Original Article

Does Mandatory Disclosure of Internal Control Weaknesses Affect Corporate Financing Decisions?

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Abstract

We examine the impact of internal control weaknesses (ICWs) on firms' financing choices and how firms alter their financing behavior after the mandated disclosure of ICWs. We find that, before disclosure, ICW firms tend to seek external financing more than non-ICW firms do and are more likely to use equity financing as opposed to debt. After the disclosure, however, ICW and non-ICW firms exhibit similar financing preferences. In exploring the motivations for equity financing, we find that ICW firms are more prone than non-ICW firms to use the equity proceeds to fund investments and that this penchant disappears post-disclosure. The overall evidence indicates that ICW disclosure alters the information environment and managerial incentives, which has significant impact on firms' financing decisions.

Keywords

internal control weakness, external financing, financing choices, mandated disclosure

Introduction

Information asymmetry and agency conflicts between managers and outside investors are two primary market frictions that affect financiers' decisions to supply capital to a firm (Jensen & Meckling, 1976; Myers & Majluf, 1984). Given that corporate disclosure plays a critical role in mitigating information asymmetry and agency problems, a large body of literature examines how managers utilize voluntary disclosure strategically in anticipation of external financing activities to influence investors' perception of firm performance and governance (see, for example, Frankel, McNichols, & Wilson, 1995; Lang & Lundholm, 2000). Relatively, little research looks into whether and how managers alter their financing choices under mandated disclosure in which they are left with little discretion over the information flow. The Sarbanes-Oxley Act (SOX) of 2002 requires firms to disclose

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material weaknesses in their internal control systems, and this mandatory disclosure limits managerial discretion over influencing the mix of information available to investors. In this study, we investigate how managers adjust their firms' debt-equity choices after the mandated disclosure of internal control weaknesses (ICWs).

To address our research question, we employ a comparison method, similar to Hope and Thomas (2008), by examining how ICW firms differ from non-ICW firms in terms of financing pre-disclosure and whether these differences persist post-disclosure.[1] We construct two samples to operationalize the comparison. The prediscloure sample spans from 2000 to 2002 (financing period) with firms having Section 404 reports filed between November 15, 2004 and December 31, 2005 (disclosure period).[2] We follow Doyle, Ge, and McVay (2007b) to determine the internal control status of firms in the pre-disclosure sample by assuming that a firm that discloses at least one material weakness during the disclosure period has ICWs during the financing period.[3] For the post-disclosure sample, we focus on firms disclosing ICWs for the first time under Section 404 between 2004 and 2008 and examine their financing decisions following the initial disclosure.

Given that the disclosure of ICWs causes both shareholders and debtholders to price-protect themselves by charging higher risk premiums (e.g., Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2009; Dhaliwal, Hogan, Trezevant, & Wilkins, 2011), we first examine whether the ICW disclosure adversely affects firms' access to external financing (debt and equity). Our empirical results indicate that ICW firms are more inclined to raise external capital than non-ICW firms before the disclosure, but they behave similarly as regards the size and frequency of external financing post-disclosure. This finding suggests that increased costs of capital do not hinder ICW firms' access to capital markets. Instead, the disclosure dampens the pre-disclosure desire for external capital shown by ICW firms.

We then compare ICW firms' debt-equity choices with those of non-ICW firms both pre- and post-disclosure. Firms' decisions on debt versus equity financing depend not only on price terms but also on managerial incentives. Shareholders are more sensitive to information asymmetry than debtholders, as they bear the firms' ultimate risk and have limited means to monitor managers. The pecking order theory predicts that managers refrain from issuing equity when facing severe information asymmetry, due to particularly high costs of equity capital (Lucas & McDonald, 1990; Myers & Majluf, 1984). With respect to managerial incentives, Jensen and Meckling (1976) and Zwiebel (1996) argue that managers, in the absence of discipline, tend to steer away from debt given the performance pressure from periodic payments under debt contracts and close monitoring from debtholders. The perceived information asymmetry in ICW firms is not necessarily high before outsiders become aware of the existence of internal control problems, but the lack of effective monitoring in internal control systems provides plenty of leeway for managers to incorporate personal preferences into financing choices. Hence, we predict that ICW firms prefer equity to debt financing relative to non-ICW firms pre-disclosure. After the public disclosure of ICWs, which tends to increase the perceived information asymmetry and prompts closer monitoring from boards of directors and outside shareholders, we expect a wane in ICW firms' preference for equity financing.

Consistent with our predictions, we find that, pre-disclosure, ICW firms prefer equity as opposed to debt, compared with non-ICW firms. The impact of ICWs on firms' financing choices is economically meaningful in terms of financing size and frequency. More importantly, we find that the ICW firms' preference for equity disappears after the public notice of internal control problems, suggesting that the disclosure induces these firms to behave like their non-ICW peers in respect of financing choices. This finding parallels that of

Cheng, Dhaliwal, and Zhang (2013), who find that ICW firms' investment inefficiency relative to non-ICW firms vanishes after disclosure. Further analyses reveal that firms with company-level ICWs and firms with account-level ICWs both exhibit pre-disclosure preference for equity over debt, but only firms with company-level ICWs reverse this preference post-disclosure, indicating a greater disclosure effect on firms with severe ICWs. Our inferences are not sensitive to the controls for restatement effect and endogeneity of internal control quality. Other robustness checks show that the disclosure effect is not distinguishable from remediation effect, not transient, and not due to the drastic market movements during the 2007-2008 financial crisis.

To illuminate ICW firms' motives to take on greater equity financing pre-disclosure, we examine the use of issue proceeds. We find that ICW firms are more likely than non-ICW firms to use equity proceeds to finance investments. Interestingly, the difference disappears after the disclosure. These results suggest that ICW firms lavish investments with equity proceeds and the ICW disclosure induces a moratorium on the practice.

Our study complements the research examining the relation between ICWs and cost of capital but differs in that we examine firms' financing choices rather than financing costs. Several studies find that a firm's credit spread on publicly traded debt, loan spreads, and cost of equity increases if it discloses a material weakness (Ashbaugh-Skaife et al., 2009; Dhaliwal et al., 2011; Gao & Jia, 2017; J.-B. Kim, Song, & Zhang, 2011). These findings, albeit substantial, do not naturally predict debt-equity choices. First, increases in the cost of both debt and equity post-disclosure do not tell which type of capital is preferable even in price terms. Second, these studies address only the price terms of external financing, though firms' financing choices are also affected by managerial incentives. Third, the incomparability of samples across these studies makes it difficult to evaluate directly the cost of different types of capital across firms.[4]

Our study also adds to the research that examines various market frictions affecting firms' financing choices. For example, Chang, Dasgupta, and Hilary (2006, 2009) find that firms with less analyst coverage and non-Big N auditors are less likely to take equity financing due to high information asymmetry. Chen, Cheng, and Lo (2013) examine the effect of accounting credibility on firms' external financing choices and find that firms decrease their reliance on equity financing after accounting restatements. Our study differs from Chen et al. (2013) in several important respects, including the setting, the scope of analysis, and the main findings. Chen et al. (2013) focus on changes in firms' external financing choices in response to the announcement of restatements and find that restatements have a detrimental effect by reducing firms' financing flexibility evidenced by a declining level of external financing and greater reliance on debt. In contrast, we study the effects of both ICW and ICW disclosure on external financing choices by examining both pre- and post-ICW disclosure financing behaviors and we document a beneficial role of the ICW disclosure: Pre-disclosure, ICW firms have an unusual propensity to seek external financing—equity in particular—and the disclosure brings them back to normal, so that they exhibit financing behaviors similar to those of their non-ICW counterparts.

To the best of our knowledge, our study is the first to present a complete link from information environment to external financing and to the use of proceeds, adding to the understanding of how information transparency affects firm investment. Biddle, Hilary, and Verdi (2009) and Cheng et al. (2013) document that poor accounting information quality results in inefficient investment. Harris and Raviv (1996) argue that, to understand firms' investment behavior, one must consider both the process by which external capital is raised and that by which it is used. Our evidence suggests that the documented link between

accounting information and investment efficiency arises from managers with informational advantage taking on greater equity financing and then overinvesting the proceeds.

Literature Review and Hypothesis Development

The debt-equity choice has long been a critical corporate financing decision. Price terms and managerial incentives contribute to the decision. The information risk perceived by financiers is found to largely determine price terms. Stockholders have the residual claim on firms' resources and bear the ultimate risk. Compared with debtholders, they have limited ability to access private information and monitor managers. Thus, they are more sensitive to information asymmetry. In the case of severe information asymmetry, stockholders choose to price-protect themselves by charging higher risk premiums. Due to the high cost of equity, managers tend to refrain from using it when information asymmetry is high—This is the prediction of the pecking order hypothesis developed by Myers and Majluf (1984) and Lucas and McDonald (1990).

Several studies challenge the importance of information asymmetry in explaining firms' financing decisions (e.g., Fama & French, 2005; Frank & Goyal, 2003), while others provide supportive empirical evidence. For instance, given that analyst coverage and high-quality audits help to reduce information asymmetry, Chang et al. (2006, 2009) find that firms covered by fewer analysts or audited by non-Big N accounting firms are less likely to issue equity as opposed to debt. Extending the argument that financial restatements impair accounting credibility, Chen et al. (2013) find that restating firms substantially reduce external financing and rely more on debt and less on equity.

Managers' personal incentives may also affect firm financing choices. Regular payments of interest under debt contracts reduce the free cash flow at managers' discretion and impose performance pressure (Stulz, 1990). In addition, debtholders can employ debt covenants and other provisions to enforce close monitoring. Accordingly, Jensen and Meckling (1976) argue that managers, in the absence of discipline, have a tendency to shy away from debt to avoid periodic payments, performance pressure, and regular monitoring. Jung, Kim, and Stulz (1996) show empirically that a significant portion of equity issuers are firms with poor growth opportunities that should have issued debt, and these firms invest more than similar firms that issue debt.

Admittedly, ICWs are associated with lower reporting quality, as weak internal control induces unintentional errors and facilitates accounting manipulations. Doyle et al. (2007b), for example, find that firms with weak internal controls have lower earnings quality, proxied by abnormal accruals. Outside investors, however, may not be able to correctly interpret the meaning of discretionary accruals without knowledge of firms' internal controls. As defined by Dechow, Ge, and Schrand (2010), the meaning and measures of earnings quality are ''contingent on the decision context.'' On one hand, discretionary accruals can proxy for earnings management; on the other hand, they are viewed as a signal to convey managers' private information about firm prospects (e.g., Chaney & Lewis, 1995; Subramanyam, 1996). In other words, despite low-quality abnormal accruals, the perceived information risk of ICW firms may not necessarily be high before ICWs are made known to the public. This is supported by Dhaliwal et al. (2011), J.-B. Kim et al. (2011), Ashbaugh-Skaife et al. (2009), and Gao and Jia (2017) who find that perceived information risk increases only after ICWs are disclosed.

Indeed, the information argument per se does not predict that ICW firms will take on more equity, but it does suggest that ICW firms will not take on more debt as, accordingly

to the pecking order theory, firms prefer debt when information asymmetry is high. Another important factor coming into play is the lack of effective monitoring or weak controls in ICW firms. Hoitash, Hoitash, and Bedard (2009) find that firms with weak internal controls generally have weak governance. Gao and Jia (2016) document that inadequate internal checks and balances facilitate management extraction of private benefits associated with cash. Cheng et al. (2013) provide empirical evidence that greater moral hazard problems in ICW firms cause inefficient investment. D'Mello, Gao and Jia (2017) report that ICWs exacerbate the two-tiered agency problems in multi-segment firms. The lack of effective controls allows managers to incorporate their personal preferences into firms' financing decisions by dodging debt to avoid debt restrictions. Thus, we predict that, pre-disclosure, ICW firms will prefer equity over debt, relative to non-ICW firms.

After ICW disclosure, investors, realizing they may have received inaccurate information, reevaluate firms' information risk and uncertainties. The perceived information asymmetry surrounding these disclosing firms shoots up. As mentioned earlier, studies examining the association between ICW disclosures and cost of capital support this argument by showing that ICW disclosures convey new information about firms' information risk. A series of changes also take place after the disclosure. Public awareness of firms' internal control problems may prompt boards of directors and investors to reassess the risk and enhance oversight of management (Hoitash et al., 2009; Singer & You, 2011). Disclosure also draws attention of market intermediaries such as analysts and credit-rating agencies, inducing greater external monitoring. The heightened monitoring, in turn, helps to prevent managers from favoring their interests over those of outside investors (Lobo & Zhou, 2010). Accordingly, we expect ICW firms' greater reliance on equity, compared with non-ICW firms, to taper off after the ICW disclosure.

Sample, Descriptive Statistics, and Research Design

Sample Construction

We obtain financial data from the Compustat annual files, stock price and return information from the Center for Research in Security Prices (CRSP) files, and internal control information from the AuditAnalytics database. We focus on Section 404 disclosures and exclude financial firms and utilities because their financing policies may differ significantly from those of industrial companies. We require a firm to have nonmissing data on the sale and purchase of common and preferred stocks (to determine equity financing) or long-term debt issuance and reduction and change in current debt (to determine debt financing) so that we can ascertain financing status. To be included in the sample, a firm-year observation also must have either equity financing or debt financing and nonmissing information on control variables for regression analyses of debt-equity choice. The number of observations may differ in our analyses, depending on the data availability of variables included in the regressions.

To investigate whether ICW firms differ pre-disclosure from non-ICW firms in financing choices and act similarly post-disclosure, we construct two distinctive samples. For the pre-disclosure sample, the financing period spans from 2000 to 2002 and the disclosure period from November 15, 2004 (the effective date of Section 404) to December 31, 2005. We start with identifying firms that file Section 404 reports during the disclosure period and obtain an initial sample of 3,719 firms (excluding 69 firms that make multiple disclosures). By merging with Compustat and CRSP in the financing period, we obtain a total of

Table 1. Sample Selection.

Panel A: Pre-Disclosure Sample.

Firms that disclose Section 404 report from November 15, 2004 to December 30, 2005	3,719
Firm-years after merging with Compustat/CRSP from 2000 to 2002	6,359
After requesting data availability	1,964
Firms with ICWs	350
Control firms without ICWs	350
Total sample	700

Panel B: Post-Disclosure Sample.

Firm-years disclosing ICWs under Section 404 from 2004 to 2008	2,062
After keeping the first ICW disclosure	1,377
After removing firms disclosing ICWs before November 15, 2004	1,253
After merging with Compustat/CRSP 1 year after ICW disclosure	742
After requesting data availability	135
Control firms never disclosing ICWs	135
Total sample	270

Note. CRSP = Center for Research in Security Prices; ICWs = internal control weaknesses.

6,359 firm-years. After applying the restrictions mentioned earlier, we are left with 1,964 firm-year observations. We follow Doyle, Ge, and McVay (2007a) to determine firm internal control over financial reporting (ICFR) status by assuming that firms that disclose at least one material weakness in the disclosure period have ICWs in the financing period.[5]

ICW firms may differ from non-ICW firms in a number of ways such as industry membership, firm size, performance, and financial resources (Doyle et al., 2007a). To ensure that it is not these differences that drive the differing financing policies, we follow Chen et al. (2013) and match each ICW firm with a non-ICW firm based on industry, firm size, and performance in the same year. Specifically, we require a control firm to have (a) the same two-digit SIC code, (b) a size difference less than 10%, and (c) the closest performance measure relative to an ICW firm. The performance measure is calculated as the average rank of return on assets, Altman's (1968) Z-score and market-to-book. Our final pre-disclosure sample includes 350 pairs of ICW, and non-ICW firms.

For the post-disclosure sample, we focus on firms disclosing ICWs under Section 404 for the first time from 2004 to 2008 and firms never disclosing ICWs in the same period. We first identify 2,062 firm-years that disclose ICWs from 2004 to 2008. After requiring the first ICW disclosure and excluding firms that disclose ICWs under Section 302 before November 15, 2004, we are left with 1,253 observations. We merge the dataset with Compustat and CRSP and obtain 742 firm-years, of which 135 have available data for debt-equity regression analysis. We find a matching non-ICW firm for each ICW firm in a similar way to the pre-disclosure sample. In total, we have 270 observations in the post-disclosure sample. Table 1 details our sample selection.

For the pre-disclosure sample, we examine firm financing choices from 2000 to 2002 and their use of equity proceeds 2 years following offerings. For the post-disclosure sample, we examine firms' financing choices 1 year after the ICW disclosure and the use of equity proceeds 2 years following offerings. Hence, our pre-disclosure sample covers 2000 through 2004 and post-disclosure sample 2005 through 2011. Figure 1 depicts the timeline for both pre- and post-disclosure samples.
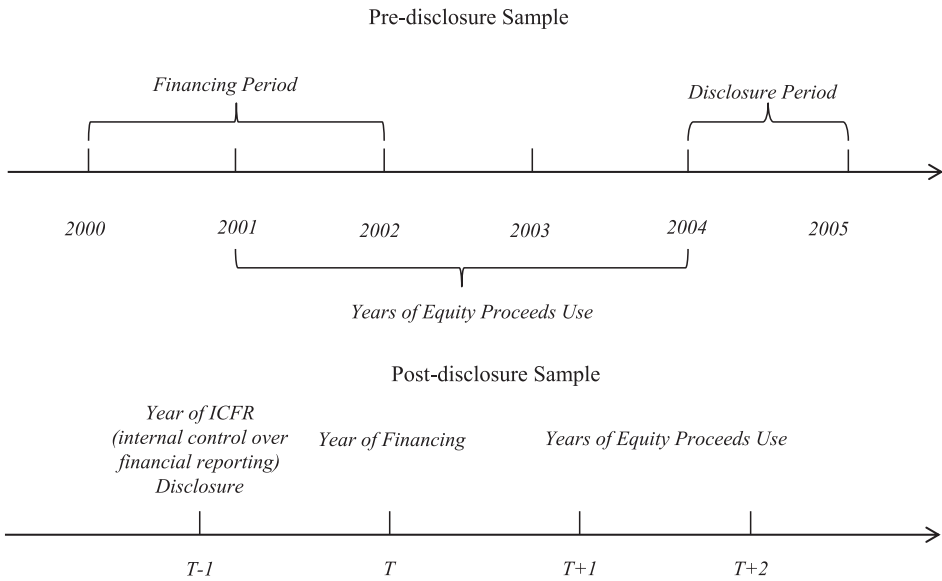
Pre-disclosure Sample

Financing Period   *Disclosure Period*

2000   *2001*   *2002*   *2003*   *2004*   *2005*

Years of Equity Proceeds Use

Post-disclosure Sample

Year of ICFR
(internal control over   *Year of Financing*   *Years of Equity Proceeds Use*
financial reporting)
Disclosure

T-1   *T*   *T+1*   *T+2*

Figure 1. Timeline of samples.

To provide evidence on whether the ICW disclosure affects firms' financing choices, we examine how ICW firms behave differently than non-ICW firms before the ICW disclosure and whether the differences continue to exist after the disclosure. The comparisons over the same period help to ensure that our results are not driven by temporal shifts in financing markets. Also, the financing period for the pre-disclosure sample preceding the effective date of Section 404 serves to avoid capturing the effect on firms' financing choices of potential managerial opportunism in anticipation of the SOX disclosure requirement (i.e., managers may act opportunistically on the upcoming ICW disclosure by raising large amounts of equity capital before the disclosure). Moreover, the non-overlapping between the pre-disclosure and post-disclosure samples provides a relatively straightforward and nonconfounding setting to study the impact of ICW disclosure on the use of equity issue proceeds, as we examine the use of proceeds over 2 years following equity offerings.[6]

Summary Statistics

Table 2, Panel A reports summary statistics of the pre- and post-disclosure samples. For the pre-disclosure sample, the market-to-book ratio averages 2.55, asset tangibility 0.24, leverage ratio 0.27, and return on total assets 0.04. Around 25% of the firms have access to public debt markets, proxied by having a credit rating. The average number of analysts covering each firm is 8.06, and average firm age is 12.23. For the post-disclosure sample, the market-to-book ratio is 2.21, asset tangibility 0.23, leverage ratio 0.30, return on assets 0.04, and firm age 15. Around 30% of the firms have a credit rating; average analyst coverage is 8.52.

Panel B of Table 2 reports the comparison of ICW and non-ICW firm characteristics in both periods. For the pre-disclosure sample, the ICW firms are very similar to the matching non-ICW firms, and the differences in firm characteristics are generally not significant except for firm age and R&D expense. We find a similar situation for the post-disclosure

Table 2. Descriptive Statistics.

Panel A: Summary Statistics.

	Pre-disclosure sample			Post-disclosure sample		
	(*n* = 700)			(*n* = 270)		
Variable	*M*	Median	SD	*M*	Median	SD
AT	5.654	5.621	1.524	6.120	6.021	1.436
FirmAge	12.231	7.000	12.170	15.348	11.000	10.925
MTB	2.548	1.787	2.385	2.206	1.851	1.455
RDS	0.347	0.035	1.232	0.552	0.020	1.902
Tangibility	0.242	0.158	0.222	0.234	0.136	0.236
ROA	0.039	0.106	0.235	0.042	0.104	0.200
ZSCORE	0.531	1.281	3.174	0.210	1.052	3.598
CreRating	0.253	0.000	0.435	0.304	0.000	0.461
Leverage	0.270	0.234	0.273	0.297	0.272	0.243
Div	0.003	0.000	0.011	0.003	0.000	0.008
Analyst	8.063	6.000	6.471	8.519	7.000	6.419
BigN	0.969	1.000	0.175	0.826	1.000	0.380
Turnover	0.002	0.001	0.002	0.002	0.002	0.002
Ret	0.462	0.095	1.125	0.110	0.067	0.458
MTRB	0.267	0.323	0.097	0.269	0.328	0.106

Panel B: Comparison Between ICW Firms and Non-ICW Firms.

	Pre-disclosure sample			Post-disclosure sample		
			p-value			p-value
Variable	ICW (1)	Non-ICW (2)	(1) − (2)	ICW (3)	Non-ICW (4)	(3) − (4)
AT	5.678	5.630	0.678	6.109	6.132	0.897
FirmAge	13.009	11.454	0.091	15.162	15.537	0.778
MTB	2.496	2.601	0.560	2.003	2.412	0.021
RDS	0.201	0.493	0.020	0.452	0.653	0.385
Tangibility	0.245	0.239	0.739	0.225	0.243	0.527
ROA	0.051	0.027	0.192	0.047	0.036	0.635
ZSCORE	0.359	0.703	0.151	0.169	0.251	0.851
CreRating	0.251	0.254	0.931	0.294	0.313	0.731
Leverage	0.284	0.255	0.156	0.307	0.288	0.525
Div	0.003	0.003	0.800	0.002	0.003	0.308
Analyst	8.283	7.843	0.369	7.699	9.351	0.034
BigN	0.966	0.971	0.665	0.801	0.851	0.287
Turnover	0.002	0.002	0.286	0.002	0.002	0.595
Ret	0.421	0.503	0.335	0.043	0.178	0.016
MTRB	0.267	0.268	0.871	0.267	0.272	0.739

Note. This table presents summary statistics for the pre- and post-disclosure samples (Panel A) and comparison between firms with ICWs or disclosing ICWs and firms without ICWs or never disclosing ICWs (Panel B). The pre-disclosure sample includes firm-years with external financing from 2000 to 2002, necessary information on control variables to conduct debt-equity choice analysis, and information on internal control status reported under SOX Section 404 from November 15, 2004, to December 31, 2005. The post-disclosure sample includes firms disclosing internal control weaknesses for the first time from 2004 to 2008 and firms never disclosing internal control weaknesses from 2002 to 2008 with external financing 1 year after the disclosure and necessary information on control variables to conduct debt-equity choice analysis. Variables are as defined in the appendix. SOX = Sarbanes-Oxley Act.

sample with differences only in market-to-book, analyst coverage and stock return being statistically significant. The similarity between ICW and non-ICW control firms suggests that our matching method works effectively and helps ensure that the differential financing choices are not driven by differing firm characteristics.

Debt-Equity Choice Regression Model

Following Hovakimian, Hovakimian, and Tehranian (2004) and Chang et al. (2006, 2009), we use items from the statement of cash flows to determine debt financing and equity financing. A firm is considered to have debt financing if its net debt issues (long-term debt issuance − long-term debt reduction + change in current debt) in year t exceeds 5% of its total assets in year $t-1$. Similarly, a firm is considered to have equity financing if its net equity issued (sale of common and preferred stock − purchase of common and preferred stock) in year t is above 5% of its total assets in year $t-1$.[7] We focus on net financing as managers are concerned about net proceeds flowing into their firms from debt or equity issuances, and we are interested in inquiring about how managers use the net proceeds from equity offerings.

To investigate how ICWs affect firms' debt-equity choices, we examine both the likelihood of equity financing versus debt financing, and equity financing size relative to debt financing size. For the likelihood of equity financing as against debt financing, we estimate the following Logit regression resembling that used by Hovakimian et al. (2004) and Chang et al. (2006, 2009).

$$
\begin{aligned}
\mathrm{Prob}[Dissue_t = 1] \ = & \ \beta_0 + \beta_1 ICW + \beta_2 Log(AT_{t-1}) + \beta_3 FirmAge_{t-1} + \beta_4 MTB_{t-1} + \beta_5 RDS_{t-1} \\
& + \beta_6 RDSMis_{t-1} + \beta_7 Tangibility_{t-1} + \beta_8 ROA_{t-1} + \beta_9 ZSCORE_{t-1} \\
& + \beta_{10} CreRating_{t-1} + \beta_{11} DevTgt_{t-1} + \beta_{12} Div_{t-1} + \beta_{13} Analyst_{t-1} \\
& + \beta_{14} BigN_{t-1} + \beta_{15} Ret_{t-1} + \beta_{16} Turnover_{t-1} + \beta_{17} MTRB_{t-1} \\
& + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon_t,
\end{aligned}
$$

$$(1)$$

where the dependent variable, *Dissue*, takes a value of one if a firm has net debt financing in year t and zero if it has net equity financing. We follow Chang et al. (2006, 2009) and drop firm-years that have both debt and equity financing or neither.

For the size of financing, we follow Chen et al. (2013) and use the OLS (ordinary least squares) to estimate the following regression model:

$$
\begin{aligned}
DebtFinSize_t \ = & \ \beta_0 + \beta_1 ICW + \beta_2 Log(AT_{t-1}) + \beta_3 FirmAge_{t-1} + \beta_4 MTB_{t-1} + \beta_5 RDS_{t-1} \\
& + \beta_6 RDSMis_{t-1} + \beta_7 Tangibility_{t-1} + \beta_8 ROA_{t-1} + \beta_9 ZSCORE_{t-1} \\
& + \beta_{10} CreRating_{t-1} + \beta_{11} DevTgt_{t-1} + \beta_{12} Div_{t-1} + \beta_{13} Analyst_{t-1} \\
& + \beta_{14} BigN_{t-1} + \beta_{15} Ret_{t-1} + \beta_{16} Turnover_{t-1} + \beta_{17} MTRB_{t-1} \\
& + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon_t,
\end{aligned}
$$

$$(2)$$

where the dependent variable, $DebtFinSize_t$, is the ratio of net debt financing to total external financing that is the sum of debt and equity financing. Similar to Chen et al. (2013), we estimate Equation 2 only for firm-years with positive total external financing.

We estimate Equations 1 and 2 for the pre- and post-disclosure samples separately. The main variable of interest is *ICW*. For the pre-disclosure sample, *ICW* equals one for years from 2000 to 2002 if a firm discloses at least one material weakness between November 15, 2004 and December 31, 2005, and zero otherwise. For the post-disclosure sample, *ICW* equals one if a firm discloses at least one material weakness in the previous year $(t-1)$ and zero otherwise. The coefficient on *ICW* represents incremental changes in the probability of debt financing versus equity financing in Equation 1 and incremental changes in the size of debt financing versus equity financing in Equation 2 for ICW firms relative to non-ICW firms. To support our hypotheses that ICW firms prefer equity financing to debt compared with non-ICW firms and that ICW disclosure mitigates this propensity, we expect a negative and significant coefficient on *ICW* for the pre-disclosure sample and an insignificant coefficient for the post-disclosure sample.

Because of imperfect matches, we control for a set of variables that have been shown to influence firms' financing behavior. Specifically, firms' capital structure relates to firm size, age, profitability, deviation from target debt ratio, asset tangibility, growth opportunities, financial risk, marginal tax rate, information asymmetry, and access to public debt markets. We use the book value of total assets (*log(AT)*) to proxy for firm size, the number of years since firms entered Compustat (*FirmAge*) to proxy for firm age, and the market-to-book ratio (*MTB*) to proxy for growth opportunities. The impact of firm size and age on financing choices is an empirical issue as, on one hand, large and mature firms tend to have lower information asymmetry and are expected to issue equity more often based on the pecking order theory of Myers and Majluf (1984), and, on the other hand, Fama and French (2005) find that most Compustat firms violate the pecking order theory. We expect a negative coefficient on *MTB*, as firms with greater growth opportunities are less likely to issue debt to avoid giving up valuable growth options (Myers, 1977). *RDS* can proxy for information asymmetry, for which a positive coefficient is predicted, and growth potential, for which a negative coefficient is expected. Therefore, the impact of R&D expense on financing choices is ambiguous. Following prior studies, we set *RDS* to zero if there is a missing value and denote this by a variable *RDSMis*.

We use return on assets (*ROA*) to proxy for profitability, Altman's (1968) unleveraged Z-score (*ZSCORE*) to measure financial risk and constraints, and the ratio of net property, plant, and equipment to total assets (*Tangibility*) to gauge asset tangibility. While some studies suggest that firms tend to rely less on debt financing when performance is poor or financial distress risk is high (e.g., Fama & French, 2002), others argue that these firms are less likely to use equity financing due to greater information asymmetry (e.g., Hayn, 1995). Because firms are found to use more debt if they have access to public debt markets (Faulkender & Petersen, 2006), we include an indicator variable, *CreRating*, as a proxy for firms' access to bond markets. The trade-off theory suggests that the change in leverage level is affected by whether the firm deviates from its target debt ratio (e.g., Marsh, 1982). We estimate a regression of debt ratio (long-term debt + short-term debt) / (total assets − book value of equity + market value of equity) in year *t* - 1 on the same control variables in Equation 1 over the period 2000 to 2009 and treat the predicted value from this regression as the target debt ratio. The difference between actual debt ratio and the target is thus the deviation from the target (*DevTgt*).

We control for firm dividends (*Div*) because corporate payout policy is related to its capital structure. Chang et al. (2006, 2009) find that auditor quality and analyst coverage reduce information asymmetry, which in turn affects firms' financing choices. We include in the regressions an indicator variable, *BigN*, to control for auditor quality, and the

Table 3. Univariate Analysis.

Variable	Pre-disclosure sample			Post-disclosure sample		
	ICW (1)	Non-ICW (2)	p value (1) − (2)	ICW (3)	Non-ICW (4)	p value (3) − (4)
% of Debt Financing	0.160	0.159	.919	0.193	0.181	.556
% of Equity Financing	0.118	0.096	.060	0.076	0.066	.487
% of External Financing	0.309	0.278	.070	0.288	0.262	.253
$DebtFinancing / Assets	0.026	0.031	.463	0.026	0.036	−.200
$EquityFinancing / Assets	0.074	0.060	.098	0.014	0.013	.815
$ExternalFinancing / Assets	0.087	0.082	.635	0.039	0.047	−.396

Note. This table presents univariate comparison of debt-equity financing between ICW and non-ICW firms for both pre- and post-disclosure samples using different cutoffs. *% of Debt Financing* is the ratio of firms with debt financing (no equity financing). *% of Equity Financing* is the ratio of firms with equity financing (no debt financing). *% of External Financing* is the ratio of firms with either debt financing or equity financing. A firm is considered to have debt financing if its net debt issuance (long-term debt issuance − long-term debt reduction + change in current debt) in year t exceeds 5% of its total assets in year $t − 1$. Similarly, a firm is considered to have equity financing if its net equity issued (sale of common and preferred stock − purchase of common and preferred stock) in year t exceeds 5% of total assets in year t - 1. *$Debt Financing / Assets* is net debt issues divided by total assets. *$Equity Financing / Assets* is net equity issued divided by total assets. *$External Financing / Assets* is the sum of net debt issued and net equity issued divided by total assets.

number of analysts following a firm (*Analyst*) to control for analyst coverage. The market timing theory suggests that firms more likely issue equity after price run-up and when they have high stock liquidity (e.g., Baker & Wurgler, 2002). We use monthly stock buy-and-hold return in the previous 12 months (*Ret*) as proxy for price run-up and the median value of monthly shares traded divided by total shares outstanding over the past 12 months (*Turnover*) as proxy for liquidity. Due to tax deductibility of interest expense, firms' incentives to take on more debt are expected to increase with marginal tax rate. We include in the regressions a simulated marginal tax rate (MTRB) based on operating income before interest deduction (Graham, 1996). To control for the impact of macroeconomic conditions on external financing markets, we include year and industry fixed effects. Given possible serial correlation in firm financing behavior, we adjust standard errors for clustering at the firm level (Petersen, 2009).

Empirical Tests and Results—ICWs and Financing Decisions

Univariate Analysis

We tabulate the frequency and size of debt and equity financing in Table 3. Around 16.0% of ICW firms and 15.9% of non-ICW firms issue debt, 11.8% of ICW firms and 9.6% of non-ICW firms issue equity, and 30.9% of ICW firms and 27.8% of non-ICW firms seek external financing pre-disclosure. The differences in the frequency of equity issues and external financing between ICW and non-ICW firms are statistically significant. The corresponding numbers for the post-disclosure sample are 19.3% and 18.1%, 7.6% and 6.6%, and 28.8% and 26.2%, and the differences between ICW and non-ICW firms are not statistically significant. These statistics comport with prior studies such as Chang et al. (2006, 2009). For example, Chang, Dasgupta, and Hilary (2009) report that 7.4% of their sample firms issue equity and 23.3% issue debt.

As to issue size, we find that, pre-disclosure, the size of debt financing (dollar amount of net debt financing scaled by total assets) averages 2.6% and 3.1%, equity financing 7.4% and 6.0%, and total financing 8.7% and 8.2% for ICW and non-ICW firms, respectively. The difference in the size of equity financing between ICW and non-ICW firms is statistically significant. Post-disclosure, the corresponding numbers are 2.6% and 3.6%, 1.4% and 1.3%, and 3.9% and 4.7%. None of the differences between ICW and non-ICW firms is statistically significant.

The overall results from univariate analyses suggest that ICW firms are more likely than non-ICW firms to use equity financing as opposed to debt and that this preference disappears after the ICW disclosure. Nevertheless, caution should be exercised in drawing inferences from univariate analyses due to omitted variable bias. We proceed to analyze the relation between ICWs and firms' financing choice in a multivariate regression framework.

ICWs and Total External Financing

While our focus is firms' debt-equity choices, it is also interesting to know whether ICW disclosure affects firms' access to external financing given that the disclosure leads to increased costs of both debt and equity. To investigate the impact of ICWs and their disclosure on firms' access to external financing, we estimate the following two regression models:

$$
\begin{aligned}
\mathrm{Prob}[Issue_t = 1] = {} & \beta_0 + \beta_1 ICW + \beta_2 Log(AT_{t-1}) + \beta_3 FirmAge_{t-1} + \beta_4 CashFlow_{t-1} + \beta_5 Cash_{t-1} \\
& + \beta_6 StdRet_{t-1} + \beta_7 Investment_{t-1} + \beta_8 WCapital_{t-1} + \beta_9 Leverage_{t-1} \\
& + \beta_{10} Div_{t-1} + Year\ fixed\ effects + Industry\ fixed\ effect + \varepsilon_t,
\end{aligned}
$$

(3)

$$
\begin{aligned}
TotFinSize_t = {} & \beta_0 + \beta_1 ICW + \beta_2 Log(AT_{t-1}) + \beta_3 FirmAge_{t-1} + \beta_4 CashFlow_{t-1} + \beta_5 Cash_{t-1} \\
& + \beta_6 StdRet_{t-1} + \beta_7 Investment_{t-1} + \beta_8 WCapital_{t-1} + \beta_9 Leverage_{t-1} \\
& + \beta_{10} Div_{t-1} + Year\ fixed\ effects + Industry\ fixed\ effect + \varepsilon_t,
\end{aligned}
$$

(4)

where the dependent variable in Equation 3, *Issue*, is set to one if a firm has external financing (either equity or debt financing) and zero otherwise,[8] and the dependent variable in Equation 4, *TotFinSize*, is the ratio of total external financing to total assets. The definitions of *ICW* for the pre- and post-disclosure samples are the same as in Equations 1 and 2. The inclusion of control variables, such as firm size, firm age, projected current cash flow, cash balance, return volatility, projected current investment, working capital, market leverage, and dividend payment, is generally guided by Chang et al. (2009).

We report the estimated results in columns 1 and 2 of Table 4 for the pre-disclosure sample and columns 3 and 4 for the post-disclosure sample. The coefficients on *ICW* are positive and significant for both the likelihood and size of external financing in the pre-disclosure period, suggesting that ICW firms, without public awareness of the existence of ICWs, are more likely to seek external financing than non-ICW firms. However, the differences vanish after the ICW disclosure. These findings suggest that the ICW disclosure does not hinder ICW firms from accessing external financing markets; instead, it brings the external financing level on par with their non-ICW counterparts'.

Table 4. Internal Control Weaknesses and Total External Financing.

Variable	Pre-disclosure sample		Post-disclosure sample	
	Likelihood	Size	Likelihood	Size
Intercept	0.628	0.497**	−1.802**	0.434**
	(0.126)	(0.027)	(0.010)	(0.024)
ICW	**0.159***	**0.015***	**0.085***	**−0.025***
	(0.070)*	**(0.065)***	**(0.484)***	**(0.291)***
Log(AT)	−0.194***	−0.022	0.001	−0.015
	(0.000)	(0.181)	(0.994)	(0.324)
FirmAge	−0.007	−0.001	−0.008	−0.003
	(0.123)	(0.337)	(0.154)	(0.220)
CashFlow	0.060	0.039	0.072	0.015
	(0.372)	(0.264)	(0.346)	(0.326)
Cash	−1.540***	0.544*	−0.304	−0.179
	(0.000)	(0.085)	(0.555)	(0.183)
Std(Ret)	−2.352	−0.247	−0.762	2.545
	(0.408)	(0.921)	(0.917)	(0.192)
Investment	1.654***	0.010**	2.264***	0.110
	(0.000)	(0.046)	(0.001)	(0.129)
WCapital	−1.255***	0.097	−0.641	−0.008
	(0.002)	(0.641)	(0.287)	(0.977)
Leverage	0.292	−0.302**	0.643	−0.182
	(0.406)	(0.027)	(0.223)	(0.324)
Div	3.538	−0.208	−21.665***	2.941
	(0.446)	(0.841)	(0.006)	(0.323)
N	2,846	700	1,534	270
R^2	9.92%	25.06%	8.20%	23.30%

Note. This table presents estimated results on the relation between ICWs and total external financing. The pre-disclosure sample includes firm-years with necessary data to determine firm financing status (Equation 1) or with external financing (Equation 2) from 2000 to 2002, necessary information on control variables to conduct debt-equity choice analysis, and information on internal control status reported under Section 404 from November 15, 2004, to December 31, 2005. ICW and non-ICW firms are matched based on industry, firm size, and performance. The post-disclosure sample includes firms disclosing internal control weaknesses for the first time from 2004 to 2008 and firms never disclosing internal control weaknesses from 2002 to 2008 with necessary data to determine firm financing status (Equation 1) or external financing (Equation2) 1 year after the disclosure and necessary information on control variables to conduct debt-equity choice analysis. ICW and non-ICW firms are matched based on industry, firm size, and performance. Values of *p* based on standard errors robust to clustering at the firm level are provided in parentheses. Variables are as defined in the appendix.
***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

ICWs and Debt-Equity Choices

Main test. Following Jung et al. (1996), we first estimate a baseline regression similar to Equation 1 but without the variable *ICW* and use the estimated results to determine whether ICW firms have a greater tendency to issue equity when predicted to issue debt. As reported in columns 1 and 4 of Table 5, the model correctly predicts the debt-equity choice 78.9% of the time for both pre- and post-disclosure samples. We refer to firms issuing equity when predicted to issue debt based on their own characteristics as high equity financing firms. While ICW firms are more likely to fall into this category than non-ICW

Table 5. Internal Control Weaknesses and Debt-Equity Choices.

Variable	Pre-disclosure sample			Post-disclosure sample		
	Baseline	Likelihood	Size	Baseline	Likelihood	Size
Intercept	−3.360***	−2.871**	−0.660	−6.769**	−6.305**	−3.253
	(0.01)	(0.028)	(0.140)	(0.02)	(0.024)	(0.219)
ICW		**−0.823*** **	**−0.264** **		**−0.391**	**0.187**
		(0.000)	**(0.048)**		**(0.414)**	**(0.746)**
Log(AT)	0.491***	0.511***	0.173**	0.420	0.416	0.415
	(0.00)	(0.001)	(0.046)	(0.24)	(0.235)	(0.100)
FirmAge	0.005	0.011	0.002	0.003	0.003	0.008
	(0.72)	(0.454)	(0.607)	(0.93)	(0.922)	(0.687)
MTB	−0.026	−0.031	0.008	0.221	0.204	0.170*
	(0.62)	(0.577)	(0.571)	(0.20)	(0.229)	(0.059)
RDS	−0.086	−0.123	−0.021	−0.038	−0.046	0.057
	(0.44)	(0.280)	(0.360)	(0.79)	(0.737)	(0.409)
RDSMis	0.404	0.402	0.567	2.803***	2.776***	1.624
	(0.26)	(0.269)	(0.144)	(0.00)	(0.004)	(0.180)
Tangibility	1.545*	1.521*	0.394	5.159**	4.765*	0.281
	(0.09)	(0.099)	(0.304)	(0.05)	(0.063)	(0.836)
ROA	1.642*	2.112**	0.324	5.848**	5.938**	0.812
	(0.08)	(0.032)	(0.425)	(0.02)	(0.015)	(0.527)
ZSCORE	−0.069	−0.097*	−0.006	−0.278**	−0.276**	−0.040
	(0.24)	(0.099)	(0.798)	(0.03)	(0.034)	(0.342)
CreRating	−0.366	−0.524	−0.318	−1.270	−1.285	0.238
	(0.34)	(0.181)	(0.238)	(0.11)	(0.100)	(0.768)
DevTgt	10.231***	10.660***	1.131***	17.247***	17.243***	1.205
	(0.00)	(0.000)	(0.002)	(0.00)	(0.000)	(0.329)
Div	1.157	−4.507	0.508	109.942	103.539	−9.009
	(0.95)	(0.795)	(0.909)	(0.18)	(0.206)	(0.689)
Analyst	−0.017	−0.012	−0.005	0.058	0.055	0.014
	(0.49)	(0.638)	(0.665)	(0.38)	(0.404)	(0.727)
BigN	0.939	0.965	0.109	−0.209	−0.233	−0.306
	(0.18)	(0.164)	(0.434)	(0.75)	(0.725)	(0.279)
Turnover	−223.60***	−257.81***	−13.485	−169.87	−160.69	35.030
	(0.01)	(0.002)	(0.600)	(0.34)	(0.364)	(0.735)
Ret	−0.364***	−0.393***	−0.014	−1.285**	−1.367**	−0.863**
	(0.00)	(0.000)	(0.670)	(0.02)	(0.013)	(0.018)
MTRB	1.697	1.403	−0.055	3.144	2.913	1.443
	(0.35)	(0.447)	(0.920)	(0.48)	(0.511)	(0.577)
N	700	700	668	270	270	251
R²	40.44%	41.61%	12.10%	47.69%	47.82%	18.50%
% correct	78.90%			78.90%		
High Equity Financing						
Total	8.39%			6.30%		
ICW	13.14%			8.10%		
Non-ICW	5.14%			4.50%		
Dif (*t* statistics)	3.72			1.22		

Note. This table presents the estimated results on the relation between ICWs and debt-equity choices. The pre-disclosure sample includes firm-years with external financing from 2000 to 2002, necessary information on control variables to conduct debt-equity choice analysis, and information on internal control status reported under Section 404 from November 15, 2004, to December 31, 2005. ICW and non-ICW firms are matched based on industry, firm size, and performance. The post-disclosure sample includes firms disclosing internal control weaknesses for the first time from 2004 to 2008 and firms never disclosing internal control weaknesses from 2002 to 2008 with external financing 1 year after the disclosure and necessary information on control variables to conduct debt-equity choice analysis. ICW and non-ICW firms are matched based on industry, firm size, and performance. Values of *p* based on standard errors robust to clustering at the firm level are provided in parentheses. Variables are as defined in the appendix.

***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

firms before the disclosure (13.14% vs. 5.14%), we fail to find similar results for the post-disclosure sample. This provides preliminary evidence that ICW firms have a higher propensity than non-ICW firms to choose equity financing and that this tendency disappears post-disclosure.

Next, we estimate Equation 1 with *ICW* as a test variable for the pre- and post-disclosure samples separately. As shown in column 2 of Table 5, the coefficient on *ICW* is negative and significant for the pre-disclosure sample, suggesting that ICW firms are less likely to use debt financing as against equity financing than non-ICW firms. The impact of ICWs on firms' financing choice is also economically significant. Based on parameter estimates in column 2, the likelihood of equity issuance by ICW firms is 3.0% higher than by non-ICW firms.[9] This is close to the result of Chang et al. (2009), who report that firms audited by Big N accountants are 3.5% more likely to issue equity than firms audited by non-Big N accountants.

For the size of equity financing, the coefficient on *ICW* (column 3 of Table 5) remains negative and significant. The coefficient of –0.264 (*p* value = 0.048) indicates that the portion of equity financing relative to debt financing for ICW firms is 26.4% higher than that for non-ICW firms. This further confirms that ICW firms are more inclined to raise equity as opposed to debt when they have weak internal controls that are not known to the outside investors.

For the post-disclosure sample (columns 5 and 6 of Table 5), the coefficient on *ICW* turns insignificant for both the likelihood (*p* value = 0.414) and size of equity financing (*p* value = 0.746), suggesting that ICW and non-ICW firms exhibit similar propensities with regard to equity and debt financing. The overall evidence indicates that managers opt for equity as opposed to debt when their firms' internal control problems are unknown to the public, but they behave similar to their non-ICW counterparts after disclosure.

Turning to coefficients on the explanatory variables, we find that, in general, they have signs consistent with prior studies (e.g., Frank & Goyal, 2003). For example, firms with more tangible assets serving as collateral are more likely to issue debt and firms that deviate from their target leverage ratios are more likely to move toward their targets by issuing more debts. Consistent with the market timing argument, we find that firms experiencing recent stock price run-ups and with high market liquidity are more likely to issue equity.

ICWs are found to be related to firm attributes but may also arise from specific events or transactions such as acquisitions or restructurings (Doyle et al., 2007a). Reorganizations may cause internal control problems, and thus these ICWs may not exist in the pre-disclosure period (2000-2002). To reduce related coding errors, we remove all firm-years with acquisitions or restructurings from the pre-disclosure sample and re-estimate Equations 1 and 2. The results remain unchanged with this alternate sample.

Company-level versus account-level ICWs. ICWs encompass a wide variety of issues; some pertain to the control environment or overall financial reporting process (company-level ICWs), while others relate to problems in specific account balances or transaction-level processes (account-level ICWs). Empirical studies find company-level ICWs have greater effects on accounting quality (Doyle et al., 2007a), cost of capital (Gao & Jia, 2017), and investment efficiency (D'Mello et al., 2017).

To test whether our main results vary with different types of ICWs, we create two indicator variables to represent company-level and account-level ICWs: *CompanyICW* and *AccountICW*.[10] As shown in Table 6, we find consistent results for company-level ICWs—Firms with company-level ICWs exhibit a pre-disclosure preference for equity

Table 6. Nature of Internal Control Weaknesses and Debt-Equity Choices.

	Pre-disclosure		Post-disclosure	
Variable	Likelihood	Size	Likelihood	Size
Intercept	−2.814**	−0.681	−7.325**	−3.104
	(0.032)	(0.134)	(0.012)	(0.219)
AccountICW	**−1.075***	**−0.302**	**−1.259**	**−0.252**
	(0.001)	**(0.019)**	**(0.032)**	**(0.537)**
CompanyICW	**−0.696***	**−0.242***	**1.028**	**0.680**
	(0.006)	**(0.061)**	**(0.153)**	**(0.487)**
Control variables	Yes	Yes	Yes	Yes
N	700	668	270	251
R^2	41.72%	12.13%	49.35%	19.55%

Note. This table presents the estimated results on the relation between nature of ICWs and debt-equity choices. The pre-disclosure sample includes firm-years with external financing from 2000 to 2002, necessary information on control variables to conduct debt-equity choice analysis, and information on internal control status reported under Section 404 from November 15, 2004, to December 31, 2005. ICW firms and non-ICW firms are matched based on industry, firm size, and performance. The post-disclosure sample includes firms disclosing internal control weaknesses for the first time from 2004 to 2008 and firms never disclosing internal control weaknesses from 2002 to 2008 with external financing 1 year after the disclosure and necessary information on control variables to conduct debt-equity choice analysis. ICW firms and non-ICW firms are matched based on industry, firm size, and performance. Values of p based on standard errors robust to clustering at the firm level are provided in parentheses. Variables are as defined in the appendix.
***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

financing over debt in terms of both the likelihood and size, and this preference wanes post-disclosure. However, the results for account-level ICWs are not consistent. Specifically, the coefficient on *AccountICW* is negative and significant pre-disclosure, while it is negative and significant for the likelihood analysis but not for the size analysis post-disclosure. These findings seem to suggest that company-level ICWs attract more attention and their disclosure has greater effects on firms' financing behavior.

Remediation effect versus disclosure effect. Indeed, some ICW firms may fix their control weaknesses soon after the disclosure. To test whether post-disclosure financing differs between firms that have remediated their ICWs and those that have not, we identify firms that report ICWs in year t and maintain ineffective ICFR in year $t + 1$ (disclosure firms) and firms that report ICWs in year t and fix the problems in year $t + 1$ (remediation firms). We compare financing choices of remediation firms and non-remediation firms with those of non-ICW firms separately and find that both types of firms exhibit similar financing choices as firms never disclosing ICWs (untabulated), indicating no difference in remediation and disclosure effect.

Further evidence on ICW disclosure effect. We attribute the documented shifts in the debt-equity choice of ICW firms relative to non-ICW firms to the ICW disclosure effect. However, given that the composition of firms in the pre-disclosure sample differs from that of the post-disclosure sample, the changes in financing choices may arise from the change in the composition of firms in the samples. Moreover, our post-disclosure sample covers the 2007-2008 financial crisis period and the drastic movements in financial markets may

explain the changing financing behavior of ICW firms. We argue that the changes in finan-cial markets should similarly affect ICW and non-ICW firms. If they affect ICW firms dif-ferently post-disclosure, this is still consistent with the disclosure effect.

To further characterize the ICW disclosure effect, we construct alternative pre- and post-disclosure samples to ensure that the sample firms exist in the two periods. We iden-tify firms disclosing ICWs for the first time from November 15, 2004, to December 31, 2005, and firms without disclosing ICWs during the same period. We investigate these firms' financing decisions 1 year after the disclosure (the post-discosure sample) and the same firms' financing choices in the period 2000 to 2002 (pre-disclosure sample). After re-estimating Equations 1 and 2 on these alternative samples, we find that the coefficients on *ICW* are negative and significant pre-disclosure and turn insignificant after the disclosure (untabulated). This exercise affords us more confidence that ICW firms' disappearing pre-ference for equity financing relative to non-ICW firms cannot be explained away by the change in the composition of sample firms or the changing external financing markets during the financial crisis.

We also investigate whether the surprise component of ICW drives our results. We use the model of Ashbaugh-Skaife, Collins, and Kinney (2007) (Model 1 in Table 4, pp. 182) to obtain the probability of having ICWs. If a firm demonstrates a lower (higher) likelihood of having ICWs and turns out to have ICWs, we define this firm as having high (low) unex-pected ICWs. We use two indicator variables to denote low and high unexpected ICWs (*HUnexpectedICW* and *LUnexpectedICW*). We combine alternative pre- and post-disclosure samples and estimate a difference-in-differences regression of Equations 1 and 2. We use an indicator variable *After* to denote before and after ICW disclosure. Untabulated results show that the coefficient on *HUnexpectedICW* × *After* is positive and significant for the size of financing but not significant for the frequency of financing, indicating that the ICW disclo-sure reduces the size of equity financing for firms with high unexpected ICWs. Interestingly, the coefficient on *LUnexpectedICW* × *After* is positive and significant for the frequency of financing but not significant for the size of financing, suggesting that the ICW disclosure reduces the frequency of equity financing for firms with low unexpected ICWs. Overall, our evidence seems to indicate that the ICW disclosure has a greater effect on firms with unex-pected ICWs given that size of financing represents cash inflow to the firm.

Restatement effect versus ICW disclosure effect. Weak internal controls are thought to breed financial misstatements. Chen et al. (2013) find that firms shift to debt financing after announcement of material restatements. A natural question to ask is whether our docu-mented shifts in financing choices are ascribable to the restatement effect. To assess the confounding effect of accounting irregularities, we conduct two sets of analyses. We first look into the universe of restatement firms and the universe of ICW firms to obtain an idea of how the two samples overlap. In untabulated results, we find that over the period of 2004 to 2008, the incidence of material restatements for all Compustat firms is 0.56%, while the incidence of ICWs for Section 404 firms amounts to 9.93%. Only 6.69% of ICWs firms announce material restatements in the same year. The statistics indicate that the incidence of ICWs is much higher than that of accounting irregularities and many ICWs firms are not restating firms. Second, we directly control for the effect of restatement in our regression analyses. Consistent with the results for the universal samples, we find that only a small number of our sample firms are restating firms. Our results remain unchanged after controlling for the restatement effect.

In other untabulated robustness checks, we also find that (a) our main inferences are valid after controlling for the endogenous choice of internal control quality,[11] and (b) the effect of ICW disclosure on financing choices is not transient, that is, not limited to the first year post-disclosure.

Additional Analyses—ICWs and Motivations of Equity Issues

We document that ICW firms are more likely to use equity financing as opposed to debt than non-ICW firms and that the disclosure of ICWs reduces this tendency. To illuminate ICW firms' motives in taking on more equity financing, we follow Kim and Weisbach (2008) and Pagano, Panetta, and Zingales (1998) and estimate the ultimate use of capital raised from equity offerings.

Regression Model

Potential motivations of equity offerings can be many, such as rebalancing capital structure, timing the market or exploiting mispricing, and financing investments. These motives are not mutually exclusive. If a firm uses the proceeds to fund investment, we should be able to predict investment as a function of the quantity of capital raised. If market timing is the primary reason for equity offerings, firms should be more likely to hoard the proceeds, thus a positive relation should be observed between changes in cash holdings and the amount of capital raised. Similarly, if the purpose is to rebalance capital structure, the money raised should be used to reduce long-term debt. To examine the use of funds, we consider three variables—cash, total investment, and reduction in long-term debt—over a 2-year interval following the year of equity issuance.

Regarding cash, we calculate the logarithm of changes in cash for 2 years following the issue year scaled by total assets at the beginning of the issue year. For investment and reduction in long-term debt, we consider the logarithm of the accumulation since the issue year, scaled by total assets at the beginning of the issue year. Following Kim and Weisbach (2008), we allow new equity capital and other sources of incremental fund available to firms to enter the specification separately. Because our main interest is on whether the sensitivity of investment to capital raised varies with internal control quality, we include an interaction between equity issue size and *ICW*. Specifically, we estimate the following regression similar to the one in Kim and Weisbach (2008):

$$
\begin{aligned}
USES = {} & \beta_0 + \beta_1 ICW + \beta_2 Log(EquitySize) + \beta_3 ICW \times Log(EquitySize) \\
& + \beta_4 Log(OthSource) + \beta_5 Log(AT_0) + \varepsilon,
\end{aligned}
\tag{5}
$$

where *EquitySize* is sale of common and preferred stock minus purchase of common and preferred stock divided by total assets at the beginning of issue year, and *OthSource* is incremental capital available to firms from other sources estimated as the sum of debt issue, sale of property, plant and equipment (PPE), sale of investment, and sources of other funds, scaled by total assets.

The dependent variable, *USES*, takes one of three measures of possible uses of capital and is defined as follows:

$$USES = Log[\sum_{i=1}^{t}(Invt_i/AT_0)]$$

$$= Log[(Cash_t - Cash_0)/AT_0]$$

$$= Log[\sum_{i=1}^{t}(ChgLTD_i/AT_0)]$$

where $t = 1$, 2 years after equity issuance. AT_0 represents total assets at the beginning of issue year; $Invt$ denotes total investment including capital expenditure, acquisition expense, and R&D expense; $Cash_t - Cash_0$ represents change in cash savings; $ChgLTD$ is reduction of long-term debt. We estimate Equation 5 for the pre- and post-disclosure samples separately, with standard errors robust to clustering at the firm level.

Empirical Results of Impact of ICWs on Use of Equity Issue Proceeds

The results estimated from Equation 5 are reported in Table 7. When the dependent variable is investment, the coefficients on *ICW* are positive and significant for the pre-disclosure sample but not significant for the post-disclosure sample, indicating that ICW firms in general invest more relative to non-ICW firms before the disclosure and the overinvestment is mitigated after the disclosure. The results agree with the findings of Cheng et al. (2013). More importantly, we find that ICW firms invest more equity proceeds than non-ICW firms before the disclosure as the coefficients on the interaction term of equity issue with *ICW* are positive and significant for the pre-disclosure sample, suggesting that funding investments more likely motivates issuance for ICW firms than for non-ICW firms. The coefficient, as expected, turns insignificant post-disclosure, suggesting that the thirst of ICW firms for equity financing to lavish investment subsides after their ICWs become known to the public.

When the dependent variable is change in cash holdings, the positive coefficients on equity issue across all specifications suggest that substantial amounts of capital raised from equity issues are kept as cash. However, we find little evidence that ICW firms keep as cash more money raised from equity offerings than non-ICW firms, as the coefficients on the interaction term are insignificant or negative for both samples. The results suggest that timing the market is unlikely the primary reason for ICW firms' stronger inclination for equity financing pre-disclosure. As to the estimates when the dependent variable is change in long-term debt, we find that consistent with Kim and Weisbach (2008), capital raised from equity issues is less likely to be used to reduce long-term debt than capital from other sources. Interestingly, we find that ICW firms are more likely than non-ICW firms to use equity issue proceeds to rebalance capital structure in both sample periods.[12]

Conclusion

We examine the impact of ICWs on firms' financing choices and whether and how firms alter their financing choices after the mandated disclosure of ICWs. We find that ICW firms are more likely to seek external financing than non-ICW firms before disclosing their ICWs but, post-disclosure, become similar in respect of external financing. This suggests that the previously documented increases in the cost of capital suppress ICW firms' proclivity for external capital rather than make external financing difficult. More importantly, we find that, pre-disclosure, ICW firms are more likely than non-ICW firms to use equity financing as opposed to debt and that this propensity vanishes post-disclosure.

Table 7. Internal Control Weaknesses and Motivations of Equity Issues.

Panel A: Pre-Disclosure.

	Investment		Cash holdings		Reduction of LT debt	
	yr + 1	yr + 2	yr + 1	yr + 2	yr + 1	yr + 2
Intercept	−2.333***	−2.148***	0.342	0.460	−6.257***	−5.228***
	(0.000)	(0.000)	(0.315)	(0.283)	(0.000)	(0.000)
EquitySize	−0.032	−0.052	0.154**	0.228***	−0.500***	−0.474***
	(0.459)	(0.305)	(0.022)	(0.001)	(0.000)	(0.000)
ICW	0.360*	0.572**	0.237	−0.417	1.751***	1.763***
	(0.086)	(0.011)	(0.459)	(0.225)	(0.001)	(0.001)
ICW × EquitySize	**0.087***	**0.113***	**0.107**	**−0.068**	**0.306***	**0.269***
	(0.063)	**(0.038)**	**(0.150)**	**(0.409)**	**(0.008)**	**(0.010)**
OtherSources	0.244***	0.214***	0.303***	0.153	0.059	0.094
	(0.000)	(0.000)	(0.000)	(0.102)	(0.718)	(0.533)
Log(AT)	−0.082**	−0.122***	−0.345***	−0.303***	0.214***	0.168**
	(0.026)	(0.002)	(0.000)	(0.000)	(0.008)	(0.034)
N	300	301	213	226	224	241
R^2	13.09%	13.49%	45.64%	29.20%	21.14%	21.29%

Panel B: Post-Disclosure.

	Investment		Cash holdings		Reduction of LT debt	
	yr + 1	yr + 2	yr + 1	yr + 2	yr + 1	yr + 2
Intercept	−2.660***	−2.268***	−1.336	−0.189	−6.206***	−6.000***
	(0.000)	(0.002)	(0.104)	(0.325)	(0.000)	(0.000)
EquitySize	0.027	−0.049	0.275*	0.149***	−0.328**	−0.628***
	(0.733)	(0.610)	(0.067)	(0.000)	(0.019)	(0.000)
ICW	−0.640	−0.744	−0.394	0.382	0.186	2.379**
	(0.208)	(0.235)	(0.643)	(0.197)	(0.868)	(0.042)
ICW × EquitySize	**−0.059**	**−0.058**	**−0.172**	**0.043**	**0.083**	**0.527***
	(0.557)	**(0.639)**	**(0.416)**	**(0.442)**	**(0.687)**	**(0.018)**
OtherSources	0.326***	0.398***	0.121	0.143***	0.145	0.242
	(0.001)	(0.001)	(0.517)	(0.000)	(0.494)	(0.276)
Log(AT)	0.057	−0.037	−0.098	−0.239***	0.288*	0.216
	(0.517)	(0.689)	(0.498)	(0.000)	(0.096)	(0.153)
N	123	117	76	79	95	98
R^2	15.60%	17.33%	20.44%	25.45%	16.51%	27.34%

Note. This table presents estimated results on the relation between ICWs and use of equity issue proceeds. The pre-disclosure sample includes firm-years with external financing from 2000 to 2002, necessary information on control variables to conduct the use of equity proceeds analysis, and information on internal control status reported under Section 404 from November 15, 2004, to December 31, 2005. ICW and non-ICW firms are matched based on industry, firm size, and performance. The post-disclosure sample includes firms disclosing internal control weaknesses for the first time from 2004 to 2008 and firms never disclosing internal control weaknesses from 2002 to 2008 with external financing 1 year after the disclosure and necessary information on control variables to conduct the use of equity proceeds analysis. ICW and non-ICW firms are matched based on industry, firm size, and performance. Values of *p* based on standard errors robust to clustering at the firm level are provided in parentheses. Variables are as defined in the appendix.

***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

To illuminate ICW firms' motives for taking on greater equity financing pre-disclosure, we examine the use of proceeds. We find that ICW firms are more likely than non-ICW firms to use equity issue proceeds to finance investments. After disclosure, ICW and non-ICW firms exhibit similar preferences in using proceeds, suggesting that ICW firms take on more equity with the motive of financing investment and that disclosure ends this practice. Our overall evidence indicates that the ICW disclosure substantially alters corporate information environment and managerial incentives, which leads to significant changes in firms' debt-equity choices.

Appendix

External Financing Variable		
Dissue	=	Indicator variable equal to one if a firm's net debt issue (long-term debt issuance (data111) − long-term debt reduction (data114) + change in current debt (data34)) in year *t* exceeds 5% of its total assets in year *t* − 1, and zero if net equity issued (sale of common and preferred stock (data108) − purchase of common and preferred stock (data115)) in year *t* accounts for more than 5% of total assets in year *t* − 1. Firm-years in which both debt and equity issues exceed 5% of total assets or neither satisfies the 5% cutoff are not considered.
Issue	=	Indicator variable equal to one if a firm's net debt issue (long-term debt issuance (data111) − long-term debt reduction (data114) + change in current debt (data34)) in year t exceeds 5% of its total assets in year *t* − 1, or if net equity issued (sale of common and preferred stock (data108) − purchase of common and preferred stock (data115)) in year *t* makes up more than 5% of total assets in year *t* − 1 and zero otherwise.
DebtFinSize	=	A firm's net debt issuance divided by total external financing (the sum of net debt issuance and net equity issued), where net debt issuance is estimated as long-term debt issuance (data111) − long-term debt reduction (data114) + change in current debt (data34) and net equity issued as sale of common and preferred stock (data108) − purchase of common and preferred stock (data115).
TotFinSize	=	Total external financing (the sum of net debt issuance and net equity issued) divided by total assets (data6), where net debt issuance is estimated as long-term debt issuance (data111) − long-term debt reduction (data114) + change in current debt (data34) and net equity issued as sale of common and preferred stock (data108) − purchase of common and preferred stock (data115).
Internal Control Disclosure Status		
ICW	=	Indicator variable equal to one if a firm discloses at least one material weakness between November 15, 2004, and December 31, 2005, and zero otherwise for the pre-disclosure sample; indicator variable equal to one if a firm discloses internal control weaknesses for the first time from 2004 to 2008 (excluding firms disclosing ICWs before November 15, 2004), and zero if a firm never discloses an internal control weakness from 2002 to 2008 for the post-disclosure sample.
CompanyICW	=	Indicator variable set to one if a firm reports internal control problems related to lack of segregation of duties, inadequate disclosure controls, ineffective or understaffed audit committee, lack of senior management competency and tone, ineffective internal audit functions, and ineffective personnel and zero otherwise.
AccountICW	=	Indicator variable equal to one for firms reporting only account-level control weaknesses and zero otherwise.

(continued)

Appendix (continued)

Control Variables for Debt-Equity Choice Analysis		
Log(AT)	=	Natural logarithm of total assets (data6).
FirmAge	=	Number of years since firms entered Compustat.
MTB	=	Market-to-book ratio estimated as (total assets (data6) − book value of equity (data60) + market value of equity (data25 × data199)) / total assets (data6).
RDS	=	R&D expense (data46) / sales (data12).
RDMiss	=	Indicator variable equal to one if R&D expense (data46) is missing and zero otherwise.
Tangibility	=	Property, plant, and equipment (data8) / total assets (data6).
ROA	=	Operating income before depreciation (data13) / by total assets (data6).
ZSCORE	=	Computed as (3.3 × pretax income (data170) + sales (data12) + 1.4 × retained earnings (data36) + 1.2 × (current assets (data4) − current liabilities (data5))) / total assets.
CreRating	=	Indicator variable equal to one if a firm has a debt rating assigned by Standard & Poor's and zero otherwise.
Leverage	=	Market leverage defined as (short-term debt (data34) + long-term debt (data9)) / market value of total assets, which is calculated as total assets (data6) + market value of equity (data25 × data199) − book value of equity (data60).
DevTgt	=	Deviation of leverage from the target ratio, which is the predicted value from regression of leverage on a set of control variables.
Div	=	Indicator variable equal to one if a firm pays dividends and zero otherwise.
Analyst	=	Number of analysts following a firm.
BigN	=	Indicator variable equal to one if a firm is audited by Big N accounting firms and zero otherwise.
Turnover	=	Median value of monthly turnover (shares traded / shares outstanding) over past 12-month period.
Ret	=	Monthly stock buy-and-hold return over past 12 months.
MTRB	=	Simulated marginal tax rate (MTRB) based on operating income before interest deduction.
Control Variables for Total External Financing Analysis		
CashFlow	=	Average cash flow growth rate over previous 3 years multiplied by past year's cash flows.
Cash	=	Cash and cash equivalent divided by total assets.
Std(Ret)	=	Standard deviation of monthly stock return in the previous year.
Investment	=	Average investment growth rate over previous 3 years multiplied by past year's investment.
WCapital	=	Computed as (current assets − current liabilities) / total assets.
Variables for the Uses of Equity Proceeds Analysis		
EquitySize	=	Net equity issued (sale of common and preferred stock (data108) − purchase of common and preferred stock (data115)) in year t divided by total assets in year $t − 1$.
OthSource	=	Incremental fund available to firms from other sources estimated as the sum of debt issue, sale of property, plant and equipment (PPE), sale of investment, and sources of other funds scaled by total assets.
$Log(AT_0)$	=	Natural logarithm of total assets at the beginning of the issue year.

Declaration of Conflicting Interests

Funding

Notes

1. Hope and Thomas (2008) examine the nondisclosure effect of geographic earnings on firms' performance. They first investigate the impact of nondisclosure of geographic earnings post-SFAS 131 on foreign operations and firm value and then examine whether any performance differences also exist pre-SFAS 131.
2. SOX Section 302 requires management to assess and report the effectiveness of firm internal control over financial reporting and Section 404 demands both management assessment of, and auditor attestation to, the effectiveness of internal control. While managers may have some discretion over Section 302 reporting, their discretion is limited by auditor attestation to Section 404 reporting.
3. Doyle, Ge, and McVay (2007b) note that many ICWs have been around for some time before the mandated disclosure. We discuss the feasibility of using backfilling to code ICW firms and possible measurement errors related to the backfilling in detail in later sections.
4. As noted by Chen, Cheng, and Lo (2013), the costs of private and public debt are only available for firms obtaining bank loans or those that have access to public debts. It is unclear what the cost would have been had other firms also obtained debt financing; it could be higher or lower than that estimated for firms with debt financing.
5. Some firms might disclose ICWs under Section 302 (effective as of August 29, 2002) but remediate them before Section 404 became effective. If so, we still code the firms as ICW firms. We have 57 firms falling into this case. We acknowledge possible measurement errors to code firms using backfilling. Prior studies, however, indicate that backfilling seems to be a feasible way. For example, Doyle, Ge, and McVay (2007a) measure proxies for accruals quality from 1996 to 2002 (financial period) and assume that firms that disclosed ICWs from August 2002 to November 2005 (disclosure period) have ICWs during the financial period. Cheng, Dhaliwal, and Zhang (2013) use backfilling for 1 year to examine how ICW disclosure affects firms' investment efficiency.
6. If, instead, we allow the pre- and post-disclosure samples to overlap by constructing the pre-disclosure sample as 3 year preceding the disclosure year (*t*) and the post-disclosure sample as 3 year following the disclosure year, the 2 years of proceeds usage for the pre-disclosure sample (*t* - 1) will include year *t* + 1, the year in the post-disclosure sample, making it difficult to draw clear inferences.
7. Equity issues include all share issuances that result in cash flows to the firm, such as SEOs, private placements, rights offerings, stock sales through direct purchase plans, preferred stock issues, conversions of debt and preferred stock, and employee options, grants, and benefit plans. The only share issuances that are excluded from this measure are those that do not result in cash flows to the firm (e.g., stock-financed mergers). Equity issue in our sample therefore is not limited to SEOs. As shown by Fama and French (2005), most of the share issuances are not SEOs.

8. To investigate the likelihood of external financing, we use a sample of firms with and without external financing. We employ the same matching method discussed above to identify a non-ICW control firm for each ICW firm.

9. The 3.0% increase in the likelihood of issuing equity is the estimated marginal effect of the *ICW* variable on equity issue probability, which is the expected increase in the equity issue probability as a function of the *ICW* variable, holding all other variables at the sample means.

10. The variable, *CompanyICW*, is set to one if a firm reports internal control problems related to lack of segregation of duties, inadequate disclosure controls, ineffective or understaffed audit committee, lack of senior management competency and tone, ineffective internal audit functions, and ineffective personnel, and zero otherwise. The variable, *AccountICW*, is equal to one for firms reporting only account-level control weaknesses, and zero otherwise.

11. We tackle the endogeneity issue using a technique suggested by Wooldridge (2002), which involves three steps. In the first step, we predict internal control quality by regressing *ICW* on a set of variables identified by prior research to be related to ICWs. In Steps 2 and 3, we follow a standard instrumental approach, with the predicted value obtained from Step 1 as an instrument. For the size of equity financing (Equation 2), we use the traditional two-stage least squares (2SLS) estimation procedure. The untabulated results show that the coefficients on *ICW* remain negative and significant pre-disclosure and insignificant post-disclosure, indicating that our main inferences are valid after controlling for the endogenous choice of internal control quality.

12. We also examine the relation between ICW and CEO compensation and find that there is no significant difference between ICW and non-ICW firms pre- and post-disclosure in total compensation, option grants, restricted stocks, cash compensation, and composition of compensation. However, we find both ICW and non-ICW firms lower their option-based compensation post-SOX (with no significant difference between the two types of firms), consistent with the notion that firms slash option grants after SOX. We obtain similar results while looking at compensation for top five executives. This is, indeed, an interesting area for future research.

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