the fifth additional condition reported in Footnote 17, for a response rate of about 3%.

Our participants have an average of 6.3 years of work experience and 4.2 years of experience analyzing the financial performance of firms. Almost 90 percent of the participants work in accounting and finance-related professions (i.e., auditing, tax, accounting, and finance, banking, or investing). On a scale of 0 ("never") to 14 ("with high frequency"), our participants indicated a mean of 3.1 with respect to how often they invested in the stock market, and the results are the same when we controlled for their investment frequency.¹² Given the educational

¹¹ As an alternative, we could have used U.S. participants who are currently in a regime that mandates both disclosure and audit for large issuers (which our experimental firm is likely to be perceived as given the size of its sales and stockholder's equity). However, U.S. regulators have not expressed any interest in removing the audit requirement for large issuers, and U.S. participants may therefore find it unrealistic to consider a disclosure only (i.e., *MANDIS_VOLAUD*) regime for large issuers.

¹² None of these demographic variables (years of work experience, years of experience analyzing financial performance of firms, profession, investment frequency) are significantly different across conditions nor are they significant covariates in the ANCOVA for investment potential rating (all p values ≥ 0.210).

background and work experience of our participants, they would have the following requisite domain-specific knowledge necessary for the configural information processing that we predict: knowledge about companies' incentives for opportunistic voluntary disclosures, impact of mandatory disclosures on companies' disclosures, and the assurance value of ICFR audits.

Procedures

Participants were randomly assigned by the survey software to one of the four between-subject experimental conditions. They were asked to assume that they worked in the investment department of a company and that they were assessing the investment potential of two firms on behalf of their company. This design choice of asking participants to assess firms on behalf of their company rather than for their own personal investment has been used in prior studies such as Elliot, Hodge, and Sedor (2012). This design choice likely increases participants' objectivity in that they are less likely to bring their personal risk preferences into their judgments.¹³

Participants were told that the two firms were listed on a hypothetical stock exchange where regulations required management to evaluate ICFR in a listed firm. Participants were also informed that the external auditors of each firm had expressed unqualified opinions on the financial statements.¹⁴ Then, participants read one of the independent variable manipulations about ICFR disclosure and audit regulations in the hypothetical stock exchange (*VOLDIS_VOLAUD*, *MANDIS_VOLAUD*, *VOLDIS_VOLAUD*, and *MANDIS_MANAUD*).¹⁵

Excerpts of our between-subjects manipulations are reproduced in the Appendix 1.

¹³ However, prior research suggests that findings on individuals making risky financial decisions for themselves are consistent with findings on individuals making those decisions for others (Stone, Yates, & Caruthers, 2002).

¹⁴ This provides a cleaner test of the effects of mandatory disclosure and mandatory audit. We want to eliminate the situation where investors were not sure whether management had evaluated the ICFR (particularly for the No-MW disclosure firm) and whether the external auditors had expressed an unqualified opinion on the financial statements (particularly for the MW disclosure firm).

¹⁵ Our manipulations did not include any language on the effectiveness of the regulatory enforcement mechanisms associated with mandatory disclosure and mandatory audit. We do not collect any evidence on participant perceptions about the strength of investor protection laws relating to company misrepresentation and auditor misrepresentation, although participants (and hence their perceptions) are randomly assigned to conditions.

Next, participants were given information about two firms, comprising financial data (e.g., sales, net income, working capital, long-term debt, new sales orders) and a note disclosure on controls and procedures.¹⁶ The note disclosure on controls and procedures for the No-MW disclosure firm disclosed that management did not identify any material weaknesses in its ICFR whereas the MW disclosure firm disclosed that management had identified various material weaknesses in its ICFR.¹⁷ The No-MW disclosure firm was presented either before or after the MW disclosure firm to avoid an order effect and the results are the same controlling for the order in which the two firms appear on the instrument. We adapted the description of disclosed ICFR material weaknesses for the MW disclosure firm from one of the cases in Earley, Hoffman, and Joe (2008) rated by their participating auditors to be more severe than a significant deficiency.

For *VOLDIS_MANAUD* and *MANDIS_MANAUD*, management's note disclosure on controls and procedures additionally disclosed that the firm's independent auditors had also conducted their own evaluation of the firm's ICFR, and that their opinion concurred with the firm (i.e., either MW or No-MW). For *VOLDIS_VOLAUD* and *MANDIS_VOLAUD*, management's note disclosure did not indicate that there was an independent ICFR audit in line with common practice. Excerpts of our within-subjects manipulations for the NO-MW/MW disclosure firms are reproduced in the Appendix 1.

¹⁶ We created minor 2-4 percent variations in the financial data of the two firms so that participants will see two firms with fairly similar financials but different internal control disclosures. The financial data was crossed between the two firms to avoid an effect from the differences in financial data.

¹⁷ The original study had a fifth additional *VOLDIS_VOLAUD* condition with a No-MW disclosure firm and a firm that is silent on whether there is MW or not. Investment potential rating does not differ between the No-MW disclosure firm (mean = 3.85) and the silent firm (mean = 3.60) ($p = 0.371$), suggesting that a Silent-MW disclosure firm is not penalized vis-à-vis a No-MW disclosure firm in terms of investment potential evaluation in a *VOLDIS_VOLAUD* setting. More importantly, participants gave a No-MW disclosure firm in this fifth condition (mean = 3.85) a marginally higher investment potential evaluation when it is contrasted against a silent firm than when a No-MW disclosure firm (mean = 2.97) is contrasted against a MW disclosure firm in the *VOLDIS_VOLAUD* condition reported in text (one-tailed $p = 0.054$). This finding suggests that contrasting a No-MW disclosure firm against a MW disclosure firm may serve to highlight the difference in consistency of the disclosure with the firm's disclosure incentives, making the low reliability of the No-MW disclosure more salient, and increasing the power of detecting effects of regulatory mechanisms (such as mandatory disclosure and mandatory audit) aimed at improving disclosure reliability.

Participants then made several judgments about the two firms (during which they could access the cases), including investment potential and other assessments discussed later in the paper. Finally, participants answered manipulation check and demographic questions during which the case could not be consulted.

Dependent variables

Participants judged the two firms' investment potential by rating on a 15 point scale (-7 to +7): (1) the attractiveness of the stock as an investment, and (2) the company's earnings potential (Spearman-Brown correlation for No-MW disclosure firm = 0.62, $p < 0.001$; Spearman-Brown correlation for MW disclosure firm = 0.65, $p < 0.001$).¹⁸ We averaged these two ratings to obtain an overall investment potential rating for each firm because the two individual ratings are highly correlated and the results for each individual rating are similar to the averaged overall investment potential rating.

We also asked participants four questions that measure their perceptions of management credibility (Giffin, 1967; Mercer, 2005): (1) whether management is trustworthy in its disclosures about ICFR (on a scale of 0 "Not at all trustworthy" to 14 "Very trustworthy") (Trust), (2) whether the company had undisclosed material weaknesses in its ICFR (on a scale of 0 "Very certain that there are no undisclosed material weaknesses" to 14 "Very certain that there are undisclosed material weaknesses", reverse coded) (UndisclosedMW), (3) the quality of the company's ICFR (on a scale of -7 "Extremely Poor" to 7 "Extremely Good") (ICFR Quality), and (4) whether management is competent in establishing and maintaining adequate ICFR (on a scale of 0 "Not at all competent" to 14 "Very competent") (Management Competence). Factor analyses for these credibility questions indicate that the first two questions load together on one factor with factor loadings 0.69 or higher for both firms, while the last two questions load

¹⁸ All p values are two-tailed unless otherwise stated.

together on another factor with factor loadings 0.65 or higher for both firms. The first two questions relate generally to the trustworthiness of management (e.g., did management disclose all material weaknesses?) and responses to these two questions (Trust and UndisclosedMW) are averaged to obtain a *TRUSTWORTHINESS* measure (Spearman-Brown correlation for No-MW disclosure firm = 0.43, $p < 0.001$; Spearman-Brown correlation for MW disclosure firm = 0.37, $p = 0.002$). The last two questions relate generally to management's ability to establish and maintain a good quality ICFR and responses to these two questions (ICFR Quality and Management Competence) are averaged to obtain an *ICFR-QUALITY* measure (Spearman-Brown correlation for No-MW disclosure firm = 0.54, $p < 0.001$; Spearman-Brown correlation for MW disclosure firm = 0.65, $p < 0.001$).

Manipulation checks

We asked participants whether under the hypothetical stock exchange's regulations (1) management's disclosure of identified material weaknesses in ICFR was voluntary or mandatory, and (2) an independent audit of ICFR was voluntary or mandatory. Fifty-one (51) out of the 69 participants (74 percent) correctly answered both questions. The manipulation check failure rate does not differ significantly across conditions ($p = 0.614$). Participants who failed manipulation checks might still have been influenced by the manipulations but were not able to recall correctly the manipulations by the time they responded to the manipulation check questions (Perdue & Summers, 1986). We retain all participants in our analyses because differences in *ICFR-QUALITY* assessment across the *VOLDIS* versus *MANDIS* manipulation ($F = 6.61$, $p = 0.012$) and the *VOLAUD* versus *MANAUD* manipulation ($F = 10.15$, $p = 0.002$) (see Table 2 Panel B) indicate that our manipulations were successful regardless of the participants' recall ability

(Sigall & Mills, 1998). The results for the full sample of participants (N =69) are also similar to the results for the smaller sample of participants (N=51) who passed both manipulation checks.¹⁹

We also asked participants whether they thought the No-MW disclosure firm and the MW-disclosure firm hired an independent auditor to evaluate its ICFR. For participants who were in the *VOLAUD* conditions and the firm was silent on whether it had hired an auditor, 82% (27 out of 33) believed the No-MW disclosure firm had not hired an auditor while 56% (18 out of 33) believed the MW disclosure firm had not hired an ICFR auditor.²⁰ Participants' beliefs were consistent with practice where in a voluntary audit regime, if the firm was silent on whether an ICFR auditor was hired, investors tend to believe that the firm had not done so. For participants who were in the *MANAUD* conditions, 89% (32 out of 36) and 86% (31 out of 36) indicated that the No-MW disclosure firm and the MW disclosure firm, respectively, had hired an ICFR auditor. Given that our *VOLAUD* versus *MANAUD* manipulations were whether or not the regulatory regime mandated an ICFR audit rather than whether or not participants believed the firm hired an ICFR auditor, we do not exclude *VOLAUD* participants who indicated that the firm hired an ICFR auditor or *MANAUD* participants who indicated that the firm did not hire an ICFR auditor. Regardless, the results are similar whether or not we exclude these participants.

Finally, we asked participants whether they recalled if the firm disclosed that there were material weaknesses or no material weaknesses. About 84% (58 out of 69) participants recalled that the MW disclosure firm disclosed material weaknesses, and 91% (63 out of 69) participants recalled that the No-MW disclosure firm disclosed no material weaknesses. We retain all

¹⁹ According to Sigall and Mills (1998), differences between experimental conditions on a measure of the conceptual independent variable or a dependent measure provide evidence that participants notice the manipulated differences between conditions (p. 221).

²⁰ It is not surprising that a high percentage of participants (44% or 15 out of 33) in the *VOLAUD* conditions believed the MW disclosure firm had hired an ICFR auditor. In practice, a MW disclosure is a less common event than a No-MW disclosure (see Footnote 2). Even though the firm was silent on whether it had hired an ICFR auditor, participants may have assumed that it had voluntarily hired an ICFR auditor which helped it identify those material weaknesses and pressured it to disclose identified material weaknesses.

participants because differences in investment potential rating and *ICFR-QUALITY* assessment across the MW and No-MW disclosure firms (reported in the paired t-tests below) indicate that our manipulation was successful regardless of the participants' recall ability (Sigall & Mills, 1998). The results are also similar whether or not participants who indicated the MW disclosure firm disclosed no material weaknesses and participants who indicated the No-MW disclosure firm disclosed material weaknesses are excluded.

Results

Paired t-tests indicate that investment potential evaluation (3.99 versus 2.14, $t = 6.31$, one-tailed $p < 0.001$) and *ICFR-QUALITY* (6.22 versus 2.57, $t = 8.43$, one-tailed $p < 0.001$) are higher for the No-MW disclosure firm than the MW disclosure firm. These results are consistent with our hypotheses development that disclosing material weaknesses decreases the perceived quality of ICFR in the firm, which is associated with lower investment potential evaluations.

We use MANOVA to first test if there are multivariate differences (in the investment potential evaluations of both the No-MW disclosure firm and the MW disclosure firm) across the between-subjects conditions, followed by standardized canonical coefficients and univariate ANOVAs to test that the between-subjects differences are driven by the No-MW disclosure firm as predicted in H1 and not by the MW disclosure firm as predicted in H2 (Garson, 2015; Scheiner, 2001 p. 99-115; Wilkinson, 1975). We use MANOVA rather than ANOVA of the difference score in investment potential evaluations between the two firms because the reliability of a difference score and hence statistical power is low when the components that make up that difference score are positively correlated, as is the case for our study where the No-MW firm's investment potential evaluation is strongly and positively correlated with the MW firm's investment potential evaluation (Pearson $r = 0.38$, $p = 0.001$) (Edwards 1995; Edwards 2001;

Peter, Churchill, & Brown, 1993; Bergh & Fairbanks, 2002).²¹ Edwards (1995) recommends that the individual components that make up the difference score be used as separate dependent variables in a multivariate regression analysis or MANOVA for improved reliability and power (for examples of such studies, see Ostroff, Atwater, & Feinberg, 2004; Mullins, Ahearne, Lam, Hall, & Boichuk, 2014; and Sturm, Taylor, Atwater, & Braddy, 2014). Edwards (1995) also recommends MANOVA because it allows unambiguous specification of the individual effects of the independent variables on the No-MW firm's investment potential evaluation (ordinal interaction effect) and the MW firm's investment potential evaluation (no effect) as prescribed by theory, whereas ANOVA of the difference score does not allow for that. The results of the difference score are nevertheless reported in Footnote 22.²²

Given that H1 predicts an ordinal interaction for the pattern of configural information processing for the No-MW disclosure firm as shown in Figure 2 Panel A, we maximize the power of our test by using contrast coding (Buckless & Ravenscroft, 1990; Rosenthal & Rosnow, 1985). The contrast weights to test H1 are -3 for *VOLDIS_VOLAUD*, +1 for *VOLDIS_MANAUD*, +1 for *MANDIS_VOLAUD*, +1 for *MANDIS_MANAUD*; and the multivariate contrast for this

²¹ Indeed, for the investment potential evaluations of the two firms, the reliabilities of the individual firms are higher than the reliability of the difference score between the two firms. With respect to the two items in the investment potential evaluation variable (i.e., stock attractiveness and earnings potential), Cronbach alpha and Spearman-Brown correlation for the No-MW disclosure firm (0.77 and 0.62) and the MW disclosure firm (0.72 and 0.65) are higher than the respective Cronbach alpha and Spearman-Brown correlation for the difference score (0.65 and 0.55). Low reliability and low power of a difference score is less of an issue in cases where (1) the individual components are not correlated or negatively correlated or (2) the individual components are one-item measures (Bergh & Fairbanks, 2002). Edwards (1995, 2001), Peter et al. (1993), Hom, Griffeth, Palich, and Bracker (1999), Bergh and Fairbanks (2002), Kristof-Brown, Zimmerman, and Johnson (2005), Klein, Jiang, and Cheney (2009) discuss various cases in research (e.g., person-environment fit, gap between employee/consumer expectations and experiences, change over time, difference between wholesaler and broker perceptions) where using difference scores may lead to misleading conclusions or conceal more complex relationships. Thus, it is now common practice in literature in management, marketing, and psychology to recognize the statistical limitations of using difference scores and to analyze individual components jointly (e.g., Ostroff et al., 2004; Mullins et al., 2014; Seo, Gamache, Devers, & Carpenter, 2015; Sturm et al., 2014).

²² An alternative analysis is to use the difference in investment potential evaluations of the two firms (DiffInvm) as the dependent variable to jointly test H1 and H2. The results are directionally consistent with our hypotheses, with the smallest DiffInvm in the *VOLDIS_VOLAUD* condition and with DiffInvm being higher in all other conditions, although the differences are not statistically significant (*VOLDIS_VOLAUD* = 1.24; *VOLDIS_MANAUD* = 2.05; *MANDIS_VOLAUD* = 2.16; *MANDIS_MANAUD* = 1.94). The contrast for the disordinal interaction predicted in H1 (with weights of -3, +1, +1, +1) for DiffInvm is also not significant (one-tailed $p = 0.120$). Another alternative analysis used to overcome the statistical limitations of the difference score is to analyze one dependent variable while controlling for the other dependent variable as a covariate (e.g. Seo et al., 2015). Our results using this method are consistent with our hypotheses and are qualitatively similar to the results reported in text when the other dependent variable is not included as a covariate.

ordinal interaction is significant (Table 1 Panel C, $F = 4.18$, one-tailed $p = 0.010$). The multivariate contrast to test if investment potential evaluations are higher in *MANDIS_VOLAUD* and *VOLDIS_MANAUD* as compared to *VOLDIS_VOLAUD* (as predicted in H1a) is also significant (Table 1 Panel C, $F = 3.93$, one-tailed $p = 0.012$). The multivariate contrast to test that investment potential evaluations are not higher in *MANDIS_MANAUD* compared to *MANDIS_VOLAUD* and *VOLDIS_MANAUD* (as predicted in the null H1b) is not significant (Table 1 Panel C, $F = 0.04$, $p = 0.965$). For each multivariate contrast, MANOVA generates the standardized canonical coefficients for the No-MW firm's investment potential evaluation and the MW firm's investment potential evaluation to enable comparisons of the contribution of each dependent variable to the extracted dependent canonical variate. For all three multivariate contrasts, the standardized canonical coefficients (reported in Table 1 Panel C) are always larger for the No-MW firm's investment potential evaluation than those for the MW firm's investment potential evaluation with respect to the dependent canonical variate: 1.08 versus -0.12 for H1, 1.08 versus -0.14 for H1a, and 1.07 versus -0.67 for H1b, respectively. Standardized canonical coefficients are interpreted similarly to beta weights in multiple regression analysis. For example, in H1, one standard deviation increase in No-MW firm's investment potential evaluation increases the dependent canonical variate by 1.08 standard deviation, whereas one standard deviation increase in the MW firm's investment potential evaluation decreases the dependent canonical variate by 0.12 standard deviation. Therefore, the standardized canonical coefficients indicate that the No-MW disclosure firm explains more of the multivariate differences predicted in H1 and H1a than does the MW disclosure firm (Garson, 2015; Scheiner, 2001 p. 99-115).

We then use univariate ANOVAs and contrasts to further test if these multivariate results are driven by the No-MW disclosure firm (H1) and not the MW disclosure firm (H2). The

univariate 2×2 ANOVA for the investment potential rating is significant for the No-MW disclosure firm ($F = 2.85, p = 0.044$) but it is not significant for the MW disclosure firm ($F = 0.21, p = 0.888$), consistent with our hypotheses that manipulated regulatory regimes affect the investment potential evaluation of a No-MW disclosure firm but not that of a MW disclosure firm. Results are summarized in Figure 2 Panel B and Table 1.

--- Insert Table 1 here ---

Firms that disclose no material weaknesses (No-MW disclosure firms)

The univariate contrast to test the predicted ordinal interaction effect in H1 for the No-MW disclosure firm (-3 for *VOLDIS_VOLAUD*, +1 for *VOLDIS_MANAUD*, +1 for *MANDIS_VOLAUD*, +1 for *MANDIS_MANAUD*) is significant (Table 1 Panel D, $F = 8.38$, one-tailed $p = 0.003$), supporting H1. H1a predicts that vis-à-vis a voluntary disclosure/voluntary audit regime, a mandatory disclosure regime alone and a mandatory audit regime alone have positive effects on investment potential evaluations of a No-MW disclosure firm. The univariate contrast for H1a is supported in that investment potential evaluation for the No-MW disclosure firm is higher in *MANDIS_VOLAUD* and *VOLDIS_MANAUD* as compared to *VOLDIS_VOLAUD* (Table 1 Panel D, $F = 7.86$, one-tailed $p = 0.003$).²³ Investment potential evaluation for the No-MW disclosure firm is also higher in *MANDIS_VOLAUD* versus *VOLDIS_VOLAUD* ($t = 2.61$, one-tailed $p = 0.006$), and in *VOLDIS_MANAUD* versus *VOLDIS_VOLAUD* ($t = 2.25$, one-tailed $p = 0.014$) (untabulated).²⁴ H1b is in the null form and

²³ Although there may be a concern that participants are not able to differentiate between *VOLDIS_MANAUD* and *MANDIS_MANAUD*, the failure rate for the manipulation check question on whether ICFR disclosure is voluntary or mandatory is not significantly different across the two conditions ($p = 0.905$) which suggests that participants in *VOLDIS_MANAUD* do not face increased difficulty interpreting the voluntary nature of the disclosure. Also, the results using only participants who pass both manipulation checks on voluntary/mandatory disclosure and voluntary/mandatory audit are the same as the results for the full sample.

²⁴ Given that the investment potential rating for the No-MW disclosure firm is higher in *VOLDIS_MANAUD* versus *VOLDIS_VOLAUD* (4.24 versus 2.97, $t = 2.25$, one-tailed $p = 0.014$), the mandatory audit itself has a positive effect on investment potential evaluations under a *VOLDIS* setting. As such the null incremental effect of the mandatory audit when mandatory disclosure is already in place is not because mandatory audit itself has no effect.

predicts that for a No-MW disclosure firm, a mandatory disclosure/mandatory audit regime does not significantly increase investment potential evaluations compared to a mandatory disclosure regime alone or mandatory audit regime alone. There is no evidence to reject the null H1b. The univariate contrast indicates that investment potential evaluation for the No-MW disclosure firm is not higher in *MANDIS_MANAUD* compared to *MANDIS_VOLAUD* and *VOLDIS_MANAUD* (Table 1 Panel D, $F = 0.04$, $p = 0.836$). Investment potential evaluation for the No-MW disclosure firm is also not higher in *MANDIS_MANAUD* versus *MANDIS_VOLAUD* ($t = -0.40$, $p = 0.690$), and in *MANDIS_MANAUD* versus *VOLDIS_MANAUD* ($t = 0.05$, $p = 0.961$) (untabulated). Hence, alumni participants exhibit configural information processing where mandatory disclosure and mandatory audit are substitutes in terms of their positive effects on the investment potential evaluations of a No-MW disclosure firm.

Firms that disclose material weaknesses (MW disclosure firms)

H2 is in the null form and predicts that neither a mandatory disclosure regime alone nor a mandatory audit regime alone will have any effects on investment potential evaluation of a MW disclosure firm (see Figure 2 Panel A). H2 suggests that the significant multivariate differences in the multivariate contrasts reported earlier are driven by the No-MW disclosure firm rather than by the MW disclosure firm. Univariate contrasts for the No-MW disclosure firm discussed in the preceding sub-section indicate significant contrasts for H1 and H1a, and a non-significant contrast for the null H1b. We next conduct univariate contrasts to test H2.

Unlike the significant multivariate contrast for H1 (-3 for *VOLDIS_VOLAUD*, +1 for *VOLDIS_MANAUD*, +1 for *MANDIS_VOLAUD*, +1 for *MANDIS_MANAUD*), the univariate contrast for the MW disclosure firm is not significant (Table 1 Panel D, $F = 0.60$, one-tailed $p = 0.440$). H2a predicts that vis-à-vis a voluntary disclosure/voluntary audit regime,

neither a mandatory disclosure regime alone nor a mandatory audit regime alone has any significant effect on investment potential evaluation of a MW disclosure firm. We find no evidence to reject the null H2a, with a univariate contrast indicating that investment potential evaluation of a MW-disclosure firm is not different in *VOLDIS_VOLAUD* versus *MANDIS_VOLAUD* and *VOLDIS_MANAUD* (Table 1 Panel D, $F = 0.50$, $p = 0.482$). Investment potential evaluation is also not different in *MANDIS_VOLAUD* versus *VOLDIS_VOLAUD* ($t = 0.69$, $p = 0.492$), and in *VOLDIS_MANAUD* versus *VOLDIS_VOLAUD* ($t = 0.53$, $p = 0.596$) (untabulated). We also find no evidence to reject the null H2b, with a univariate contrast indicating that investment potential evaluation of a MW-disclosure firm is not different in *MANDIS_MANAUD* versus *MANDIS_VOLAUD* and *VOLDIS_MANAUD* (Table 1 Panel D, $F = 0.01$, $p = 0.937$). Investment potential evaluation is also not different in *MANDIS_MANAUD* versus *MANDIS_VOLAUD* ($t = -0.02$, $p = 0.982$), and in *MANDIS_MANAUD* versus *VOLDIS_MANAUD* ($t = 0.17$, $p = 0.869$) (untabulated). Therefore, in contrast to the positive and substitutory effects of mandatory disclosure and mandatory audit on the investment potential evaluation of a No-MW disclosure firm, there are no effects of mandatory disclosure or mandatory audit on the investment potential evaluation of a MW disclosure firm.

Additional analyses on reliability and relevance assessments

H1 posits that mandatory disclosure and mandatory audit act as substitutable regulatory mechanisms that increase investors' perceived reliability of No-MW disclosures and their relevance to investment potential evaluations. In contrast, H2 posits that mandatory disclosure and mandatory audit do not increase investors' perceived reliability and relevance of MW disclosures. Therefore, our post-experimental questions asked all participants to indicate their agreement for each type of disclosure (No-MW and MW) whether, in general, (a) making

management disclosure of ICFR material weaknesses mandatory, and (b) making an ICFR audit mandatory, make the disclosure (i) more free from error and bias (i.e., reliable) and (ii) more likely to make a difference in investors' decisions (i.e., relevant) (on scales of -7 "Strongly disagree" to +7 "Strongly agree").

Participants agree that both mandatory audit and mandatory disclosure increase the reliability and the relevance of No-MW disclosures (all responses are greater than zero, all p values ≤ 0.002). Paired t-tests show that participants believe that mandating audit increases the reliability of a No-MW disclosure more than mandating disclosure (2.58 versus 1.39, $t = 2.92$, $p = 0.005$). However, they do not believe that mandating audit increases the relevance of a No-MW disclosure to investors' decisions more so than mandating disclosure (1.71 versus 1.74, $t = -0.09$, $p = 0.927$).

We also find that participants believe that both mandatory audit and mandatory disclosure increase the reliability and the relevance of MW disclosures (all responses are greater than zero, all p values ≤ 0.001). Paired t-tests show that participants believe that mandating audit increases the reliability of a MW disclosure more than mandating disclosure (3.23 versus 1.70, $t = 3.70$, $p < 0.001$), but they do not believe that mandating audit increases the relevance of a MW disclosure more than mandating disclosure (1.48 versus 1.67, $t = -0.63$, $p = 0.529$).

Together, these results are consistent with participants treating mandatory disclosure and mandatory audit as substitutes in terms of making a difference to their investment potential evaluations for No-MW disclosure firms.

Additional analyses on TRUSTWORTHINESS and ICFR-QUALITY assessments

In our hypotheses development, we argue that the NO-MW disclosure is consistent with company disclosure incentives, and that both mandatory disclosure regime alone and mandatory

audit regime alone would increase the reliability of a No-MW disclosure, and hence its relevance. In contrast, the MW disclosure is inconsistent with company disclosure incentives and hence already reliable. Mandatory disclosure and/or mandatory audit are not expected to have further incremental effects.

A reliable ICFR disclosure is perceived to be trustworthy, and we use participants' assessments of *TRUSTWORTHINESS* of each firm as a proxy for reliability. A relevant ICFR disclosure is one that ultimately makes a difference in investor assessment of the firm's investment potential. To the extent that investors perceive ICFR quality to be an important element in their assessments of the firm's investment potential, *ICFR-QUALITY* can be interpreted as a proxy for relevance.²⁵ The univariate 2×2 ANOVA is significant for the No-MW disclosure firm for both *TRUSTWORTHINESS* ($F = 4.03, p = 0.011$) and *ICFR-QUALITY* ($F = 5.65, p = 0.002$), and it is not significant for the MW disclosure firm for both *TRUSTWORTHINESS* ($F = 1.06, p = 0.372$) and *ICFR-QUALITY* ($F = 0.06, p = 0.981$); see Table 2 for results. Consistent with our expectations, our manipulated regulatory regimes affect the perceived trustworthiness and ICFR quality of the No-MW disclosure firm, but not the perceived trustworthiness and ICFR quality of the MW disclosure firm. We then conduct contrasts of differences in *TRUSTWORTHINESS* and *ICFR-QUALITY*.

--- Insert Table 2 here ---

We use similar contrast weights used in H1 to test for the predicted ordinal interaction for the No-MW disclosure firm: -3 for *VOLDIS_VOLAUD*, +1 for *VOLDIS_MANAUD*, +1 for *MANDIS_VOLAUD*, +1 for *MANDIS_MANAUD*. The overall contrasts for

²⁵ We conducted verbal protocol analyses with 9 additional alumni participants (see details in a later sub-section), and additionally asked them to rate the extent to which information about a company having effective ICFR with no material weaknesses would positively affect their assessment of a company's investment potential (on a scale of 0 "Not at all" to 14 "To a large extent"). In line with our expectations, participants' average rating of 9.22 (s.d. = 4.18) is significantly larger than 0 ($t = 6.62$, one-tailed $p < 0.001$) and larger than the mid-point 7 at marginal significance ($t = 1.60$, one-tailed $p = 0.075$).

TRUSTWORTHINESS ($F = 9.08$, one-tailed $p = 0.002$) and *ICFR-QUALITY* ($F = 8.72$, one-tailed $p = 0.002$) are significant, consistent with the results for investment potential evaluations in H1. However, contrasts with the same contrast weights are not significant for both *TRUSTWORTHINESS* ($F = 0.63$, $p = 0.430$) and *ICFR-QUALITY* ($F = 0.03$, $p = 0.874$) for the MW disclosure firm.²⁶

We then test if the effects on investment potential evaluation of the No-MW disclosure firm are mediated through perceived *TRUSTWORTHINESS* and *ICFR-QUALITY* of the firm. Kenny, Kashy, and Bolger (1998, 260) outline two essential steps to establish mediation: (1) the independent variable is related to the mediator, and (2) the mediator is in turn related to the dependent variable, while controlling for the independent variable. Fulfilling the first step, our results above indicate that the regulatory regime independent variables affect both *TRUSTWORTHINESS* ($F = 4.03$, $p = 0.011$) and *ICFR-QUALITY* ($F = 5.65$, $p = 0.002$) of the No-MW disclosure firm. For the second step, an ANCOVA analysis indicates that, controlling for the regulatory regime independent variables, *ICFR-QUALITY* ($F = 16.41$, $p < 0.001$) is significantly related to investment potential rating of the No-MW disclosure firm, but *TRUSTWORTHINESS* ($F = 1.49$, $p = 0.226$) is not. The overall contrast for the predicted ordinal interaction pattern in investment potential evaluation also reduces in significance when *ICFR-QUALITY* and *TRUSTWORTHINESS* are included in the ANCOVA (i.e., from one-tailed $p = 0.003$ to one-tailed $p = 0.03$). These results suggest that *ICFR-QUALITY* partially mediates the effect of regulatory regimes on investment potential evaluations of the No-MW disclosure firm.

Verbal protocol analyses for additional alumni participants

In order to obtain more direct evidence of the thought processes of participants when they are

²⁶ The multivariate overall contrasts for both *TRUSTWORTHINESS* (untabulated, $F = 5.26$, $p = 0.008$) and *ICFR-QUALITY* (untabulated, $F = 4.30$, $p = 0.018$) are significant.

making investment potential evaluations, we conducted verbal protocol analyses with 9 additional alumni participants (2 each in *VOLDIS_VOLAUD*, *VOLDIS_MANAUD*, and *MANDIS_MANAUD*, and 3 in *MANDIS_VOLAUD*). Alumni for the verbal protocol study were recruited via instructors in the program who were in contact with these alumni. Participants verbalized their thoughts as they completed a paper instrument similar to the online instrument in the main experiment, except that the paper instrument only included the main dependent variables to keep the verbal protocol session to a manageable time. Verbal protocol participants were paid \$20 each. The means for the dependent variables for the No-MW disclosure firm are directionally similar to that in our main experiment, and all results are qualitatively unchanged when we include these 9 additional alumni participants in the analyses. All 9 participants verbally noted the regulatory regime manipulations.

After the main dependent variables, we asked additional questions not in the main experiment to get direct evidence on whether participants consciously considered mandatory disclosure and mandatory audit as substitutes. Participants agreed (on scales of -7 “Strongly disagree” to +7 “Strongly agree”) more strongly with a statement that they considered mandating management disclosure of ICFR effectiveness and mandating independent ICFR audit as complementary (mean = 3.22, s.d. = 2.77) than a statement that they considered the two to be substitutory (mean = -2.67, s.d. = 4.53) ($t = 2.99$, $p = 0.017$). Participants also indicated (on scales of 0 “Not at all” to +14 “To a large extent”) that additionally mandating an ICFR audit when disclosure is already mandatory further increases their investment potential evaluation (mean = 11.67, s.d. = 1.87) to a larger extent than additionally mandating disclosure when an ICFR audit is already mandatory (mean = 9.56, s.d. = 4.28) ($t = 1.94$, $p = 0.088$). Thus, they believed that the incremental effect of adding mandatory audit to mandatory disclosure is

stronger than the incremental effect of adding mandatory disclosure to mandatory audit. These results suggest that notwithstanding existing regulations in Canada that mandate only disclosure but not audit, verbal protocol participants indicated a preference for mandatory audit over mandatory disclosure. To the extent that the verbal protocols here are generalizable to findings in our main experiment, this suggests that the substitutory effects of mandatory disclosure and mandatory audit on investment potential evaluations in the main experiment are sub-conscious in that participants in the verbal protocol study indicated that the two mechanisms are complements rather than substitutes when asked directly (contrary to what we observed in the main experiment).

We also analyzed the verbal protocols for evidence of why participants perceive mandatory disclosure and mandatory audit to have positive effects on the investment potential of a No-MW disclosure firm. The positive effects of mandatory disclosure verbalized included: (1) enabling companies to credibly commit to consistently disclose both good news and bad news, and (2) providing increased oversight over management disclosures. The positive effect of mandatory audit verbalized is predominantly about having an independent party counter management bias. Excerpts of the verbal protocol quotes are reproduced in the Appendix 2.

Supplementary experiments using undergraduates with less knowledge

A major premise in our hypotheses development is that our predicted pattern of configural information processing is a function of investors' knowledge about companies' incentives for opportunistic voluntary disclosures, impact of mandatory disclosures on disclosure reliability, and the assurance value of ICFR audits. Our main experiment used alumni participants from an accounting and finance undergraduate program for whom we believe possess this set of knowledge. This suggests that participants with less of this knowledge would either not employ

configural information processing, or, if they do, in a different form. To test this prediction, we repeated the same experiment with third-year and first-year undergraduate students from the same accounting and finance undergraduate program as our alumni participants.

Participants

To proxy for investors with moderate level of knowledge, 83 undergraduate students were recruited from a third year audit strategy course. These students had already completed their introductory management accounting, introductory financial accounting, intermediate financial accounting, and introduction to auditing and tax courses at the time they participated in the experiment. The third-year undergraduate participants report an average of 1.0 years of work experience and 1.3 years of experience analyzing the financial performance of firms.

To proxy for investors with the lowest level of knowledge, 76 undergraduate participants were recruited from a first-year introductory management accounting course. These students had already completed their introductory financial accounting course at the time they participated in the experiment and have not had any audit courses. The first-year undergraduate participants report an average of 1.2 years of work experience and 0.5 years of experience analyzing the financial performance of firms.

In contrast to our third-year and first-year undergraduate participants, our alumni participants have completed all introductory, intermediate, and advanced financial accounting, managerial accounting, auditing, and finance courses, and they have an average of 6.3 years of work experience and 4.2 years of experience analyzing the financial performance of firms. Neither third-year nor first-year undergraduates have been exposed to ICFR disclosures and ICFR audits in any of their courses at the point of participation (although third-year undergraduates have exposure to auditing), whereas alumni would have exposure to ICFR disclosures and ICFR

audits through their courses and work experience. Alumni participants have significantly more work experience than first-year and third-year undergraduates (all p values < 0.001), but first-year and third-year undergraduates do not differ in their work experience ($p = 0.819$). Alumni participants have more experience analyzing financial performance of firms than first-year and third-year undergraduates (all p values < 0.001), and third-year undergraduates have more experience analyzing the performance of firms than first-year undergraduates ($p = 0.054$).

Given that both third-year undergraduates and alumni have taken auditing courses, we expect them to have more knowledge about the assurance value of ICFR audits than first-year undergraduates who have not taken any auditing courses. This suggests that alumni and third-year undergraduates may be more likely than first-year undergraduates to perceive a positive effect of mandatory ICFR audit. Alumni are also expected to have more knowledge about company disclosure incentives and the impact of mandatory disclosures on disclosure reliability than third-year and first-year undergraduates because their increased experience analyzing the financial performance of firms and auditing/accounting work experience likely expose them to instances where companies are opportunistic in disclosing good news and withholding negative news. Alumni, through their auditing/accounting work experience, may also have more exposure to the enforcement mechanisms associated with mandatory disclosure that makes mandatory disclosure more reliable (e.g., regulatory oversight and independent auditors who review mandatory ICFR disclosures as part of financial statement audits). If so, alumni may be more likely than third-year and first-year undergraduates to perceive mandatory disclosure as a mechanism that increases the reliability of positive ICFR disclosures that may otherwise be perceived as opportunistic voluntary disclosures.

Participants who completed the study were paid \$10 each. Unlike the main experiment which

was conducted via an online instrument, the two experiments with undergraduates were conducted using a paper instrument.²⁷ A total of 65 of the 83 (78%) third-year undergraduates and 46 of the 76 (61%) first-year undergraduates passed both the manipulation checks on the mandatory (versus voluntary) audit and mandatory (versus voluntary) disclosure regulations. Similar to the main experiment, we report the results for all participants, although the results are similar for participants who passed both the manipulation checks.

Results

The results for undergraduate participants are reported in Table 3. For third-year undergraduates, the ANOVA and post-hoc contrasts for the No-MW disclosure firm indicate that mandatory (versus voluntary) audit has a positive effect on the investment potential evaluation (4.76 vs. 4.10, $F = 3.57$, $p = 0.062$), whereas mandatory (versus voluntary) disclosure has no significant effect (4.38 vs. 4.48, $F = 0.09$, $p = 0.766$) and neither does the interaction effect ($F = 1.21$, $p = 0.275$). For first-year undergraduates, mandatory audit, mandatory disclosure, and the interaction effect are all not significant for the No-MW disclosure firm. The overall contrast for the predicted ordinal interaction pattern for the No-MW disclosure firm (contrast weights: -3 for *VOLDIS_VOLAUD*, +1 for *VOLDIS_MANAUD*, +1 for *MANDIS_VOLAUD*, +1 for *MANDIS_MANAUD*) is not significant for both third-year undergraduates ($F = 0.08$, one-tailed $p = 0.386$) and first-year undergraduates ($F = 0.07$, one-tailed $p = 0.395$). Consistent with the main experiment, mandatory audit, mandatory disclosure, and the interaction effect are all not significant for the MW disclosure firm for both third-year and first-year undergraduates.

--- Insert Table 3 here ---

These results indicate that whilst moderately knowledgeable third-year undergraduates

²⁷ Undergraduates were recruited in-class and completed the experiment in an experimental laboratory. The authors were not course instructors for these students.

perceive a positive effect of mandatory audit on investment potential evaluation of a No-MW disclosure firm like alumni participants, they do not perceive the positive effect of mandatory disclosure on investment potential evaluation of a No-MW disclosure firm in contrast to alumni participants. The least knowledgeable first-year undergraduate participants are not able to perceive the positive effects of mandatory audit or mandatory disclosure on investment potential evaluation of a No-MW disclosure firm. These results are consistent with the differences in knowledge amongst the three types of participants discussed in the preceding sub-section. Prior research indicates that people use counterfactual reasoning to assess causality, in that “to understand whether X caused Y, a person may imagine that X had not occurred” and “the easier it is to imagine that Y would not now follow, the more likely the person is to view X as a cause of Y” (Spellman & Mandel, 1999 p. 121; Wells & Gavanski, 1989; Macrae, Milne, & Griffiths, 1993). In our context, investors are trying to assess if mandatory disclosure (X) increases disclosure reliability (Y). The easier it is for investors to imagine that increased reliability would not follow if there had been no mandatory disclosure (i.e., under voluntary disclosure), the more likely investors would conclude that mandatory disclosure increases reliability. Compared to first-year and third-year undergraduates, alumni who have more exposure to companies’ incentives for opportunistic voluntary disclosures may find it easier to imagine low reliability under voluntary disclosure and hence they may be more likely to conclude that mandating disclosure increases reliability.

Conclusion

This study examines how judgments of investors about a firm’s ICFR and investment potential are affected by regulations mandating management disclosure of material weaknesses in the ICFR and the independent audit of the ICFR. Specifically, we examine whether investors

consider mandatory disclosure and mandatory audit to be substitutes rather than complements in terms of their effects on investment potential evaluations. In our main experiment, participants are alumni of a Canadian accounting and finance undergraduate program and thus are more likely to have domain-specific knowledge about companies' incentives regarding voluntary disclosures, impact of mandatory disclosures on disclosure reliability, and the assurance value of ICFR audits. In a setting where management is required to evaluate the firm's ICFR and the auditor has already given an unqualified opinion on the financial statements, we establish that material weakness disclosures affect investment potential evaluations with our alumni participants judging a firm that discloses it has no material weaknesses (No-MW disclosure firm) to have a higher investment potential and ICFR quality than a firm that discloses that it has material weaknesses (MW disclosure firm). We find that mandating ICFR material weakness disclosure alone and mandating ICFR audit alone both positively affect investment potential evaluations for the No-MW disclosure firm but not significantly so for the MW disclosure firm.

Our results also suggest that mandating disclosure and mandating audit are substitutes for these alumni participants, in that having both regulatory mechanisms does not significantly affect investment potential evaluations compared to having just one regulatory mechanism alone. Therefore, if policy makers believe that investment potential evaluations should normatively be affected by adding mandatory audit to mandatory disclosure, more investor education may be needed to help investors understand the incremental benefit of an ICFR audit.

We also conduct supplementary experiments with first-year undergraduates and third-year undergraduates of the same accounting and finance program. We find that our undergraduate participants do not display configural information processing as our alumni participants. Specifically, neither mandatory audit nor mandatory disclosure affects investment potential

evaluation of a No-MW disclosure firm for the least knowledgeable first-year undergraduates, whereas only mandatory audit but not mandatory disclosure positively affects investment potential evaluation of a No-MW disclosure firm for the moderately knowledgeable third-year undergraduates.

There are several limitations to our study. First, management ICFR disclosures and ICFR quality are exogenous to the regulatory regimes manipulated in our experiments. However, mandating disclosure and mandating audit could benefit investors further if they actually improve management disclosure behavior or the ICFR quality in companies (but see Kinney and Shepardson 2011). Second, we acknowledge that the complementary effect of ICFR audit and ICFR disclosure may be more apparent in other settings which future research can examine, such as (1) when investors perceive that there are weaker investor protection laws with respect to company misrepresentation but stronger investor protection laws with respect to auditor misrepresentation, (2) when investors are concurrently comparing no material weakness disclosures with and without a voluntary ICFR audit on a within-subject basis, and (3) for firms with poorer financials. Our participants are from Canada where recent legislative changes have strengthened investor protection laws with respect to both company misrepresentation and auditor misrepresentation.²⁸ The relative impact of mandating ICFR audit and ICFR disclosure may vary across regimes with differences in the strength of investor protection laws, auditor liability, and regulatory enforcement capabilities. Third, our within-subjects manipulation of the No-MW versus MW disclosure enhances the salience of these conditions. However, we do not

²⁸ In Canada, changes were made in 2005 to securities legislation to make it easier for investors to sue both the company and its auditors for negligent misrepresentation (Emerson & Clarke 2003; Lam, Marques, & O' Brien 2013). Specifically, the Ontario Securities Act (Section 138.3 (1)), with respect to an issuer releasing a document that contains a misrepresentation, allows an investor to a right of action for damages against the issuer, directors and officers of the issuer, and third-party experts such as auditors, regardless of whether the investor relied on the misrepresentation (http://www.osc.gov.on.ca/en/SecuritiesLaw_ar_20050805_notice-amend-act.jsp).

believe that it would create demand effects for our main results, which contrast participants' responses across regulatory regimes that are manipulated between-subjects. Lastly, our participants are Canadians. The existing regulatory regime in Canada (i.e., one that mandates only disclosure) may, however, bias them towards favoring only mandating disclosure rather than mandating both audit and disclosure. Our verbal protocol results do not support this view, with participants indicating that they consider mandatory audit and mandatory disclosure to be complements rather than substitutes. As an alternative, we could have used U.S. participants who are accustomed to a regime that mandates both disclosure and audit for large issuers. Parallel to the situation with Canadian participants, there may be a reverse bias where participants favor mandating both audit and disclosure rather than mandating only disclosure. In addition, given that few countries (e.g., U.S. and Japan) mandate the ICFR audit, using Canadian participants may have broader generalizability to many regimes across the world that have no mandatory audits. We also acknowledge that investors who are more experienced in investing compared to our participants may not respond similarly if their personal investment experience gives them more information to assess how mandatory ICFR disclosures and audits actually impact a firm's stock prices and investment potential.

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Appendix 1

Excerpts of Experiment materials

Between-subjects Manipulations of *VOLDIS_VOLAUD* (Voluntary Disclosure and Voluntary Audit), *MANDIS_VOLAUD* (Mandatory Disclosure and Voluntary Audit), *VOLDIS_MANAUD* (Voluntary Disclosure and Mandatory Audit), and *MANDIS_MANAUD* (Mandatory Disclosure and Mandatory Audit) conditions:

Please take note of the following regulations in this hypothetical stock exchange with respect to management disclosures and independent audits relating to firms' internal control over financial reporting:

[VOLDIS_VOLAUD and VOLDIS_MANAUD conditions state:] **Management disclosure** of identified material weaknesses in the internal control over financial reporting is voluntary. Some management **voluntarily** discloses whether or not there are material weaknesses; others choose to be **silent** on this matter.

[Versus MANDIS_VOLAUD and MANDIS_MANAUD conditions state:] **Management disclosure** of identified material weaknesses in the internal control over financial reporting is mandatory.

[VOLDIS_VOLAUD and MANDIS_VOLAUD conditions state:] An **independent audit** of the internal control over financial reporting is voluntary. Some companies engage an independent auditor **voluntarily** and disclose that; others choose not to engage an independent auditor and are **silent** on this matter.

[Versus VOLDIS_MANAUD and MANDIS_MANAUD conditions state:] An **independent audit** of the internal control over financial reporting is mandatory.

Within-subjects Manipulations of NO-MW disclosure firm versus MW disclosure firm and between-subjects Manipulations of *VOLDIS_MANAUD* and *MANDIS_MANAUD* versus *VOLDIS_VOLAUD* and *MANDIS_VOLAUD* conditions:

[MW disclosure firm states:]

SELECTED NOTES TO FINANCIAL STATEMENTS

1) CONTROLS AND PROCEDURES

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is designed with the objective of providing reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Based on an evaluation of the effectiveness of our internal control over financial reporting, **management identified the following material weaknesses:**

Several weaknesses in the accounting for fixed assets were identified. First, there was inadequate documentation of fixed assets to assist in the identification and location of certain fixed assets. Specifically, several fixed assets could not be located at the sites that were recorded in the accounting records. Second, the company failed to affix ID tags to fixed assets in locations outside of corporate headquarters. In addition, the company did not document the policies,

practices, and procedures pertaining to the classification of certain expenditures as fixed assets. Finally, the requisite documentation supporting the authorization and categorization of fixed assets could not be obtained. These control weaknesses resulted in an overstatement of fixed assets. Specifically, Repairs and Maintenance Expense amounting to 2.4% of net income was erroneously capitalized as Property, Plant, and Equipment. While the error was detected and corrected during the internal control evaluation, the company acknowledges that it could have resulted in a misstatement in the annual financial statements that otherwise would not have been prevented or detected.

[VOLDIS_MANAUD/MW disclosure firm and MANDIS_MANAUD/MW disclosure firm conditions additionally state the following, versus VOLDIS_VOLAUD/MW disclosure firm and MANDIS_VOLAUD/MW disclosure firm conditions which do not have this statement:] Our **independent auditor**, ABC LLP, has also **conducted their own evaluation** of our internal control over financial reporting. In their opinion, the company had material weaknesses in internal control over financial reporting as of June 30, 2010, as described above.

[Versus No-MW disclosure firm states:]

SELECTED NOTES TO FINANCIAL STATEMENTS

1) CONTROLS AND PROCEDURES

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is designed with the objective of providing reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Based on an evaluation of the effectiveness of our internal control over financial reporting, **management did not identify any material weaknesses.**

[VOLDIS_MANAUD/No-MW disclosure firm and MANDIS_MANAUD/No-MW disclosure firm conditions additionally state the following, versus VOLDIS_VOLAUD/No-MW disclosure firm and MANDIS_VOLAUD/No-MW disclosure firm conditions which do not have this statement:] Our **independent auditor**, DEF LLP, has also **conducted their own evaluation** of our internal control over financial reporting. In their opinion, the company had no material weaknesses in internal control over financial reporting as of June 30, 2010.

Appendix 2

A) Examples of quotes on why mandatory ICFR disclosure increases investment potential evaluations:

(1) Enables companies to credibly commit to consistently disclose both good news and bad news

Participant 6 (*VOLDIS_MANAUD*): “It [No-MW disclosure] wouldn’t have a higher effect on me from an investment potential perspective if management was telling about their ICFR on a voluntary basis subject to that voluntary disclosure being present in all, I guess, reviewable years. ... when it’s voluntary, ... yeah, so they could not disclose in ineffective years and disclose in effective years ... I would assume that if it’s mandatory to disclose ICFR effectiveness, then management must disclose in poor years and in favourable years for ICFR effectiveness, so that would make me happy.”

Participant 7 (*VOLDIS_MANAUD*) “Management disclosure of identified material weaknesses and the internal control over the financial reporting is voluntary. So that sounds important to me. Since we [management] can decide not to disclose, it kind of weakens sort of the point, I guess, of [management] being required to do sort of internal evaluation of internal controls over financial reporting ... this [No-MW disclosure] is assertion by management is not, necessarily, valid or carries any weight because they’re not required to disclose anything. ”

Participant 9 (*VOLDIS_VOLAUD*): “So, if it’s mandatory versus voluntary disclosure, that does really impact my assessment. For me, I think they [companies under mandatory disclosure] would have processes. If it [disclosure] is voluntary, if there’s silence on it, there’s no trust there for me. I guess the regulation kind of builds a bit of trust, a bit of confidence. There’s a bit more consistency in each company. I don’t have to wonder is there any disclosure missing here.”

(2) Provides increased oversight over management disclosures

Participant 1 (*MANDIS_VOLAUD*): “if regulation makes management disclosure mandatory ... I think I would feel more comfortable if it [disclosure] is mandatory because ... versus voluntary. There’s no faith. There’s no oversight, so I could lie and nobody would catch me, so it [mandatory disclosure] does positively affect it [my assessment of the company’s investment potential] ... [for mandatory disclosure] there would still be some sort of oversight, whether it’s from an independent auditor or regulatory, or whatever oversight there is.”

B) Examples of quotes on why mandatory ICFR audit increases investment potential evaluations:

(1) Provides an independent opinion that counters management bias

Participant 3 (*MANDIS_VOLAUD*): “There is the margin for error that management could be hiding potential control weaknesses just as a result of an independent party not performing the control procedures because with internal controls what you can have is there can be a lot of judgment involved in determining whether or not in a specific instance a control is going to pass

or a control is going to fail; and, in my mind, if you have management attempting to objectively evaluate their controls, they're going to err on the side of a control being effective as opposed to being ineffective."

Participant 6 (*VOLDIS_MANAUD*): "Management can tell me whatever they want, right? If I have an auditor, that's also corroborating that or telling me that's okay, and, you know, they've independently come to the same conclusion management has, and I've got better information than when just management is telling me something because if management is just telling me something, then there's the element of bias that needs to be considered, whereas when the auditors tell me the same thing, there's less bias to affect my judgment, or to consider when I'm judging."

C) Examples of quotes on preference for mandatory ICFR audit over mandatory ICFR disclosure:

Participant 2 (*MANDIS_VOLAUD*): "I think that management can do it [ICFR evaluation]. ... but I think an auditor should be ... if I want credibility to it, somebody else independent has to do it."

Participant 4 (*MANDIS_MANAUD*): "The independent firm to assess the internal controls over financial reporting, I think that's such a stronger sort of assurance to investors, so, in my opinion, I think that ... mandatory disclosure over internal weaknesses of their internal controls, I don't think that's enough. I think that I would feel way more comfortable having that independent audit over internal controls."

Participant 7 (*VOLDIS_MANAUD*): "I definitely agree that a mandatory disclosure is important, but I think sort of the ability to trust management and to keep the sort of professional scepticism alive, the fact that this doesn't seem to make any indication that it's, you know, independently verified or sort of tested, it doesn't really add any weight to management's disclosure, I guess. So I think it's definitely stronger than sort of completely voluntary disclosure, but it wouldn't affect my assessment that extensively without an independent verification because sort of I guess, from my experience sometimes management thinks that something is fine and dandy; but when we go in, it's, like, "Nah, maybe not"."

D) Examples of quotes on the limits of mandatory ICFR audit:

Participant 1 (*MANDIS_VOLAUD*): "If regulation makes an independent ICFR audit mandatory ... I'm running into, like, a pros and con situation. There are pros to always adding things on; but from a cost benefit analysis or an effectiveness situation, sometimes doing these things is just more work, and it's not... it doesn't, necessarily, end up accomplishing the purpose."

Participant 2 (*MANDIS_VOLAUD*): "so I'm going to feel better about having management and auditors doing it [ICFR evaluation]. The only problem I would have with that would be is if the auditors don't go any further than what management has, so I think there might be a little bit of a risk ... with the auditors getting a little bit of familiarity by just working off management's document."

Participant 7 (*VOLDIS_MANAUD*): “I think mandatory independent audit is ... stronger than lack of independent ICFR audit ... I don’t think it is a make-or-break issue. ... Yeah, so I guess in comparing environments, so, say, you know, they’re working in different jurisdictions, and one jurisdiction requires an independent auditor and the other does not. I would definitely take that into consideration; but if sort of the financials for one company which asserts that they have effective ICFR and they have an independent auditor saying that their financial statements are unqualified, and sort of that company is sort of, I guess... yeah, investment potential is significantly stronger than another company who has sort of an independent ICFR audit and says that they’re fine. I wouldn’t, necessarily, discount the strength of the investment opportunity just because the ... because they haven’t been independently audited for internal controls over financial reporting because the independent auditor has audited the financial statements, which I’m using to form my opinion on the investment opportunity, at least those are good or free of material misstatement.”

Note: Words in square brackets [] are added for clarification and they are not in the verbatim quotes of participants.

Figure 1

Panel A: Regulatory regimes present in the U.S. and Canada for mandating ICFR disclosure and mandating ICFR audit and prior research of investor reactions in each regulatory regime

	Voluntary audit regime	Mandatory audit regime
Voluntary disclosure regime	Pre-SOX ^a in the U.S. Pre-NI 52-109 ^b in Canada <i>Cell 1: Current study</i>	No such regime exists <i>Cell 2: Current study</i>
Mandatory disclosure regime	SOX Section 404a in the U.S. for <i>small</i> issuers ^c in 2007 NI 52-109 in Canada in 2008 <i>Cell 3: Current study</i>	SOX Sections 404a/404b in the U.S. for <i>large</i> issuers ^d in 2004 Asbaugh-Skaife et al. 2009 Beneish et al. 2008 Ogneva et al.2007 <i>Cell 4: Current study</i>

^a The Sarbanes-Oxley Act (SOX) was passed in 2002 in the U.S.

^b National Instrument 52-109 (NI 52-109) was approved in 2008 in Canada.

^c Small issuers are issuers with total market capitalization < \$75m.

^d Large issuers are issuers with total market capitalization $\geq$ \$75m.

Figure 1 continued

Panel B: Regulatory regimes and conditions examined in current study

	<i>Current study</i>
Voluntary audit regime	
Four possible settings: 1) Firm chooses to have an ICFR audit and chooses to explicitly disclose that it has an ICFR audit (rare in real voluntary audit regimes)	Not examined
2) Firm chooses not to have an ICFR audit and chooses to explicitly disclose that it does not have an ICFR audit (rare in real voluntary audit regimes)	Not examined
3) Firm is silent on whether there is an ICFR audit and chooses to have an ICFR audit (rare in real voluntary audit regimes)	Examined (consistent with real voluntary audit regimes, majority of participants believed that the experimental firm which is silent on whether there is an ICFR audit has not hired an ICFR auditor – see manipulation check section for details)
4) Firm is silent on whether there is an ICFR audit and chooses not to have an ICFR audit (most common in real voluntary audit regimes)	
Mandatory audit regime	
One possible setting: 1) Firm must have an ICFR audit	Examined
Voluntary disclosure regime	
Two possible settings: 1) Firm chooses to make an ICFR disclosure (rare in real voluntary disclosure regimes)	Examined (to hold constant the presence of ICFR disclosure in the experimental firm between voluntary versus mandatory disclosure regimes)
2) Firm chooses not to make an ICFR disclosure (most common in real voluntary disclosure regimes)	Not examined
Mandatory disclosure regime	
One possible setting: 1) Firm must make an ICFR disclosure	Examined

Figure 2 Effects of mandatory management disclosure and mandatory ICFR audit on investment potential evaluations^a

Panel A: Hypotheses

Panel B: Results for investment potential evaluations rating

^a See Table 1 for definitions of investment potential evaluations rating, the regulatory regimes (voluntary disclosure/voluntary audit, voluntary disclosure/mandatory audit, mandatory disclosure/voluntary audit, and mandatory disclosure/mandatory audit), and the two firm types (No-MW disclosure firm and MW-disclosure firm).

TABLE 1

Descriptive statistics on investment potential evaluations and planned contrasts

Panel A: Means (standard deviations) of investment potential evaluations rating^a

Regulatory regime condition ^b	<i>N</i>	No-MW disclosure firm ^c	MW disclosure firm ^c
Voluntary disclosure/voluntary audit [<i>VOLDIS_VOLAUD</i>]	17	2.97 (2.53)	1.74 (2.72)
Voluntary disclosure/mandatory audit [<i>VOLDIS_MANAUD</i>]	19	4.24 (1.21)	2.18 (2.30)
Mandatory disclosure/voluntary audit [<i>MANDIS_VOLAUD</i>]	16	4.50 (1.39)	2.34 (2.30)
Mandatory disclosure/mandatory audit [<i>MANDIS_MANAUD</i>]	17	4.26 (1.29)	2.32 (2.76)

Panel B: Univariate ANOVAs of investment potential evaluations

ANOVA for No-MW disclosure firm					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	10.42	1	10.42	3.67	0.060
<i>Mandatory Audit</i>	4.57	1	4.57	1.61	0.209
<i>Mandatory Disclosure*Mandatory Audit</i>	9.69	1	9.69	3.41	0.069
Error	184.48	65	2.84		
Overall $F = 2.85, p = 0.044$					
ANOVA for MW disclosure firm					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	2.40	1	2.40	0.38	0.542
<i>Mandatory Audit</i>	0.79	1	0.79	0.12	0.726
<i>Mandatory Disclosure*Mandatory Audit</i>	0.95	1	0.95	0.15	0.702
Error	414.99	65	6.38		
Overall $F = 0.21, p = 0.888$					

Panel C: MANOVA planned contrasts for investment potential evaluations

	<i>F</i>	<i>p</i>	<i>Standardized canonical coefficient</i>	
			No-MW disclosure firm	MW disclosure firm
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	4.18	0.010*	1.08	-0.12
H1a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> > <i>VOLDIS_VOLAUD</i> (i.e., -2 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , 0 <i>MANDIS_MANAUD</i>)	3.93	0.012*	1.08	-0.14
H1b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i> (i.e., 0 <i>VOLDIS_VOLAUD</i> , -1 <i>VOLDIS_MANAUD</i> , -1 <i>MANDIS_VOLAUD</i> , +2 <i>MANDIS_MANAUD</i>)	0.04	0.965	1.07	-0.67

Panel D: Univariate planned contrasts for investment potential evaluations

	<i>F</i>	<i>p</i> ^d
For No-MW disclosure firm		
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	8.38	0.003*
H1a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> > <i>VOLDIS_VOLAUD</i>	7.86	0.003*
H1b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	0.04	0.836
For MW disclosure firm		
Overall contrast: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	0.60	0.440
H2a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>VOLDIS_VOLAUD</i>	0.50	0.482
H2b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	0.01	0.937

^a Investment potential evaluations rating is the average responses to two questions regarding the stock's investment attractiveness and the company's earnings potential.

^b Participants in the *VOLDIS_VOLAUD* and *VOLDIS_MANAUD* (*MANDIS_VOLAUD* and *MANDIS_MANAUD*) conditions are told that management disclosure of identified material weaknesses in the internal controls over financial reporting (ICFR) is voluntary (mandatory). Participants in the *VOLDIS_VOLAUD* and *MANDIS_VOLAUD* (*VOLDIS_MANAUD*

MANDIS_MANAUD) conditions are told that an independent audit of the ICFR is voluntary (mandatory). Participants in the *VOLDIS_MANAUD* and *MANDIS_MANAUD* conditions are additionally told in the note disclosures of the two firms that an independent auditor had conducted their own evaluation of the firms' ICFR, while there is no mention of an independent ICFR audit in the *VOLDIS_VOLAUD* and *MANDIS_VOLAUD* conditions.

^c All participants are given financial data and note disclosures of two firms, a No-MW disclosure firm that discloses that management did not identify any material weakness and a MW disclosure firm that discloses that management has identified material weaknesses described in the note.

^d One-tailed p values are reported for directional predictions in H1 and H1a (and indicated with *). Two-tailed p values are reported for all other contrasts.

TABLE 2

Descriptive statistics on trustworthiness and ICFR quality assessments and contrasts

Panel A: Means (standard deviations) of trustworthiness and ICFR quality assessments^a

Regulatory regime condition ^a	N	No-MW disclosure firm		MW disclosure firm	
		<i>TRUST-WORTHINESS</i> ^a (std dev.)	<i>ICFR-QUALITY</i> ^a (std dev.)	<i>TRUST-WORTHINESS</i> ^a (std dev.)	<i>ICFR-QUALITY</i> ^a (std dev.)
Voluntary disclosure/ voluntary audit [<i>VOLDIS_VOLAUD</i>]	17	6.38 (2.32)	4.94 (2.28)	8.97 (2.50)	2.47 (2.71)
Voluntary disclosure/ mandatory audit [<i>VOLDIS_MANAUD</i>]	19	8.68 (2.63)	6.21 (1.88)	7.84 (3.38)	2.47 (2.60)
Mandatory disclosure/ voluntary audit [<i>MANDIS_VOLAUD</i>]	16	7.59 (1.78)	5.91 (2.33)	9.25 (2.37)	2.84 (3.51)
Mandatory disclosure/ mandatory audit [<i>MANDIS_MANAUD</i>]	17	8.85 (2.58)	7.79 (1.69)	7.82 (3.47)	2.50 (3.35)

Panel B: Univariate ANOVAs for No-MW disclosure firm

TRUSTWORTHINESS					
Source	SS	df	MS	F	p
Mandatory Disclosure	8.18	1	8.18	1.46	0.231
Mandatory Audit	54.48	1	54.48	9.72	0.003
Mandatory Disclosure*Mandatory Audit	4.67	1	4.67	0.83	0.365
Error	364.36	65	5.61		
Overall F = 4.03, p = 0.011					
ICFR-QUALITY					
Source	SS	df	MS	F	p
Mandatory Disclosure	27.91	1	27.91	6.61	0.012
Mandatory Audit	42.82	1	42.82	10.15	0.002
Mandatory Disclosure*Mandatory Audit	1.64	1	1.64	0.39	0.535
Error	274.24	65	4.22		
Overall F = 5.65, p = 0.002					

Panel C: Univariate ANOVAs for MW disclosure firm

<i>TRUSTWORTHINESS</i>					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	0.29	1	0.29	0.03	0.857
<i>Mandatory Audit</i>	28.04	1	28.04	3.13	0.082
<i>Mandatory Disclosure*Mandatory Audit</i>	0.38	1	0.38	0.04	0.837
Error	583.23	65	8.97		
Overall $F = 1.06, p = 0.372$					

<i>ICFR-QUALITY</i>					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	0.69	1	0.69	0.07	0.787
<i>Mandatory Audit</i>	0.50	1	0.50	0.05	0.818
<i>Mandatory Disclosure*Mandatory Audit</i>	0.52	1	0.52	0.06	0.814
Error	604.33	65	9.30		
Overall $F = 0.06, p = 0.981$					

Panel D: Univariate planned contrasts *TRUSTWORTHINESS* and *ICFR-QUALITY*

<i>TRUSTWORTHINESS</i>	<i>F</i>	<i>p^d</i>
For No-MW disclosure firm		
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	9.08	0.002*
H1a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> > <i>VOLDIS_VOLAUD</i>	6.28	0.007*
H1b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	1.04	0.312
For MW disclosure firm		
Overall contrast: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	0.63	0.430
H2a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>VOLDIS_VOLAUD</i>	0.23	0.634
H2b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	0.66	0.418

<i>ICFR-QUALITY</i>	<i>F</i>	<i>p^d</i>
For No-MW disclosure firm		
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	8.72	0.002*
H1a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> > <i>VOLDIS_VOLAUD</i>	3.38	0.035*
H1b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	8.15	0.006
For MW disclosure firm		
Overall contrast: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>	0.03	0.874
H2a: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>VOLDIS_VOLAUD</i>	0.04	0.836
H2b: <i>MANDIS_VOLAUD</i> and <i>VOLDIS_MANAUD</i> = <i>MANDIS_MANAUD</i>	0.03	0.861

Notes:

^a *TRUSTWORTHINESS* is measured using two questions: (1) whether management is trustworthy in its disclosures about ICFR and (2) whether the company had undisclosed material weaknesses in its ICFR (reverse coded). *ICFR-QUALITY* is measured using two questions: (1) quality of the company's ICFR and (2) whether management is competent in establishing and maintaining adequate ICFR. See Table 1 for definitions of the four regulatory regime conditions (*VOLDIS_VOLAUD*, *MANDIS_VOLAUD*, *MANDIS_MANAUD*, *VOLDIS_MANAUD*) and the two firm types (No-MW disclosure firm and MW-disclosure firm).

^b One-tailed *p* values are reported for directional predictions in H1 and H1a (and indicated with *). Two-tailed *p* values are reported for all other contrasts.

TABLE 3

Results for First-Year Undergraduates and Third-Year Undergraduates

Panel A: Means (standard deviations) of investment potential evaluations rating^a

Regulatory regime condition ^a	First-year undergraduates ^b			Third-year undergraduates ^b		
	<i>N</i>	No-MW disclosure firm ^a	MW disclosure firm ^a	<i>N</i>	No-MW disclosure firm ^a	MW disclosure firm ^a
Voluntary disclosure/ voluntary audit [<i>VOLDIS_VOLAUD</i>]	18	3.97 (2.21)	2.64 (3.32)	22	4.34 (1.58)	3.05 (2.31)
Voluntary disclosure/ mandatory audit [<i>VOLDIS_MANAUD</i>]	20	4.03 (0.83)	2.53 (2.04)	21	4.62 (1.67)	2.71 (2.19)
Mandatory disclosure/ voluntary audit [<i>MANDIS_VOLAUD</i>]	20	3.98 (2.19)	2.38 (2.06)	20	3.85 (1.52)	2.83 (2.30)
Mandatory disclosure/ mandatory audit [<i>MANDIS_MANAUD</i>]	18	3.50 (2.16)	1.86 (2.54)	20	4.90 (1.63)	3.08 (2.30)

Panel B: Univariate ANOVA of investment potential evaluations rating for No-MW disclosure firm

FIRST-YEAR UNDERGRADUATES					
Source	SS	df	MS	F	p
Mandatory Disclosure	1.29	1	1.29	0.35	0.557
Mandatory Audit	0.84	1	0.84	0.23	0.635
Mandatory Disclosure*Mandatory Audit	1.32	1	1.32	0.36	0.553
Error	266.71	72	3.70		
Overall $F = 0.30, p = 0.824$					
THIRD-YEAR UNDERGRADUATES					
Source	SS	df	MS	F	p
Mandatory Disclosure	0.23	1	0.23	0.09	0.766
Mandatory Audit	9.14	1	9.14	3.57	0.062
Mandatory Disclosure*Mandatory Audit	3.09	1	3.09	1.21	0.275
Error	202.00	79	2.56		
Overall $F = 1.57, p = 0.202$					

Panel C: Univariate ANOVA of investment potential evaluations rating for MW disclosure firm

<i>FIRST-YEAR UNDERGRADUATES</i>					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	4.08	1	4.08	0.64	0.426
<i>Mandatory Audit</i>	1.87	1	1.87	0.29	0.590
<i>Mandatory Disclosure*Mandatory Audit</i>	0.76	1	0.76	0.12	0.731
Error	457.48	72	6.35		
Overall $F = 0.34, p = 0.799$					

<i>THIRD-YEAR UNDERGRADUATES</i>					
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Mandatory Disclosure</i>	0.10	1	0.10	0.02	0.889
<i>Mandatory Audit</i>	0.03	1	0.03	0.03	0.936
<i>Mandatory Disclosure*Mandatory Audit</i>	1.75	1	1.75	0.34	0.563
Error	409.02	79	5.18		
Overall $F = 0.12, p = 0.947$					

Panel D: Univariate planned contrasts for investment potential evaluations rating

<i>FIRST-YEAR UNDERGRADUATES</i>		p^c
For No-MW disclosure firm		
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>		$F = 0.07$ 0.395*

<i>THIRD-YEAR UNDERGRADUATES</i>		p^c
For No-MW disclosure firm		
Overall contrast for H1: -3 <i>VOLDIS_VOLAUD</i> , +1 <i>VOLDIS_MANAUD</i> , +1 <i>MANDIS_VOLAUD</i> , + 1 <i>MANDIS_MANAUD</i>		$F = 0.08$ 0.386*
<i>MANAUD</i> vs <i>VOLAUD</i> (4.76 vs 4.10)		$t = 1.89$ 0.062
<i>MANDIS</i> vs <i>VOLDIS</i> (4.38 vs 4.48)		$t = -0.30$ 0.766

^a See Table 1 for definitions of the four regulatory regime conditions (*VOLDIS_VOLAUD*, *MANDIS_VOLAUD*, *MANDIS_MANAUD*, *VOLDIS_MANAUD*), the two firm types (No-MW disclosure firm and MW-disclosure firm), and investment potential evaluations rating.

^b First-year undergraduates are recruited from the first-year introductory management accounting course. Third-year undergraduates are recruited from the third-year audit strategy course.

^b One-tailed p values are reported for directional prediction in H1 (and indicated with *). Two-tailed p values are reported for all other contrasts.