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Internal Control Weakness and Bank Loan Contracting: Evidence from SOX Section 404 Disclosures

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ABSTRACT: Using a sample of borrowing firms that disclosed internal control weaknesses (ICW) under Section 404 of the Sarbanes-Oxley Act, this study compares various features of loan contracts between firms with ICW and those without ICW. Our results show the following. First, the loan spread is higher for ICW firms than for non-ICW firms by about 28 basis points, after controlling for other known determinants of loan contract terms. Second, firms with more severe, company-level ICW pay significantly higher loan rates than those with less severe, account-level ICW. Third, lenders impose tighter nonprice terms on firms with ICW than on those without ICW. Fourth, fewer lenders are attracted to loan contracts involving firms with ICW. Finally, our within-firm analyses show that banks increase loan rates charged to ICW firms after their disclosure of internal control problems and that banks reduce loan rates after firms remediate previously reported ICW.

Keywords: *internal control weaknesses*; *loan contracting*; *Sarbanes-Oxley Act* (*SOX*).

JEL Classifications: *G21*; *G32*; *K22*; *M41*.

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I. INTRODUCTION

In response to a series of corporate failures and accounting scandals that started with the Enron debacle and the subsequent Andersen collapse, the U.S. Congress passed the Sarbanes-Oxley Act (SOX) in July 2002. Section 404 of SOX (SOX 404) requires company management to assess the effectiveness of internal controls over financial reporting and to provide periodic auditor-attested evaluations of internal control effectiveness. The major rationale behind this requirement is that lack of adequate internal controls leads to poor financial reporting and increases information risk, which in turn increases the cost of external financing (e.g., U.S. House of Representatives 2005).

Several studies have examined the impact of material internal control weakness (ICW) on information uncertainty and the cost of capital from the perspective of equity stakeholders, and the evidence provided is mixed (e.g., Ogneva et al. 2007; Beneish et al. 2008; Hammersley et al. 2008; Ashbaugh-Skaife et al. 2009). For example, using a sample of SOX 404 filers with the U.S. Securities and Exchange Commission (SEC), Ogneva et al. (2007) find no significant differences in their implied cost of equity estimates between ICW firms and non-ICW firms. In contrast, Ashbaugh-Skaife et al. (2009) report that ICW firms exhibit significantly higher beta risk and cost of equity capital than non-ICW firms, suggesting that information risk arising from ICW is priced in the stock market. However, previous research has paid little attention to the economic consequences of internal control quality from the perspective of credit stakeholders. To help fill this void, our study aims to provide systematic evidence on the effects of ICW on bank loan contracting. Specifically, our analyses focus on the manner in which ICW impacts various features of loan contracts, such as loan spreads, collateral requirements, restrictive covenants, and the number of lenders for a loan.

We are motivated to examine the loan contracting consequences of ICW for several reasons. First, bank loans are a major source of external financing in the United States and most other countries (e.g., Graham et al. 2008).[1] Thus, it is economically important to investigate whether internal control quality is associated with the cost of bank loans. This investigation has the potential to provide evidence on the benefit of maintaining and reporting internal control effectiveness according to SOX 404. Second, measurement errors inherent in the implied cost of equity estimates can lead to the inconclusive results of prior research on the relation between ICW and the cost of capital.[2] In contrast, the cost of private debt is observed directly through loan contract terms and is subject to fewer measurement errors. This allows us to make a cleaner inference about the impact of ICW on the cost of external financing. Finally, multifaceted features of loan contracts provide a unique opportunity to assess not only the direct cost of ICW (i.e., higher loan spreads), but also the associated indirect cost (i.e., tighter nonprice terms).[3]

[1] Since 1980, bank loans have consistently accounted for more than 50 percent of total debt financing in the United States (see Graham et al. 2008). The volume of syndicated loans reached $1.69 trillion in 2007, according to the DealScan database.

[2] Various implied cost of equity measures are generally inferred from the current stock price, based on some valuation models. Thus, the accuracy of these measures depends critically on the validity of the assumptions and structures of the valuation models used. Moreover, some key inputs to the valuation models can also suffer from measurement errors. For example, it is widely recognized in the literature that analyst earnings forecasts, a proxy for expected future earnings in these models, are biased upward.

[3] The restrictive covenants can also limit flexibility in investment decisions or cause the borrower to abandon profitable investment projects to comply with them, which increases the indirect cost of debt.

To provide evidence of the impact of ICW on various features of loan contracts, we construct a sample of 3,164 loan facility-years for borrowers that filed SOX 404 disclosures with the SEC during 2005–2009. We then compare various features of loan contracts with ICW borrowers with those with non-ICW borrowers, after controlling for borrower- and loan-specific characteristics deemed to affect the contract terms. Briefly, our main results show the following.

First, we find that the loan spread is higher for ICW firms than for non-ICW firms by about 28 basis points (bps) in the full-model regressions, after controlling for other factors influencing loan terms, default risk, credit quality, and internal control quality. This finding is consistent with the notion that banks take into account internal control over financial reporting when setting the price term of loan contracts. That is, banks view ICW as an incrementally significant information risk factor, above and beyond traditional credit risk factors, that increases pre-contract information uncertainty, as well as post-contract monitoring and re-contracting costs. Our results suggest that the quality of the financial reporting system plays an important role in private debt contracting and that information risk incurred by weak internal controls cannot be removed by lenders' access to borrowers' inside information.

Second, we find that the nature or severity of material weakness in internal control matters in loan contracting. Specifically, we find that borrowers with more severe, company-level ICW (e.g., organizational control or governance flaws) pay higher loan rates than those with less severe, account-level ICW (e.g., inventory recording flaws and lease accounting problems). This finding suggests that lenders are able to differentiate more severe ICW problems from less severe ones when designing loan contracts. To some extent, it implies that the comparative advantages that banks have in accessing inside information help them reduce, but not completely eliminate, the information risk associated with account-level control problems, but lenders have more difficulty obtaining useful inside information that can help mitigate information risk associated with company-level control problems.

Third, we find that lenders impose tighter nonprice terms on ICW borrowers than on non-ICW borrowers. In particular, we find that the likelihood of a loan being secured by collateral is higher for ICW borrowers than for non-ICW borrowers. We also provide evidence that collateral and restrictive covenants are used more intensively in loan contracts involving borrowers with company-level control problems than in those involving borrowers with account-level control problems. Fourth, we find that the number of lenders in each loan is smaller for loans to ICW borrowers than for those to non-ICW borrowers, consistent with the theory that information asymmetries between the borrower and potential lenders attract fewer lenders in a loan syndicate (e.g., Sufi 2007).

Fourth, using a sample of firms that initiate similar loans both before and after their first-time internal control disclosures under SOX 404, we conduct within-firm analyses and find that the loan spreads charged to ICW firms significantly increase after SOX 404 disclosures, while the loan spreads charged to non-ICW firms significantly decrease after SOX 404 disclosures. This suggests that SOX 404 disclosures provide new information to the private debt market regarding a borrower's information risk. Moreover, we show that firms enjoy a meaningful reduction in the cost of bank loans after they remediate previously reported ICW problems, consistent with the equity market evidence documented by Ashbaugh-Skaife et al. (2009).

Finally, we find that the number of financial covenants imposed on loans to *both* ICW and non-ICW firms decreases after SOX 404 disclosures. In a concurrent study, Costello and Wittenberg-Moerman (2011) find that the number of financial covenants decreases after a firm discloses ICW under SOX Section 302 (SOX 302). The authors interpret this result as evidence that ICW disclosure *per se* leads to decreased use of financial covenants. However, because Costello and Wittenberg-Moerman (2011) include only ICW firms in their sample, their within-firm analysis seems to be missing a control condition, which could limit the inferences

they may draw from their analysis.[4] We conjecture that the decreased use of financial covenants for both ICW and non-ICW firms could be driven, at least partially, by a general regulatory effect of SOX.[5]

This study contributes to the existing literature in at least three ways. First, our study adds to the literature on the economic consequences of the quality of the financial reporting system in the debt market. Unlike studies of debt contracting that rely on researchers' self-constructed reporting quality proxies (e.g., Bharath et al. 2008), we use auditor-attested evaluations of material weakness in internal control, a direct signal of a low-quality financial reporting system. Our results suggest that the quality of the financial reporting system plays an important role in the private debt market, even though the lenders in this market have superior information processing capabilities and better access to borrowers' inside information. Our study is related to Bharath et al. (2008) and Graham et al. (2008), who show that accrual quality and financial restatement are associated with the cost of private debt. We show that our results remain the same after controlling for accrual quality and financial restatement. This finding suggests that our results are largely driven by the dimensions of a firm's information system quality that is incremental to the accounting quality measures used in prior research.[6]

The concurrent studies by Dhaliwal et al. (2011) and Costello and Wittenberg-Moerman (2011) also examine the relation between ICW and cost of debt. Dhaliwal et al. (2011) find that the cost of debt increases after the disclosure of a material weakness in an initial SOX 404 report, which is consistent with our within-firm analysis. A key difference between our study and Dhaliwal et al. (2011) is that their analysis focuses on the credit spread in the secondary bond market (i.e., public debt market), whereas our approach focuses on the cost of debt in the primary bank loan market (i.e., private debt market).[7] In addition, Dhaliwal et al. (2011) use change analysis, while our study conducts both cross-sectional and change analyses. Costello and Wittenberg-Moerman (2011) examine the impact of ICW disclosures on the cost of bank loans and report somewhat similar findings to our within-firm analysis. An important feature that distinguishes their study from ours is that their focus is on unaudited SOX 302 disclosures, whereas ours is on auditor-attested SOX 404 disclosures. We argue that, compared to SOX 302 disclosures, auditor-attested SOX 404 disclosures are more reliable indicators of a firm's financial reporting system quality. Moreover, as their study investigates only the temporal changes in loan terms for ICW firms, they are unable to provide evidence on the differences in various loan features between loans to ICW firms and loans to non-ICW firms.

Second, our study contributes to the loan contracting literature, as well. Evidence reported in this study suggests that information risk associated with ICW is a priced risk factor that is distinct from traditional credit risk factors. Our results also show that banks not only incorporate ICW information into loan contract terms, but they are also able to differentiate between company- and account-level ICW problems when designing loan contracts and monitoring post-contract credit quality.

[4] See Section VI for detailed discussions.

[5] For example, the improved general information environment and governance by SOX could reduce the need for bank monitoring through financial covenants. In our tests, we do find that the number of financial covenants decreases more (significant at the 10 percent level) for ICW firms than for non-ICW firms. However, this could be interpreted as evidence that the general regulatory impact of SOX on ICW firms is more pronounced because of their higher *ex ante* information asymmetry.

[6] Section II provides in-depth discussions on the incremental usefulness of our study in establishing the empirical link between accounting quality (or, more generally, information risk) and cost of debt.

[7] As discussed further in Section II, unlike investors in the bond market, banks have comparative advantages in accessing borrowers' inside information. For example, Fama (1985) argues that banks have superior information due to their access to information from an organization's decision process not otherwise publicly available. In contrast, public debt holders (e.g., investors of publicly traded bonds) rely mostly on publicly available information.

Finally, our study provides new evidence on the benefits of SOX 404 internal control disclosure in the private debt market, and thus contributes to the debate on the costs and benefits of SOX 404 compliance. The combined empirical evidence in Ashbaugh-Skaife et al. (2009), Dhaliwal et al. (2011), and our study suggests that SOX 404 disclosure is informative to stakeholders in the equity market, the public debt market, and the private debt market.

Section II develops research hypotheses. Section III presents the empirical model for hypothesis testing. Section IV describes the sample and data sources, presents descriptive statistics, and discusses univariate results. Section V reports the results of multivariate tests on the impact of ICW on price and nonprice terms and the number of lenders. Section VI reports the results of within-firm analyses and various robustness checks. Section VII concludes.

II. MOTIVATION AND HYPOTHESES

Duffie and Lando (2001) develop a theory that information risk faced by lenders is incremental to borrower default risk. Their analysis indicates that credit suppliers require compensation not only for fundamental credit risk, but also for imperfect information-related risk. Easley and O'Hara (2004) and Lambert et al. (2007) develop similar theoretical predictions on the relation between information risk and cost of capital. Several recent empirical studies provide evidence supporting the above theories. For example, using accrual quality as an inverse measure of information risk, Francis et al. (2005) show that accrual quality is negatively related to a firm's average cost of debt. Similarly, Bharath et al. (2008) find that banks charge lower loan spreads and impose less stringent nonprice terms for firms with higher accrual quality. Finally, Graham et al. (2008) show that borrowers that restate their financial statements tend to be given unfavorable loan contract terms.

Our study extends the above research by examining the relation between ICW and bank loan contracting. We posit that weak internal controls introduce both intentional reporting biases and unintentional accounting errors into the financial reporting process, thereby increasing information risk and the cost of bank loans (Public Company Accounting Oversight Board [PCAOB] 2007). Despite the findings of previous research that ICW is related to accrual quality (e.g., Doyle et al. 2007b; Ashbaugh-Skaife et al. 2008) and that accrual quality is associated with the cost of debt (Bharath et al. 2008), our research is useful for several reasons.

First, the implications from accrual quality research are limited by the potential inaccuracy inherent in the accrual quality measures used; their accuracy relies typically on the validity of (discretionary) accrual models, which have been attracting increasing criticism.[8] Given the problems inherent in accrual quality measures, the empirical link between accounting information quality and cost of debt is far from settled. On the other hand, a SOX 404 auditor-attested evaluation of an internal control system is a relatively less ambiguous accounting quality measure (e.g., Ashbaugh-Skaife et al. 2009). Thus, examining the relation between ICW and the cost of bank loans is a useful exercise to further our understanding of the impact of accounting system quality on the cost of debt.

Second, even if accrual quality is measured without error, such a measure captures only the quality of the bottom line item of a firm's external financial reports. However, there is much more information in a firm's financial reports than just earnings numbers. For example, given their superior information processing capability, banks can overcome the problem of low-quality accruals by carefully examining the information in the notes to the financial statements. In contrast, ICW disclosures reflect the quality of a firm's entire information production system, which will, in

[8] See Dechow et al. (2010) for a comprehensive discussion on the problems of the various accrual quality measures.

turn, affect the quality of a variety of information items in the financial reports, including notes to financial statements and many other non-bottom-line items.

Third, unlike arm's-length investors in the equity and bond markets, commercial banks and other private lenders have comparative advantages in accessing borrowers' inside information that is useful for mitigating pre-contract information uncertainty and post-contract monitoring problems (Fama 1985; Cole 1998; Rajan 1992; Denis and Mihov 2003; Bharath et al. 2008). As a result, banks may be able to overcome information problems associated with poor-quality financial reporting at a relatively low cost. This implies that the quality of a firm's external financial reporting may be of lesser importance to banks than to widely dispersed equity and/or bondholders. However, the proxies used in the literature capture only the quality of externally reported earnings (e.g., accrual quality, restatements). In contrast, a firm's internal control system can affect the quality of its inside information, as well as information in externally oriented financial reports. For example, Feng et al. (2009) find that management earnings guidance is less accurate for firms with ICW, suggesting that ICW affects the quality of internal reports used by managers. The authors argue that even insiders cannot overcome problems arising from ineffective internal controls. Thus, we argue that ICW is a comprehensive information quality indicator that is able to capture the quality of both inside and publicly reported accounting information.

Overall, we believe that ICW is a more comprehensive and accurate indicator of a firm's accounting information risk and that establishing the link between ICW and the cost of bank loans can provide more convincing evidence for the pricing of accounting information risk in the private debt market. Moreover, documenting the benefits of effective internal controls and internal control disclosures is interesting in its own right, given the substantial cost of SOX 404 compliance. To provide empirical evidence on the role of internal control quality in loan pricing, we test the following hypothesis in alternative form:

H1: Controlling for other determinants, loan spreads are higher for ICW borrowers than for non-ICW borrowers.

Not all internal control material weaknesses have the same nature and potential severity. Moody's Investors Service (2004, 2006, 2007; hereafter, Moody's) classifies the various material weaknesses into two types, account-level material weaknesses (Category A) and company-level material weaknesses (Category B). Account-level material weaknesses relate to controls over specific account balances or transaction-level processes, either of which is relatively "auditable." Moody's is less concerned about this type of material weakness and does not expect to take any rating action for firms reporting it. Company-level material weaknesses relate to the overall control environment or financial reporting process, and they have a pervasive effect on a company's financial reporting. Moody's contends that company-level material weakness calls into question not only management's ability to prepare accurate financial reports, but also its ability to control the business. Thus, Moody's is more concerned about company-level material weakness and more likely to take rating action for firms with company-level control problems.

Consistent with Moody's arguments, previous research documents that account- and company-level material weaknesses have different impacts. For example, Doyle et al. (2007b) find that the presence of company-level weakness results in lower accruals quality, but find no significant relation between the presence of account-level weakness and accrual quality. This evidence suggests that company-level weakness hampers the quality of financial reporting to a greater extent than does account-level weakness. To examine whether the nature or severity of ICW matters in loan pricing, we test the second hypothesis in alternative form:

H2: Controlling for other determinants, loan spreads are higher for borrowers with company-level ICW than for those with account-level ICW.

Bank loan contracts include not only the price term (i.e., loan spread), but also various nonprice terms, such as collateral requirements and restrictive covenants. Lenders use these nonprice terms (as well as the price term) when designing loan contracts in an attempt to mitigate (1) agency costs of debt arising from agency conflicts between shareholders and debtholders (Smith and Warner 1979), (2) information problems faced by lenders (Graham et al. 2008; Kim et al. 2010), and (3) potential conflicts between lenders and borrowers (Vasvari 2008). Extant evidence shows that lenders are more likely to require collateral for borrowers with opaque information (e.g., Berger and Udell 1990; Rajan and Winston 1995; Jimenez et al. 2006). We therefore expect that banks are more likely to require borrowers with ICW problems to pledge collateral on their loans. This leads to our third hypothesis:

H3: Controlling for other determinants, the likelihood of loans being secured by collateral is higher for ICW borrowers than for non-ICW borrowers.

The debt covenant literature indicates that lenders use loan covenants to improve the *ex post* monitoring of changes in credit quality, although the use of covenants also incurs costs of reduced flexibility for the borrower (Smith and Warner 1979; Rajan and Winston 1995; Bradley and Roberts 2004). In particular, Rajan and Winston (1995) show that the inclusion of restrictive covenants in loan contracts provides lenders with a strong incentive to monitor more closely credit quality subsequent to loan initiations. To the extent that lenders are likely to have higher incentives to monitor the post-contract performance of borrowers with poor reporting quality, we expect that restrictive covenants are more intensively used in loans involving borrowers with ICW problems than in those involving borrowers without such problems. This leads to our fourth hypothesis:

H4: Controlling for other determinants, the use of restrictive covenants in loan contracts is more intensive and prevalent for ICW borrowers than for non-ICW borrowers.

The syndicate loan literature shows that fewer lenders are involved in a loan deal when borrowers have information problems. This occurs because a syndicate structure with fewer lenders helps minimize free-rider problems in private information gathering and facilitates *ex post* monitoring (Dennis and Mullineaux 2000; Sufi 2007). Thus, we expect the number of lenders to be smaller for loan contracts with ICW borrowers than for loan contracts with non-ICW borrowers. This leads to our final hypothesis:

H5: Controlling for other determinants, the number of lenders in a loan deal is smaller for ICW borrowers than for non-ICW borrowers.

III. EMPIRICAL MODEL

To evaluate the impact of ICW on various features of loan contracting, we specify the following regression model:

$$\begin{aligned} Loan\_Feature = {} & \alpha_0 + a_1 Weak + \alpha_2 Loan\text{-}specific\_Control \\ & + a_3 Borrower\text{-}specific\_Control + a_4 Economy\text{-}wide\_Control \\ & + (Year\_Indicators) + (Industry\_Indicators) + Error, \end{aligned} \tag{1}$$

where, for each loan facility and borrowing firm, all variables are as defined in Appendix A. The dependent variable, *Loan_Feature*, refers to one of the following features of a loan contract: (1) the price term, namely, the drawn all-in spread (*AIS*); (2) the nonprice terms, including the likelihood of the loan being secured by collateral (*DSecured*), the number of financial covenants included in each loan (*FinCovIndex*), and the number of general covenants included in each loan (*GenCovIndex*); and (3) the number of lenders involved in the loan deal (*NLenders*).

The variable *AIS* proxies for the interest cost of borrowing and is measured by the drawn all-in spread (plus the upfront fee and annual fee, if any) in basis points in excess of the benchmark rate, that is, the London Inter-Bank Offer Rate (LIBOR). The test variable *Weak* is an indicator variable that equals 1 if the auditor concludes in the SOX 404 report filed with the SEC that the borrower's internal control over financial reporting is ineffective for the fiscal year, and 0 otherwise. When *AIS* is used as the dependent variable, that is, *Loan_Feature* in Equation (1), the coefficient on *Weak* captures the difference in the loan spread charged to borrowers with ICW problems *vis-à-vis* those without such problems.[9] Therefore, H1 implies $\alpha_1 > 0$. Similarly, H3 (H4) is supported if we observe $\alpha_1 > 0$ when the dependent variable is *DSecured* (*FinCovIndex* or *GenCovIndex*). H5 implies $\alpha_1 < 0$ when the dependent variable is *NLenders*.

To test whether company-level ICW differs systematically from account-level ICW in terms of its impact on loan contracting features (H2),[10] we also estimate Equation (1) after replacing *Weak* by two indicator variables, *Company_ICW* and *Account_ICW*, which equal 1 for borrowers that report any company-level ICW (and borrowers with incomplete internal control assessment)[11] and for those that report any account-level weakness, respectively, and 0 otherwise. H2 is supported if the coefficient on *Company_ICW* is greater than that on *Account_ICW*.

The loan contracting literature shows that several loan-specific characteristics are related to the interest cost of borrowing (e.g., Strahan 1999; Dennis et al. 2000; Bharath et al. 2008; Graham et al. 2008; Vasvari 2008; Kim et al. 2010). We include in Equation (1) a set of loan-level control variables, that is, *Log_Maturity*, *Log_Loan_Size*, *Log_NLenders*, and *Performance_Pricing*, when examining the effect of ICW on loan spreads. The variable *Log_Maturity* is the natural log of loan maturity in months, and *Log_Loan_Size* is measured by the natural log of the dollar amount of each loan facility given to a borrower. Previous research finds that lenders charge lower interest rates for shorter-maturity loans and larger loan facilities (e.g., Graham et al. 2008). Therefore, we expect a positive coefficient for *Log_Maturity* and a negative coefficient for *Log_Loan_Size*. The variable *Log_NLenders* is the natural log of the number of lenders in a loan deal, and *Performance_Pricing* is an indicator variable that equals 1 for loans with performance pricing provisions, and 0 otherwise. We expect loan contracts involving larger numbers of lenders and performance pricing provisions to have lower interest rates.

We also control for a set of borrower-specific variables that are known to affect credit quality and, thus, loan contract terms: *Size*, *Leverage*, *MB*, *Profitability*, *Tangibility*, and *CashVol*. The variables *Size* and *Leverage* are measured by the natural log of total assets and the ratio of long-term debt to total assets, respectively. We expect *Size* (*Leverage*) to be positively (negatively) related to credit quality. The variable *MB* is the market value of equity plus the book value of debt divided by the book value of total assets. To the extent that *MB* proxies for a borrower's growth potential, *MB* is likely to be positively associated with credit quality. However, growing firms are often faced with high risk. In such a case, *MB* is likely to be inversely associated with credit quality. The variable *Profitability* refers to earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets; *Tangibility* is the ratio of property, plant, and equipment (PP&E) to total

[9] We define a borrower as a non-ICW firm if its external auditor concludes that the firm maintains, in all material respects, effective internal control over financial reporting in the annual report.

[10] In our study, company-level ICW includes problems related to inadequate disclosure control, an ineffective or understaffed audit committee, lack of senior management competency and tone, ineffective internal audit function, ineffective personnel, and the segregation of duties, while account-level control weaknesses include all other weaknesses.

[11] Moody's Investors Service (2006, 2007) argues that the inability to complete the Section 404 report is itself a company-level control weakness that generally merits rating committee consideration. Thus, we view firms that did not finish internal control assessments as having company-level weaknesses. In our sample, only two firms fall into this category. Excluding these two firms from the sample does not change our empirical results.

assets; and *CashVol* refers to the standard deviation of quarterly cash flows from operations (scaled by yearly total assets) over the past five fiscal years. We expect *Profitability* and *Tangibility* to be positively associated with credit quality, and *CashVol* to be inversely associated with credit quality.

To control for borrower default risk, we construct a comprehensive measure of default risk incorporating three default risk proxies that have been widely used in the literature: Altman's (1968) z-score, Ohlson's (1980) O-score, and Shumway's (2001) probability of bankruptcy. Specifically, we apply principal component analysis to the three proxies and extract the first principal component, which is defined as:[12]

$$\begin{aligned} Default\_Risk = & -0.7999 \times z\text{-}score + 0.8948 \times O\text{-}score + 0.6239 \\ & \times Probability\ of\ Bankruptcy. \end{aligned}$$

We then rank it in each fiscal year and use the decile rank value (*RDefault_Risk*) as our default risk measure in our regression analyses. This ranked measure is constructed in such a way that a higher value of *RDefault_Risk* represents a higher default risk.

Hammersley et al. (2008) show that ICW disclosures are often accompanied by restatements. Further, Graham et al. (2008) document that loans initiated after restatements have significantly higher spreads, shorter maturities, higher likelihoods of loans being secured by collateral, and more covenant restrictions. Thus, restatements may be an important confounding factor in our study.[13] To ensure that our results are not driven by the effect of financial restatements, we include in our model an indicator variable, *Restate*, which equals 1 if the firm restates its financial statements in the year of ICW disclosure. Moreover, Bharath et al. (2008) find that accrual quality affects the terms of bank loan contracts. To alleviate the concern that our results may simply pick up the effects of accrual quality on the cost of debt, we also control for accrual quality (*AbsAccr*) in our regression model. The variable *AbsAccr* is estimated using the modified Jones model (Dechow et al. 1995), allowing for accounting conservatism (Ball and Shivakumar 2006).

Previous research has identified additional firm characteristics that are possible determinants of ICW (Ashbaugh-Skaife et al. 2007; Doyle et al. 2007a). To the extent that these variables are correlated with both ICW and loan contract terms, their omission could create a problem of correlated omitted variables. To avoid this problem, we also control for the following additional firm characteristics: auditor quality (*Big4*), firm age (*Age*), the number of the firm's business segments (*NSegment*), inventory holdings (*Inventory*), a firm's involvement in mergers and acquisitions (*M&A*), organizational change (*Restructure*), the existence of foreign sales (*Foreign*), sales growth (*Sale_Growth*), and the presence of aggregate loss (*Loss*).[14]

In addition, we include two economy-wide variables, *Credit_Spread* and *Term_Spread*, to control for the potential effects of macroeconomic conditions on loan contracting. Here, *Credit_Spread* is the difference in yield between BAA- and AAA-rated corporate bonds, while *Term_Spread* is the difference in yield between ten-year and two-year U.S. Treasury bonds.

[12] Here, z-score = 1.2 × (working capital/total assets) + 1.4 × (retained earnings/total assets) + 3.3 × (EBIT/total assets) + 0.6 × (market value of equity/total liabilities) + 0.999 × (sales/total assets); O-score = −1.32 − 0.407 × log(total assets) + 6.03 × (total liabilities/total assets) − 1.43 × (working capital/total assets + 0.076 × (current liabilities/current assets) − 1.72 × (1 if total liabilities > total assets, 0 otherwise) − 2.37 × (net income/total assets) − 1.83 × (operating income before depreciation/total liabilities) + 0.285 × (1 if net income is negative for the last two years, 0 otherwise) − 0.521 × ((net income$_t$ − net income$_{t-1}$)/(|net income$_t$|+|net income$_{t-1}$|)); and Probability of Bankruptcy = $e^w/(1+e^w)$, where w = −13.303 − 1.982 × (net income/total assets) + 3.593 × (total liabilities/total assets) − 0.467 × log (firm's market capitalization/total market capitalization) − 1.809 × excess stock return over the value-weighted index return in the past 12 months + 5.791 × stock return volatility in the past 12 months.

[13] Note, however, that a restatement is in itself a reflection of ineffective internal controls.

[14] Refer to Appendix A for detailed definitions of these variables.

Finally, we include *Loan_Type_Indicators* and *Loan_Purpose_Indicators* to control for potential differences in the price and nonprice terms of loan contracts associated with the different types and purposes of loans. We also include *Industry_Indicators* and *Year_Indicators* to control for potential differences in loan features across industries and over years.

IV. SAMPLE AND DESCRIPTIVE STATISTICS

Sample and Data Sources

Our initial sample consists of all public companies that have bank loan data in the Loan Pricing Corporation DealScan database for the five-year period 2005–2009. The DealScan loan data are compiled for each transaction or deal. Each deal, which is a loan contract between a borrower and bank(s) at a specific date, can have only one facility or a package of several facilities with different price and nonprice terms.[15] We consider each facility as a separate observation for our sample, as many loan characteristics and loan spreads vary across facilities. We then require that borrowers' SOX 404 disclosures are available from the Audit Analytics database before loans are initiated. The SOX 404 disclosure file from Audit Analytics provides information on the identities of disclosing companies, overall internal control effectiveness, filing dates, types and reasons of deficiencies, and so forth. We obtain borrowers' financial statement data from Compustat. Bank loan data are merged with the most recently disclosed internal control and financial statement data for the fiscal year before loans are initiated. The procedure ensures that the *Weak* measure reflects an observable result of SOX 404 compliance. We exclude financial companies from our sample and require that all loan facilities in our sample be senior debts. With regard to the types of loans, our sample includes term loans, revolvers, and 364-day facilities, but excludes bridge loans and non-fund-based facilities, such as leases and standby letters of credit. Our final sample includes 3,164 facility-years for 1,363 firms over the 2005–2009 period. Table 1 presents the sample selection procedure and the distribution of loan facilities in our sample by year and loan type. As shown in Table 1, Panel B, about 67.70 percent of loan facilities in our sample are revolvers, while about 28.03 percent and 4.27 percent are term loans and 364-day facilities, respectively.

Descriptive Statistics

Table 2, Panel A, presents descriptive statistics for all loan-specific variables at the facility level, while Panel B reports descriptive statistics for our test variables and all borrower-specific variables considered in this study. As shown in Table 2, Panel A, the mean and median of the drawn all-in spread over the LIBOR (i.e., *AIS*) are around 186 and 150 bps, respectively, with a standard deviation of about 159 bps. The mean (median) maturity is about 53 (60) months, while the mean (median) facility size is $478 million ($200 million). On average, 59.5 percent of the loan facilities in our sample have a performance pricing provision, while 68.1 percent of them have collateral. The mean and median numbers of restrictive covenants included in each loan contract are about 1.65 and 2.00, respectively, for financial covenants, and about 3.73 and 3.00, respectively, for general covenants. Most of the loan facilities in our sample are syndicated loans involving, on average, nine lenders.

As shown in Table 2, Panel B, about 9.6 percent of borrowers in the sample have a material weakness in internal control, as concluded by the auditor report under SOX 404. About 5.4 percent (4.2 percent) of facility-years in our sample have company-level (account-level) weaknesses. The *Size* variable is reasonably distributed, with a mean and median of 7.32 and 7.25, respectively. The

[15] For instance, a deal can comprise a line of credit facility and a term loan with different interest rates.

TABLE 1

Sample Selection and Distribution by Year and Loan Type

Panel A: Sample Selection

	Firms	Loan Facilities
Loans to public companies available in DealScan from 2005 to 2009	3,153	9,827
Less:		
Loans initiated before borrowers have SOX 404 disclosure data available in Audit Analytics	(1,069)	(3,970)
Loans borrowed by companies in the financial industry	(320)	(961)
Non-senior debts, bridge loans, bonds, letter of credit, and other non-fund-based facilities	(13)	(292)
Observations missing necessary data items for tests	(388)	(1,440)
Total observations	1,363	3,164

Panel B: Sample Distribution by Year and Loan Type

Year	Term Loans	Revolvers	364-Day Facilities	All Facilities
2005	178	461	27	666
2006	230	627	20	877
2007	264	556	35	855
2008	138	297	37	472
2009	77	201	16	294
Total	887	2,142	135	3,164
Percent (%)	28.03	67.70	4.27	100.00

mean (median) market-to-book ratio is 1.93 (1.53). On average, long-term debt, EBITDA, and tangible assets (i.e., PP&E) are about 23 percent, 13 percent, and 31 percent of total assets, respectively.

Univariate Comparisons

We first partition the full sample into two subsamples: (1) borrowers with ICW problems (n = 304), and (2) borrowers without ICW problems (n = 2,860). We then compare the differences in loan features and borrower characteristics between the two subsamples. As shown in Panel A of Table 3, the mean and median of the drawn all-in spread (*AIS*) are about 252 and 200 bps, respectively, for ICW borrowers, while they are about 179 and 150 bps, respectively, for non-ICW borrowers. Both the mean and median differences are significant at the 1 percent level, suggesting that lenders charge significantly higher loan rates to ICW borrowers than to non-ICW borrowers. With respect to other loan features, we find that, compared with loans to non-ICW borrowers, loans to ICW borrowers are smaller, have more covenants, and are more likely to be secured by collateral. We also find that ICW borrowers attract significantly fewer lenders (*NLenders*) than do non-ICW borrowers. Regarding borrower-specific characteristics, we find that, compared with borrowers without ICW problems, borrowers with ICW problems are smaller and younger, have lower growth potential, lower profitability, lower accrual quality, and higher likelihoods of default and loss, and are more likely to have foreign sales and undergoing organizational changes.

To further examine whether the nature or severity of ICW matters, we partition the ICW sample (n = 304) into two subsamples: a sample of ICW borrowers with company-level weakness

TABLE 2

Descriptive Statistics

Panel A: Loan Facility Characteristics

Variables	n	Mean	1st Quartile	Median	3rd Quartile	Std. Deviation
AIS (bps)	3,164	186.414	75.000	150.000	250.00	159.147
Maturity (months)	3,164	52.898	37.000	60.000	60.000	20.604
Loan_Size (millions)	3,164	478.473	85.000	200.000	500.000	949.409
Performance_Pricing	3,164	0.595	0.000	1.000	1.000	0.491
DSecured	2,522	0.681	0.000	1.000	1.000	0.466
FinCovIndex	3,164	1.654	0.000	2.000	3.000	1.294
GenCovIndex	3,164	3.732	1.000	3.000	6.000	2.967
NLenders	3,164	9.067	4.000	7.000	12.000	7.980

Panel B: Borrowing Firm Characteristics

Variables	n	Mean	1st Quartile	Median	3rd Quartile	Std. Deviation
Weak	3,164	0.096	0.000	0.000	0.000	0.295
Account_ICW	3,164	0.042	0.000	0.000	0.000	0.201
Company_ICW	3,164	0.054	0.000	0.000	0.000	0.226
Size	3,164	7.320	6.198	7.247	8.330	1.532
Leverage	3,164	0.230	0.073	0.200	0.331	0.203
MB	3,164	1.926	1.217	1.525	2.104	3.494
Profitability	3,164	0.129	0.089	0.123	0.177	0.136
Tangibility	3,164	0.308	0.115	0.238	0.462	0.240
CashVol	3,164	0.044	0.014	0.022	0.035	0.436
RDefault_Risk	3,164	0.501	0.222	0.444	0.778	0.320
AbsAccr	3,164	0.293	0.028	0.076	0.306	0.448
Restate	3,164	0.101	0.000	0.000	0.000	0.301
Big4	3,164	0.924	1.000	1.000	1.000	0.265
Firm_Age	3,164	24.508	10.000	17.000	39.000	17.117
NSegment	3,164	2.838	1.000	3.000	4.000	1.821
Inventory	3,164	0.114	0.009	0.082	0.171	0.125
M&A	3,164	0.261	0.000	0.000	1.000	0.439
Foreign	3,164	0.277	0.000	0.000	1.000	0.448
Restructure	3,164	0.355	0.000	0.000	1.000	0.479
Sale_Growth	3,164	0.178	0.030	0.104	0.209	0.647
Loss	3,164	0.195	0.000	0.000	0.000	0.396

(n = 171), and a sample of ICW borrowers with account-level weakness (n = 133). As shown in Table 4, Panel B, ICW borrowers with company-level weakness pay significantly higher interest rates, as reflected in higher *AIS* values, and have a higher likelihood of pledging collateral on their loans, compared with ICW borrowers with account-level weakness.

Correlation Matrix

Table 4 reports Pearson correlation coefficients among selected loan- and borrower-specific variables. As shown in Table 4, *AIS* is positively correlated with *Weak* at the 1 percent level, suggesting that banks charge higher loan rates to ICW borrowers than to non-ICW borrowers. We also find that the correlation coefficient between *AIS* and *Company_ICW* (0.13, significant at the 1

TABLE 3

Comparisons of Loan and Firm Characteristics

Panel A: Effective Internal Control versus Ineffective Internal Control

	(1) Borrowers with Effective Internal Control			(2) Borrowers with Ineffective Internal Control			Test for Difference (2) − (1)	
Variables	**n**	**Mean**	**Median**	**n**	**Mean**	**Median**	**t**	**z**
AIS (bps)	2,860	179.492	150.000	304	251.535	200.000	7.00***	8.58***
Maturity (months)	2,860	53.094	60.000	304	51.049	60.000	−1.52	−1.95*
Loan_Size (millions)	2,860	502.657	221.650	304	250.952	150.000	−9.94***	−5.55***
Performance_Pricing	2,860	0.603	1.000	304	0.520	0.000	−2.82***	−2.82***
DSecured	2,262	0.659	1.000	260	0.873	1.000	9.34***	7.02***
FinCovIndex	2,860	1.626	2.000	304	1.918	2.000	3.75***	3.59***
GenCovIndex	2,860	3.612	3.000	304	4.865	5.000	6.64***	6.77***
NLenders	2,860	9.337	7.000	304	6.530	5.000	−7.46***	−6.26***
Size	2,860	7.361	7.296	304	6.937	6.792	−4.94***	−4.92***
Leverage	2,860	0.225	0.198	304	0.273	0.225	3.02***	1.90*
MB	2,860	1.955	1.543	304	1.645	1.365	−3.60***	−5.15***
Profitability	2,860	0.133	0.127	304	0.093	0.085	−6.03***	−9.84***
Tangibility	2,860	0.308	0.237	304	0.308	0.269	0.07	−0.06
CashVol	2,860	0.045	0.021	304	0.035	0.024	−1.16	3.73***
RDefault_Risk	2,860	0.480	0.444	304	0.694	0.778	11.39***	11.07***
AbsAccr	2,860	0.275	0.072	304	0.458	0.163	5.48***	5.65***
Restate	2,860	0.066	0.000	304	0.428	0.000	12.55***	19.90***
Big4	2,860	0.926	1.000	304	0.911	1.000	−0.84	−0.90
Age	2,860	24.846	18.000	304	21.326	14.000	−3.42***	−4.45***
NSegment	2,860	2.824	3.000	304	2.970	3.000	1.33	1.62
Inventory	2,860	0.114	0.082	304	0.116	0.086	0.32	0.13
M&A	2,860	0.262	0.000	304	0.257	0.000	−0.19	−0.19
Foreign	2,860	0.264	0.000	304	0.408	0.000	4.90***	5.34***
Restructure	2,860	0.343	0.000	304	0.470	0.000	4.44***	4.42***
Sale_Growth	2,860	0.180	0.106	304	0.152	0.072	−1.14	−2.28**
Loss	2,860	0.168	0.000	304	0.447	0.000	9.49***	11.68***

Panel B: Account-Level Control Weaknesses versus Company-Level Control Weaknesses

	(1) Borrowers with Account-Level Control Weaknesses			(2) Borrowers with Company-Level Control Weaknesses			Test for Difference (2) − (1)	
Variables	**n**	**Mean**	**Median**	**n**	**Mean**	**Median**	**t**	**z**
AIS (bps)	133	220.575	175.000	171	275.614	225.000	2.89***	2.67***
Maturity (months)	133	51.053	60.000	171	51.047	60.000	−0.00	−0.73
Loan_Size (millions)	133	259.249	175.000	171	244.498	125.000	−0.43	−1.86*
Performance_Pricing	133	0.556	1.000	171	0.491	0.000	−1.13	−1.13
DSecured	109	0.789	1.000	151	0.934	1.000	3.28***	3.45***
FinCovIndex	133	1.880	2.000	171	1.947	2.000	0.44	0.80

(continued on next page)

TABLE 3 (continued)

	(1) Borrowers with Account-Level Control Weaknesses			(2) Borrowers with Company-Level Control Weaknesses			Test for Difference (2) − (1)	
Variables	**n**	**Mean**	**Median**	**n**	**Mean**	**Median**	**t**	**z**
GenCovIndex	133	4.767	5.000	171	4.942	5.000	0.48	0.71
NLenders	133	7.075	5.000	171	6.105	5.000	−1.31	−0.68
Size	133	6.953	6.741	171	6.923	6.798	−0.18	0.01
Leverage	133	0.259	0.214	171	0.285	0.243	0.84	1.23
MB	133	1.768	1.406	171	1.548	1.331	−2.02**	−2.04**
Profitability	133	0.090	0.082	171	0.095	0.088	0.38	0.26
Tangibility	133	0.348	0.334	171	0.278	0.210	−2.57**	−2.50**
CashVol	133	0.036	0.029	171	0.035	0.022	−0.28	−0.90
RDefault_Risk	133	0.680	0.778	171	0.704	0.778	0.68	0.48
AbsAccr	133	0.425	0.122	171	0.483	0.176	0.89	0.85
Restate	133	0.519	1.000	171	0.357	0.000	−2.86***	−2.83***
Big4	133	0.925	1.000	171	0.901	1.000	−0.73	−0.73
Age	133	17.752	11.000	171	24.105	16.000	3.33***	3.89***
NSegment	133	2.752	3.000	171	3.140	3.000	1.94*	1.93*
Inventory	133	0.100	0.064	171	0.128	0.103	1.84*	2.24**
M&A	133	0.211	0.000	171	0.292	0.000	1.62	1.62
Foreign	133	0.353	0.000	171	0.450	0.000	1.71*	1.70*
Restructure	133	0.481	0.000	171	0.462	0.000	−0.33	−0.33
Sale_Growth	133	0.126	0.072	171	0.173	0.072	1.17	0.72
Loss	133	0.444	0.000	171	0.450	0.000	0.12	0.12

*, **, *** Denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively, in a two-tailed test.

percent level) is much greater than that between *AIS* and *Account_ICW* (0.04, significant at the 5 percent level). Though only indicative of the underlying relation, this finding suggests that lenders are able to differentiate between borrower types based upon the nature or severity of ICW. The *Weak* variable has negative correlations with *Size* and *Profitability*, while it has positive correlations with *Leverage* and *RDefault_Risk*. The variable *AIS* is negatively correlated with *Log_Maturity*, *Log_Loan_Size*, *Log_NLenders*, and *Performance_Pricing*, while it is positively correlated with *DSecured*, *FinCovIndex*, and *GenCovIndex*.

V. REGRESSION RESULTS

ICW and Loan Spread: Test of H1

Table 5 reports the results of our main regression in Equation (1), using *AIS* as the dependent variable. In Column 1 of Table 5, we regress *AIS* on the test variable *Weak* with the full set of control variables discussed in Section III. All reported t-values are based on standard errors clustered at the firm level (Petersen 2009; Gow et al. 2010). As reported in Column 1 of Table 5, the coefficient on *Weak* is significantly positive at the 1 percent level, consistent with the prediction of H1. This result supports the view that internal control quality plays an important role in private debt contracting. Banks are unable to completely overcome information problems associated with weak internal controls, although they have superior abilities to collect and process both public and inside information about borrowers. The coefficient on *Weak* in Column 1 of Table 5 indicates that, all

TABLE 4

Pearson Correlation Matrix

Panel A: Pearson Correlation Matrix for *AIS* to *Log_Maturity*

Variables	*AIS*	*Weak*	*Account_ICW*	*Company_ICW*	*Log_Maturity*
AIS	1.00				
Weak	0.13***	1.00			
Account_ICW	0.04**	0.64***	1.00		
Company_ICW	0.13***	0.73***	−0.05***	1.00	
Log_Maturity	−0.10***	−0.02	−0.01	−0.02	1.00
Log_Loan_Size	−0.35***	−0.10***	−0.04**	−0.09***	0.16***
Log_NLenders	−0.31***	−0.10***	−0.06***	−0.08***	0.28***
Performance_Pricing	−0.28***	−0.05***	−0.02	−0.05***	0.09***
DSecured	0.47***	0.14***	0.05**	0.14***	0.10***
FinCovIndex	0.05***	0.07***	0.04**	0.05***	0.08***
GenCovIndex	0.22***	0.12***	0.07***	0.10***	0.14***
Size	−0.30***	−0.08***	−0.05***	−0.06***	−0.02
Leverage	0.17***	0.07***	0.03*	0.07***	0.05***
MB	0.02	−0.03	−0.01	−0.03	−0.01
Profitability	−0.24***	−0.09***	−0.06***	−0.06***	0.08***
Tangibility	−0.00	0.00	0.04**	−0.03*	−0.06***
CashVol	0.08***	−0.01	−0.00	−0.01	−0.00
RDefault_Risk	0.30***	0.20***	0.12***	0.15***	−0.05***
AbsAccr	0.07***	0.12***	0.06***	0.10***	−0.04**
Restate	0.04**	0.35***	0.29***	0.20***	−0.00

Panel B: Pearson Correlation Matrix for *Log_Loan_Size* to *FinCovIndex*

Variables	*Log_Loan_Size*	*Log_NLenders*	*Performance_Pricing*	*DSecured*	*FinCovIndex*
Log_Loan_Size	1.00				
Log_NLenders	0.61***	1.00			
Performance_Pricing	0.12***	0.26***	1.00		
DSecured	−0.31***	−0.24***	−0.27***	1.00	
FinCovIndex	−0.18***	0.00	0.47***	0.11***	1.00
GenCovIndex	−0.10***	0.05***	0.37***	0.41***	0.62***
Size	0.75***	0.52***	0.02	−0.38***	−0.29***
Leverage	0.12***	0.11***	−0.12***	0.17***	−0.04**
MB	−0.05**	−0.02	−0.03	−0.00	0.01
Profitability	0.17***	0.14***	0.14***	−0.14***	0.04**
Tangibility	0.17***	0.07***	0.01	−0.07***	−0.07***
CashVol	−0.06**	−0.02	−0.04**	0.03*	0.01
RDefault_Risk	−0.04**	−0.06***	−0.17***	0.23***	−0.05***
AbsAccr	−0.11***	−0.09***	−0.05***	0.09***	0.04**
Restate	−0.01	−0.04**	−0.01	0.05**	0.01

Panel C: Pearson Correlation Matrix for *GenCovIndex* to *Profitability*

Variables	*GenCovIndex*	*Size*	*Leverage*	*MB*	*Profitability*
GenCovIndex	1.00				
Size	−0.20***	1.00			
Leverage	0.06***	0.19***	1.00		

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TABLE 4 (continued)

Variables	*GenCovIndex*	*Size*	*Leverage*	*MB*	*Profitability*
MB	0.02	−0.18***	−0.09***	1.00	
Profitability	−0.02	0.16***	−0.01	−0.61***	1.00
Tangibility	−0.08***	0.20***	0.27***	−0.08***	0.11***
CashVol	0.03*	−0.16***	−0.05**	0.96***	−0.70***
RDefault_Risk	0.07***	0.10***	0.62***	−0.06***	−0.37***
AbsAccr	0.05***	−0.10***	0.02	−0.00	−0.01
Restate	0.03	0.00	0.05***	−0.02	−0.05***

Panel C: Pearson Correlation Matrix for *Tangibility* to *Restate*

Variables	*Tangibility*	*CashVol*	*RDefault_Risk*	*AbsAccr*	*Restate*
Tangibility	1.00				
CashVol	−0.05***	1.00			
RDefault_Risk	0.24***	0.05***	1.00		
AbsAccr	−0.10***	−0.02	0.04**	1.00	
Restate	0.06***	−0.01	0.11***	0.01	1.00

*, **, *** Denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively, in a two-tailed test.

else equal, the loan spread of ICW borrowers is, on average, about 28 bps higher than that of non-ICW borrowers, which is both statistically and economically significant.[16]

Turning to control variables, we find that loan spread is negatively associated with loan facility size, the presence of performance pricing provisions, borrower size, market-to-book ratio, and profitability. Also, loan spread is positively associated with leverage, cash flow volatility, default risk, losses, term spread, and credit spread. Finally, we find that the coefficients on *Restate* and *AbsAccr* (accrual quality) are insignificant, albeit with expected positive signs.[17] All results regarding control variables are largely consistent with those of previous studies on loan pricing.

Company- versus Account-Level Material Weakness: Test of H2

To test whether banks take into account the nature or severity of material ICW when setting loan spreads, we estimate Equation (1) after replacing *Weak* by a company-level weakness indicator (*Company_ICW*) and an account-level weakness indicator (*Account_ICW*). As shown in Column 2 of Table 5, the coefficient on *Company_ICW* is significantly positive at the 1 percent level (coefficient = 43.656, t = 3.07), and the coefficient on *Account_ICW* is also positive, but insignificant (coefficient = 7.093, t = 0.58). This suggests that ICW borrowers with company-level control problems bear higher interest rates than those with account-level control problems, which is

[16] As reported in Table 2, the average amount of a loan facility is about $478 million for our sample, and the mean maturity is about 53 months, or 4.42 years. This means that, on average, a typical borrower with ICW has to pay higher interest expenses, of about $1.35 million per year, than a borrower without ICW over the maturity period of 4.42 years.

[17] This result is robust to different measures of accrual quality. Bharath et al. (2008) find that accrual quality is related to loan contracting terms for a sample of firms over the period 1988–2003. However, it is possible that the SOX of 2002 changed the relation between accrual quality and the cost of bank loans significantly. Note that Hutton et al. (2009) find that accrual quality is related to downside risk only before SOX, and not after. We suggest further research on the moderating effect of SOX on the relation between accrual quality and cost of debt.

TABLE 5

Relations between Loan Spreads and ICW Measures

	Model	
Variables	**(1)**	**(2)**
Test Variables		
Weak	28.189***	
	(2.72)	
Account_ICW		7.093
		(0.58)
Company_ICW		43.656***
		(3.07)
Loan-Specific Characteristics		
Log_Maturity	−10.927	−10.983
	(−1.28)	(−1.28)
Log_Loan_Size	−10.088***	−9.859***
	(−3.59)	(−3.51)
Log_NLenders	−2.281	−2.364
	(−0.59)	(−0.61)
Performance_Pricing	−30.237***	−29.994***
	(−5.84)	(−5.81)
Borrower–Specific Characteristics		
Size	−11.479***	−11.581***
	(−3.88)	(−3.89)
Leverage	55.646**	54.735**
	(2.20)	(2.16)
MB	−14.017***	−13.843***
	(−4.67)	(−4.65)
Profitability	−89.181*	−91.248*
	(−1.76)	(−1.80)
Tangibility	12.293	15.492
	(0.63)	(0.79)
CashVol	104.465***	102.778***
	(3.68)	(3.64)
RDefault_Risk	42.111**	41.597**
	(2.54)	(2.53)
AbsAccr	5.584	4.862
	(0.77)	(0.66)
Restate	4.352	5.637
	(0.53)	(0.70)
Big4	−13.197	−12.905
	(−1.00)	(−0.98)
Log_Age	−14.194***	−14.834***
	(−3.11)	(−3.27)
Log_Segment	0.661	0.512
	(0.17)	(0.13)
Inventory	−31.201	−32.231
	(−1.04)	(−1.08)
M&A	0.203	−0.100
	(0.04)	(−0.02)

(continued on next page)

TABLE 5 (continued)

Variables	Model (1)	Model (2)
Foreign	4.635	4.389
	(0.72)	(0.68)
Restructure	0.312	0.604
	(0.05)	(0.10)
Sale_Growth	−4.349*	−4.441*
	(−1.77)	(−1.81)
Loss	64.673***	64.723***
	(7.18)	(7.18)
Macroeconomic Factors		
Term_Spread	56.368***	56.762***
	(5.02)	(5.05)
Credit_Spread	32.406***	32.471***
	(2.97)	(2.98)
Intercept and Indicators		
Intercept	469.188***	468.601***
	(8.59)	(8.56)
Loan Type Indicators	Included	Included
Loan Purpose Indicators	Included	Included
Year Indicators	Included	Included
Industry Indicators	Included	Included
n	3,164	3,164
Adj. R^2	0.56	0.56

*, **, *** Denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively, in a two-tailed test. n denotes the number of observations used in each model. The t-statistics in parentheses are based on standard errors corrected for heteroscedasticity and firm-level clustering.

consistent with H2. To directly test H2, the partial F-test shows that the coefficient on *Company_ICW* is significantly larger than that on *Account_ICW* at the 5 percent level (F = 4.34). We interpret the above results as evidence that banks are able to overcome information problems associated with account-level ICW, but not those arising from company-level ICW.

ICW and Nonprice Terms: Tests of H3 and H4

To assess the impact of ICW on the likelihood of a loan being secured by collateral, we estimate Equation (1) with *DSecured* as the dependent variable, using the probit regression procedure. Column 1a of Table 6 presents the results of this probit estimation using *Weak* as the test variable, while Column 1b reports the same using *Account_ICW* and *Company_ICW* in lieu of *Weak*. In both columns, we control for loan- and borrower-specific characteristics, determinants of ICW, and economy-wide factors. With respect to loan-specific characteristics, we include *Loan_Concentration* (the dollar amount of a loan deal divided by total assets) in lieu of *Log_Loan_Size* (the natural log of the dollar amount of the loan facility), following prior loan literature (e.g., Bharath et al. 2009). Also, we include *Prior_Lead* as an additional control variable to control for prior relationships between lead banks and borrowers. Here, *Prior_Lead* is an indicator variable that equals 1 if the lead arranger was a lead arranger for the same borrower in previous loan deals during the past five years, and 0 otherwise. Previous research suggests that banks are more likely to require collateral from borrowers that rely heavily on loans, and are less likely to require collateral from borrowers with which they have a prior banking relationship (e.g.,

TABLE 6

Effects of ICW on Collateral Requirements, Covenant Restrictions, and the Number of Lenders

Panel A: Effects of ICW for *DSecured* to *FinCovIndex*

	DSecured		*FinCovIndex*	
Variable	**(1a)**	**(1b)**	**(2a)**	**(2b)**
Test Variables				
Weak	0.413**		0.119**	
	(2.46)		(2.03)	
Account_ICW		−0.109		0.059
		(−0.60)		(0.68)
Company_ICW		0.937***		0.163**
		(3.50)		(2.29)
Loan-Specific Characteristics				
Log_Maturity	0.105	0.092	−0.015	−0.016
	(1.16)	(1.03)	(−0.38)	(−0.41)
Loan_Concentration	2.009***	2.036***		
	(4.97)	(5.02)		
Log_Deal_Size			0.027	0.028
			(0.97)	(0.99)
Log_NLenders	−0.065	−0.060	0.038	0.038
	(−0.88)	(−0.81)	(1.29)	(1.28)
Performance_Pricing	−0.420***	−0.415***	0.827***	0.829***
	(−3.75)	(−3.66)	(17.40)	(17.37)
Prior_Lead	−0.175**	−0.177**	0.015	0.016
	(−2.09)	(−2.09)	(0.47)	(0.50)
Lead_Reputation				
Borrower-Specific Characteristics				
Size	−0.323***	−0.324***	−0.171***	−0.171***
	(−5.10)	(−5.17)	(−8.06)	(−8.08)
Leverage	2.306***	2.274***	0.205	0.201
	(5.00)	(4.96)	(1.63)	(1.60)
MB	−0.258***	−0.252***	−0.098***	−0.097***
	(−4.50)	(−4.45)	(−4.98)	(−4.95)
Profitability	−1.486*	−1.524*	0.639***	0.632***
	(−1.78)	(−1.83)	(2.83)	(2.79)
Tangibility	−0.692*	−0.691*	0.026	0.032
	(−1.74)	(−1.74)	(0.22)	(0.27)
CashVol	6.425**	6.270**	0.856***	0.849***
	(2.40)	(2.33)	(5.07)	(5.04)
RDefault_Risk	1.222***	1.208***	−0.028	−0.03
	(3.92)	(3.91)	(−0.30)	(−0.32)
AbsAccr	0.164	0.172	−0.061	−0.063
	(1.41)	(1.47)	(−1.36)	(−1.40)
Restate	0.173	0.221	−0.015	−0.01
	(1.12)	(1.43)	(−0.26)	(−0.18)
Rated				

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TABLE 6 (continued)

Variable	*DSecured* (1a)	*DSecured* (1b)	*FinCovIndex* (2a)	*FinCovIndex* (2b)
Big4	0.189	0.220	−0.043	−0.042
	(0.96)	(1.12)	(−0.78)	(−0.77)
Log_Age	−0.383***	−0.406***	−0.049*	−0.051*
	(−5.23)	(−5.54)	(−1.69)	(−1.76)
Log_Segment	0.040	0.039	0.012	0.011
	(0.51)	(0.49)	(0.45)	(0.42)
Inventory	0.361	0.279	−0.256	−0.26
	(0.61)	(0.46)	(−1.25)	(−1.28)
M&A	0.019	0.013	0.011	0.011
	(0.19)	(0.13)	(0.32)	(0.31)
Foreign	0.012	0.008	0.015	0.014
	(0.11)	(0.07)	(0.37)	(0.36)
Restructure	−0.003	−0.013	0.006	0.007
	(−0.03)	(−0.12)	(0.17)	(0.19)
Sale_Growth	0.578***	0.557***	0.019	0.018
	(3.05)	(2.93)	(1.03)	(1.00)
Loss	0.617***	0.646***	0.058	0.059
	(3.46)	(3.59)	(1.02)	(1.03)
Macroeconomic Factors				
Term_Spread	0.302**	0.316**	0.053	0.055
	(2.01)	(2.07)	(0.96)	(0.98)
Credit_Spread	0.060	0.066	0.094**	0.095**
	(0.42)	(0.46)	(2.00)	(2.02)
Intercept and Indicators				
Intercept	8.295***	8.251***	1.012**	1.014**
	(9.45)	(9.58)	(2.08)	(2.08)
Loan Type Indicators	Included	Included	Included	Included
Loan Purpose Indicators	Included	Included	Included	Included
Year Indicators	Included	Included	Included	Included
Industry Indicators	Included	Included	Included	Included
n	2,522	2,522	3,164	3,164
Pseudo R^2	0.46	0.46	0.14	0.14

Panel B: Effects of ICW for *GenCovIndex* to *NLenders*

Variable	*GenCovIndex* (3a)	*GenCovIndex* (3b)	*NLenders* (4a)	*NLenders* (4b)
Test Variables				
Weak	0.217***		−0.124**	
	(3.96)		(−1.98)	
Account_ICW		0.159*		−0.121
		(1.79)		(−1.05)
Company_ICW		0.261***		−0.126**
		(4.25)		(−2.02)
Loan-Specific Characteristics				
Log_Maturity	0.010	0.009	0.235***	0.235***
	(0.24)	(0.22)	(7.55)	(7.56)

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TABLE 6 (continued)

	GenCovIndex		***NLenders***	
Variable	**(3a)**	**(3b)**	**(4a)**	**(4b)**
Loan_Concentration				
Log_Deal_Size	0.177***	0.178***	0.314***	0.314***
	(6.21)	(6.23)	(12.76)	(12.76)
Log_NLenders	−0.003	−0.004		
	(−0.11)	(−0.13)		
Performance_Pricing	0.781***	0.782***		
	(16.17)	(16.08)		
Prior_Lead	−0.007	−0.006	0.166***	0.165***
	(−0.21)	(−0.17)	(4.72)	(4.74)
Lead_Reputation			0.569***	0.569***
			(8.74)	(8.76)
Borrower-Specific Characteristics				
Size	−0.191***	−0.191***	0.047*	0.047*
	(−8.00)	(−8.01)	(1.92)	(1.92)
Leverage	0.319**	0.314**	0.221	0.221
	(2.46)	(2.42)	(1.31)	(1.31)
MB	−0.064***	−0.063***	−0.029	−0.029
	(−3.09)	(−3.06)	(−1.28)	(−1.28)
Profitability	−0.106	−0.113	−0.500**	−0.500**
	(−0.48)	(−0.51)	(−2.03)	(−2.02)
Tangibility	−0.005	0.002	0.289*	0.288*
	(−0.04)	(0.01)	(1.89)	(1.90)
CashVol	0.433**	0.424**	0.253	0.253
	(2.45)	(2.42)	(1.30)	(1.31)
RDefault_Risk	0.149	0.148	−0.15	−0.15
	(1.55)	(1.54)	(−1.36)	(−1.36)
AbsAccr	−0.039	−0.041	−0.051	−0.051
	(−0.83)	(−0.87)	(−0.90)	(−0.90)
Restate	−0.006	−0.002	−0.066	−0.066
	(−0.11)	(−0.04)	(−1.25)	(−1.27)
Rated			0.055	0.055
			(1.19)	(1.19)
Big4	0.048	0.049	0.151**	0.151**
	(0.73)	(0.75)	(2.34)	(2.35)
Log_Age	−0.062**	−0.065**	−0.03	−0.03
	(−2.09)	(−2.19)	(−1.09)	(−1.09)
Log_Segment	0.006	0.005	0.007	0.007
	(0.22)	(0.19)	(0.25)	(0.25)
Inventory	−0.081	−0.083	0.479**	0.480**
	(−0.38)	(−0.40)	(2.29)	(2.29)
M&A	0.018	0.018	0.103**	0.103**
	(0.50)	(0.50)	(2.36)	(2.36)
Foreign	0.045	0.045	0.007	0.007
	(1.09)	(1.08)	(0.15)	(0.15)
Restructure	−0.02	−0.018	−0.015	−0.015
	(−0.50)	(−0.47)	(−0.37)	(−0.37)

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TABLE 6 (continued)

Variable	*GenCovIndex* (3a)	*GenCovIndex* (3b)	*NLenders* (4a)	*NLenders* (4b)
Sale_Growth	−0.008	−0.008	−0.032	−0.032
	(−0.39)	(−0.40)	(−1.12)	(−1.12)
Loss	0.186***	0.187***	−0.262***	−0.262***
	(3.42)	(3.45)	(−4.17)	(−4.20)
Macroeconomic Factors				
Term_Spread	0.067	0.069	0.035	0.035
	(1.13)	(1.16)	(0.58)	(0.58)
Credit_Spread	0.156***	0.157***	−0.054	−0.054
	(3.06)	(3.07)	(−1.35)	(−1.35)
Intercept and Indicators				
Intercept	–1.135**	–1.133**	–6.194***	–6.194***
	(−2.32)	(−2.32)	(−13.11)	(−13.11)
Loan Type Indicators	Included	Included	Included	Included
Loan Purpose Indicators	Included	Included	Included	Included
Year Indicators	Included	Included	Included	Included
Industry Indicators	Included	Included	Included	Included
n	3,164	3,164	3,164	3,164
Pseudo R^2	0.19	0.19	0.35	0.35

*, **, *** Denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively, in a two-tailed test. n denotes the number of observations used in each model. Columns (1a) and (1b) are Probit regressions, and Columns (2a)–(4b) are Poisson regressions. The z-statistics in parentheses are based on standard errors corrected for heteroscedasticity and firm-level clustering.

Bradley and Roberts 2004; Vasvari 2008; Bharath et al. 2009). We therefore expect a positive (negative) sign on *Loan_Concentration* (*Prior_Lead*).

As shown in Column 1a of Table 6, the coefficient on *Weak* is significantly positive at the 5 percent level, consistent with H3. This finding suggests that lenders are more likely to require collateral for borrowers with ICW problems than for those without such problems. When *Weak* is replaced by *Account_ICW* and *Company_ICW* (as shown in Column 1b of Table 6), however, the coefficient on *Company_ICW* is significantly positive at the 1 percent level, but the coefficient on *Account_ICW* is insignificant. This suggests that the positive impact of ICW on the likelihood of a loan being secured by collateral is mainly driven by company-level weakness.

To assess the impact of ICW on the intensity or prevalence of restrictive covenants, we manually count the number of financial and general covenants included in each loan deal. We find from the DealScan database that there are a total of 30 different covenants, 18 of which are financial covenants and 12 of which are general covenants related to restrictions on prepayment, dividend, voting rights, and other restrictions.[18] We construct two covenant indices, *FinCovIndex* and *GenCovIndex*, based on counts of financial and general covenants, respectively. We then estimate Equation (1) with the two covenant indices as the dependent variables. In the covenant model, we include the size of the loan deal (*Log_Deal_Size*) in lieu of the size of the loan facility (*Log_Loan_Size*), because loan covenants are imposed at the deal level rather than at the facility level.

Columns 2a and 3a of Table 6 report the results of Poisson regressions of *FinCovIndex* and *GenCovIndex*, respectively, on *Weak* and all other control variables, while Columns 2b and 3b

[18] See Bradley and Roberts (2004) for a detailed discussion on a variety of covenant restrictions used in loan contracts.

report the same using *Account_ICW* and *Company_ICW* in place of *Weak*. The results show that the coefficients on *Weak* are significantly positive at the 5 percent (1 percent) level in Column 2a (3a) of Table 6, consistent with H4. Columns 2b and 3b of Table 6 show that the coefficient on *Account_ICW* is significant at the 10 percent level for the general covenant regression, but insignificant for the financial covenant regression. On the other hand, the coefficients on *Company_ICW* are significantly positive at the 5 percent and 1 percent level, respectively, in Columns 2b and 3b of Table 6.

With respect to control variables, the following findings are noteworthy. First, lenders are more likely to require collateral and use general covenants for large loans. Second, collateral requirements and/or restrictive covenants are less likely to be imposed on loans to large firms, while they are more intensively used for loans to highly levered firms, younger firms, loss firms, and firms with high cash flow volatility. Third, the presence of performance pricing provisions reduces the likelihood of a loan being secured by collateral, while it increases the intensity of loan covenants. Finally, prior lead bank-borrower relationships (*Prior_Lead*) have a negative effect on the likelihood of loan collateralization, but an insignificant effect on the occurrence of restrictive covenants.

Our cross-sectional results regarding the impact of ICW on financial covenants appear to be inconsistent with those of Costello and Wittenberg-Moerman (2011). Costello and Wittenberg-Moerman (2011) focus only on ICW firms, finding that banks decrease the use of financial covenants after these firms' disclosure of ICW. In contrast, our cross-sectional tests, involving both ICW and non-ICW borrowers, show that lenders impose more financial covenants on ICW firms than on non-ICW firms.[19] Costello and Wittenberg-Moerman (2011) claim that because loans to ICW firms have a greater number of financial covenants than loans to non-ICW firms even before ICW disclosure, our findings could be due to "differences in more fundamental firm characteristics, such as riskiness and information opacity." However, we argue that this is unlikely to be the case for at least two reasons. First, in our regression model, we have carefully controlled for proxies of fundamental risk (e.g., *RDefault_Risk*), information opacity (e.g., *AbsAccr*), and many other firm characteristics. Second, we argue that even without SOX 404 (or 302) ICW disclosures *per se*, ICW could still be priced by banks, so long as banks are able to detect such weaknesses even before SOX-mandated ICW disclosures. Thus, even if Costello and Wittenberg-Moerman (2011) are correct that banks impose more financial covenants on ICW firms than on non-ICW firms before the SOX-mandated disclosure, the reason could still be weaknesses in internal controls rather than "riskiness and information opacity." Put differently, SOX 404 and 302 are not the only sources of information that banks have about borrowers' internal control effectiveness.[20]

ICW and the Number of Lenders: Test of H5

To test H5, we estimate Equation (1) using as the dependent variable the number of lenders (*NLenders*) involved in each loan deal to which a loan facility pertains. Following the prior

[19] One can argue that banks should impose fewer financial covenants on ICW firms, considering such firms' lower reporting quality. We posit two explanations for the positive association between ICW and the number of financial covenants. First, by imposing more financial covenants, banks have little to lose. If accounting noise causes covenant violations, banks may be better off, because they can exercise their option to take over control rights or charge a higher loan rate via renegotiation; if the covenants are not violated due to accounting noise, these covenants are, at most, redundant. Second, banks can extract monopoly information rents based on private information they generate about the borrower (Rajan 1992). Bharath et al. (2008) argue that banks' information rent extraction is likely to be greater when accounting quality is poor, since poor accounting makes the firm more opaque to other outside stakeholders. Therefore, by imposing more financial covenants, banks can have more justifications and opportunities to obtain inside information from the borrower and extract information rents.

[20] In Section VI, we also conduct within-firm tests and further compare our study to Costello and Wittenberg-Moerman (2011).

literature (e.g., Sufi 2007; Ball et al. 2008), we further control for the presence of a prior lender-borrower relationship (*Prior_Lead*), the lead arranger's reputation (*Lead_Reputation*), and the availability of an alternative information source (*Rated*), in addition to other loan- and borrower-specific characteristics considered in the loan pricing model. Here, *Lead_Reputation* is an indicator variable that equals 1 if at least one of the lead arrangers for the loan deal was a top-25 U.S. lead arranger (in terms of loan volume) in the year immediately before the initiation of the loan, based on loan data from DealScan, and 0 otherwise. The variable *Rated* is an indicator variable that equals 1 if the borrower has a Standard & Poor's (S&P) Domestic Long Term Issuer Credit Rating, and 0 otherwise. We expect more lenders to be attracted to loans arranged by high-reputation banks and to loans to borrowers with external credit ratings by independent agencies.

Column 4a (4b) of Table 6 reports the results of the Poisson regression of *NLenders* on *Weak* (*Account_ICW* and *Company_ICW*) and all other control variables. As shown in Column 4a of Table 6, the coefficient on *Weak* is significantly negative at the 5 percent level, consistent with H5. When *Account_ICW* and *Company_ICW* are included in lieu of *Weak*, however, the coefficient on *Account_ICW* is insignificant, while the coefficient on *Company_ICW* is significantly negative at the 5 percent level. The above findings suggest that lenders take into account the nature or severity of material weakness in internal controls when structuring loans. The signs of the coefficients on control variables are largely consistent with prior literature.

VI. FURTHER ANALYSIS

Does SOX 404 ICW Disclosure Contain New Information for Lenders?

Our cross-sectional tests show that loan features (price terms, nonprice terms, and the number of lenders) differ significantly between ICW and non-ICW firms. A related but distinct issue is whether SOX 404 internal control disclosure contains new information for concentrated lenders with information advantage, such as banks. To examine this issue, we compare the features of a firm's loans initiated immediately before and immediately after SOX 404 disclosure. If SOX 404 disclosure provides banks with new information about borrowers' information risk, we expect to observe significant differences in loan features for the same firm before and after ICW disclosures under SOX 404.

In constructing our sample for the within-firm tests, we use each firm's *first-time* SOX 404 disclosure, because the first-time disclosure is likely to provide the most powerful setting to observe the effect of SOX 404 disclosures on loan terms. To be included in this sample, a firm must have its loans initiated in the two years before its first-time SOX 404 disclosure (the pre-SOX 404 period) and the two years after the same disclosure (the post-SOX 404 period) and these loans must have similar loan characteristics in terms of type, maturity, and amount. We match the loans initiated in the pre-SOX 404 period with those initiated in the post-SOX 404 period as closely as possible according to the following three loan characteristics: loan type (term loan or revolver), loan maturity (with a difference of less than 12 months), and loan amount (with a difference of less than 100 percent of the smaller loan). This matching procedure yields 65 ICW firms that borrow 71 pairs of loan facilities and 373 non-ICW firms that borrow 446 pairs of loan facilities. For each firm, we calculate the average values of loan features, including *AIS*, *DSecured*, *FinCovIndex*, *GenCovIndex*, and *NLenders* in the pre- and post-SOX 404 periods, and then compute their changes from the pre-SOX 404 to the post-SOX 404 period.

Table 7 presents the mean and median of these changes in loan features. Panel A of Table 7 reports the mean and median changes in five loan features for 65 ICW firms, Panel B reports the mean and median changes in five loan features for 46 ICW firms that did not previously disclose ICW problems under SOX 302, and Panel C reports the mean and median changes in five loan characteristics for 373 non-ICW firms.

TABLE 7

Changes in Loan Terms

Panel A: Changes in Loan Terms between Pre- and Post-SOX 404 Periods for 65 ICW Firms

	Δ*AIS* (bps)	Δ*DSecured*	Δ*FinCovIndex*	Δ*GenCovIndex*	Δ*NLenders*
Mean	22.581*	0.062	−0.831***	−0.238	−2.600
Median	0.000	0.000	0.000	0.000	0.000

Panel B: Changes in Loan Terms between Pre- and Post-SOX 404 Periods for 46 ICW Firms That Did Not Disclose ICW under SOX 302

	Δ*AIS* (bps)	Δ*DSecured*	Δ*FinCovIndex*	Δ*GenCovIndex*	Δ*NLenders*
Mean	34.896**	0.087*	−0.761***	−0.098	−1.543*
Median	6.250***	0.000	0.000	0.000	0.000

Panel C: Changes in Loan Terms between Pre- and Post-SOX 404 Periods for 373 Non-ICW Firms

	Δ*AIS* (bps)	Δ*DSecured*	Δ*FinCovIndex*	Δ*GenCovIndex*	Δ*NLenders*
Mean	−24.967***	0.017	−0.435***	−0.240*	−0.316
Median	−25.000***	0.000	0.000	0.000	0.000

Panel D: Changes in Loan Terms between Pre-Remediation and Post-Remediation Periods for 32 Remediating Firms

	Δ*AIS* (bps)	Δ*DSecured*	Δ*FinCovIndex*	Δ*GenCovIndex*	Δ*NLenders*
Mean	−22.078**	−0.130*	−0.656*	−1.641**	−2.375
Median	−7.500***	0.000	0.000	0.000	0.000

*, **, *** Denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively, in a two-tailed test.
Panel A presents the mean and median of the changes in loan characteristics for 65 ICW firms within two years before and after the firms' first-time SOX 404 disclosures. Panel B presents the mean and median of the changes in loan characteristics for 46 ICW firms that did not disclose ICW under SOX 302. Panel C presents the mean and median of the changes in loan characteristics for 373 non-ICW firms within two years before and after the firms' first-time SOX 404 disclosures. Panel D presents the mean and median of the changes in loan characteristics for 32 firms around their remediating ICW.

As shown in Table 7, Panel A, the mean *AIS* change for 65 ICW firms is nearly 23 bps and is significant at the 10 percent level. This is in line with the view that, on average, loan rates charged to ICW firms increase after ICW disclosure under SOX 404. For ICW firms that did not disclose ICW under SOX 302 before the first-time SOX 404 disclosure, as presented in Table 7, Panel B, the mean (median) *AIS* changes are about 35 (six) bps, and significant at less than the 5 percent (1 percent) level. The stronger *AIS* increase in Panel B than in Panel A of Table 7 suggests that lenders react more to ICW disclosures under SOX 404 when the disclosures were not made in the past and, thus, are more likely to convey new information.[21]

[21] Note that SOX 404 disclosure itself carries some confirmation effect (or feedback value), even if the firm previously disclosed ICW through unaudited disclosure. Consistent with this conjecture, we find that banks react to a firm's SOX 404 ICW disclosures even if the firm previously disclosed ICW under SOX 302.

As reported in Table 7, Panel C, both the mean and median *AIS* changes for non-ICW firms are about −25 bps. These changes are significant at the 1 percent level, suggesting that loan rates charged to non-ICW firms *decrease* after firms assure the inexistence of ICW problems by disclosing auditor-attested effectiveness of internal controls under SOX 404. The above results, taken together, suggest that SOX 404 internal control disclosures provide banks with new information about borrowers' information risk; that is, banks are not able to completely obtain all information regarding the effectiveness of a firm's internal control system before mandatory SOX 404 disclosure.[22]

With regard to the change in the number of financial covenants, Panels A and B of Table 7 show that the mean change in *FinCovIndex* is significantly negative at the 1 percent level, suggesting that lenders impose fewer financial covenants on loans to ICW firms after SOX 404 disclosures. This is consistent with the result of Costello and Wittenberg-Moerman (2011), who interpret their similar finding as evidence that lenders use fewer financial covenants for ICW firms because the accounting numbers used in loan contracts are less reliable for these firms. As shown in Panel C of Table 7, however, the change in the number of financial covenants for non-ICW firms is significantly negative, as well, at the 1 percent level. This result casts some doubt on the interpretation of Costello and Wittenberg-Moerman (2011) regarding the decrease in the use of financial covenants for ICW firms from the pre- to the post-SOX 404 period. The similar pattern of change in the number of financial covenants, that is, $\Delta FinCovIndex$, for *both* ICW and non-ICW firms observed in Panels A through C of Table 7 could be related to lenders' improved knowledge about borrowers. As banks become familiar with a firm over time, it would be less beneficial for banks to *ex post* monitor the firm using financial covenants.

Moreover, the decreased use of financial covenants for both ICW and non-ICW firms could also be driven, at least partially, by a general regulatory effect of SOX. That is, SOX-mandated regulations could have improved the overall information environment and corporate governance of U.S. firms and, thus, could have reduced the need for bank monitoring through financial covenants. In addition, we find that the number of financial covenants decreases more (significant at the 10 percent level) for ICW firms than for non-ICW firms. This difference could be interpreted as evidence that the general regulatory impact of SOX on ICW firms is more pronounced because ICW firms are likely to have higher *ex ante* information asymmetry.[23,24]

In addition, Panel B of Table 7 shows that the mean change in *DSecured* is positive and weakly significant at the 10 percent level, while the mean change in *NLenders* is negative and weakly significant at the 10 percent level. This result suggests that loans to ICW firms (under SOX 404) that did not disclose ICW under SOX 302 are more likely to be secured by collateral and attract fewer lenders. In Panel C of Table 7, we also find that fewer general covenants are imposed on loans to non-ICW firms in the post-SOX 404 disclosure period than in the pre-SOX 404 disclosure period.

Impact of ICW Remediation on Loan Features

In this subsection, we conduct another within-firm analysis to examine whether loan rates charged to ICW borrowers decrease after they remediate their internal control problems. For this

[22] Again, this "new" information can also stem from the confirmation value of the audited internal control information.

[23] In the extreme case, bank monitoring through covenants will not be necessary for a firm with absolute *ex ante* transparency and, thus, SOX will not have an impact on such firms.

[24] Given these conjectures, we believe that both the cross-sectional test and the time-series test have their own merits and limitations. Thus, it seems necessary to conduct both tests to obtain a more complete picture of the relation between ICW and bank loan contracting.

purpose, we identify a sample of firms that disclose ICW under SOX 404 in a year and then report that their internal controls are effective in a later year. In so doing, we further require these remediating firms to have loans initiated in both the pre-remediation period (from the disclosure date of ICW to the remediation date)[25] and the post-remediation period (from the remediation date to two years after). Following the same procedures described in the last subsection, we match the loans in the two periods and compute the mean and median changes in loan characteristics for the remediating firms.

The results, as reported in Table 7, Panel D, show that the mean and median changes in loan rate around the ICW remediation for 32 firms are −22.078 and −7.500, respectively, significant at the 5 percent and 1 percent levels, respectively. The significant decrease in loan rate in the post-remediation period suggests that firms enjoy a meaningful reduction in the cost of bank loans after ICW remediation. With regard to changes in nonprice terms, we find that compared with loans in the pre-remediation period, loans initiated in the post-remediation period are less likely to be secured by collateral (at the 10 percent level) and tend to include fewer financial covenants (at the 10 percent level) and fewer general covenants (at the 5 percent level). Overall, the analyses of remediating firms provide further evidence that auditor-attested internal control disclosures under SOX 404 are informative to banks.

Using a sample of SOX 302 disclosures, Costello and Wittenberg-Moerman (2011) conclude that "there is no pricing effect after the ICW is corrected," which appears to be inconsistent with our results. Note, however, that their study compares interest rates for loans initiated after ICW remediation (the "corrected" period) to those initiated before ICW disclosure (the "prior" period).[26] In contrast, we compare the interest rates for loans initiated after ICW remediation with those for loans initiated after ICW disclosure but before ICW remediation. As a matter of fact, Costello and Wittenberg-Moerman's (2011) results are somewhat consistent with ours: For example, in Column 1 of their Table 4, the coefficient on *Uncorrected* is about 29 bps and significantly positive, while the coefficient of *Corrected* is nearly zero and insignificant. Therefore, the insignificant coefficient for the *Corrected* indicator variable can also be interpreted in such a way that the loan rate decreases significantly relative to that in the uncorrected period after ICW remediation, and returns to its prior period level.

ICW and Default Risk

An important remaining challenge is to rule out the possibility that our test variable *Weak* simply captures differences in default risk (rather than the lack of reporting system quality) between ICW and non-ICW firms, thereby leading us to observe differences in various loan terms between the two. To address this possibility, we examine whether *Weak* has the ability to predict the actual occurrence of defaults observed for our sample firms. If *Weak* is merely a proxy for default risk, but not for reporting system quality, we expect it to be a significant predictor of actual defaults or bankruptcies. If *Weak* captures information risk rather than the measured default risk, we expect its predictive ability with respect to actual defaults to be insignificant. Following the recent bankruptcy prediction literature (e.g., Shumway 2001; Chava and Jarrow 2004; Chava et al. 2009), we estimate the Cox (1972) proportional hazard model to assess the ability of our ICW measures to predict

[25] The remediation date refers to the date of the firm's first clean-opinion internal control disclosure under SOX 404 after its previous ICW disclosure. The average length of the pre-remediation period for 32 firms in our sample is about 463 days, or 1.27 years.

[26] Costello and Wittenberg-Moerman (2011) include both the *Uncorrected* and *Corrected* indicator variables in the model, which means the loan rate in the prior period is used as the benchmark to interpret the coefficients for the *Uncorrected* and *Corrected* indicator variables. See Costello and Wittenberg-Moerman (2011, Table 4) for details.

actual defaults observed for the borrowing firms in our sample. We obtain data on actual default events from Moody's Corporate Default Risk Service. The results from the hazard model estimations, though not reported here, show no evidence that *Weak*, *Company_ICW*, and *Account_ICW* predict the occurrence of actual defaults. This finding is inconsistent with the view that our ICW measures simply capture default risk rather than information risk associated with the lack of adequate internal controls.

Deal-Level Analyses

Thus far, we have conducted our empirical analyses at the loan facility level; in other words, we consider each loan facility to be an independent observation. However, facility-level loan features in a deal may not be independent, as borrowers may have negotiated loan terms with lenders at the deal level. To address this concern, we construct a reduced sample of 2,334 observations at the loan-deal level and then re-estimate our main regressions. In so doing, we compute the average of the facility-level values of various loan features across multiple facilities in a deal, using facility size as a weight. Though not reported here, the inferences from the deal-level regression results are identical to those from the facility-level regression results reported in Tables 5 and 6.

Joint Determination of Loan Terms

To some extent, various loan contract terms can be jointly determined. However, the syndicated loan literature indicates that nonprice terms are normally determined before setting the loan interest rate in the syndication process (e.g., Dennis et al. 2000; Bharath. 2009; Ivashina 2009). Nonetheless, we address the possible joint determination of price and nonprice terms by estimating a system of equations using the seemingly unrelated regression (SUR) procedure.[27] Unreported results show that the SUR results are very similar to those reported in Tables 5 and 6.[28]

VII. CONCLUSIONS

Using a sample of 3,164 loan facility-years for borrowers that filed SOX 404 disclosures with the SEC during 2005–2009, this study compares the price and nonprice terms of loan contracts between borrowers with ICW problems and borrowers without such problems, after controlling for loan-specific, borrower-specific, and economy-wide factors known to affect contract terms. We find that ICW firms incur higher direct and indirect costs of bank loans than non-ICW firms. In addition, using a within-firm analysis, we show that banks charge significantly higher interest rates for loans initiated after the disclosure of ICW under SOX 404 than for loans initiated before the disclosure. This finding suggests that SOX 404 disclosure is informative to banks and other private lenders. Finally, we find evidence that banks charge lower loan rates for ICW firms after the remediation of internal control problems reported under SOX 404.

Overall, our results indicate that banks take into account the quality of internal control over financial reporting when setting the price and nonprice terms of loan contracts. This finding suggests that credit stakeholders in the private debt market view material weaknesses in internal controls over financial reporting as an information-risk-increasing factor that is incrementally significant, beyond traditional credit risk factors.

[27] The SUR equations include models with the following dependent variables: loan pricing, collateral, financial covenants, general covenants, and number of lenders.

[28] As an additional robustness test for loan pricing results, we control for nonprice terms in the loan pricing model and find that the results reported in Table 5 are robust to the inclusion of nonprice terms as additional loan-specific controls (untabulated here).

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APPENDIX A

Variable Definitions

ICW Variables	
Weak	An indicator variable that equals 1 if the auditor concludes a firm's internal control over financial reporting is not effective under SOX 404, and 0 otherwise. The data on SOX 404 disclosures are from the Audit Analytics database.
Account_ICW	An indicator variable that equals 1 if a borrowing firm reports any account-level ICW, and 0 otherwise. Data on SOX disclosures are from the Audit Analytics database.
Company_ICW	An indicator variable that equals 1 if a firm reports any company-level ICW or did not complete an internal control assessment, and 0 otherwise. Data on SOX disclosures are from the Audit Analytics database.
Borrower-Specific Variables	
Size	Firm size, which is the natural log of total assets in millions of dollars (Compustat data item 6).
Leverage	Leverage ratio, defined as the long-term debt (Compustat data item 9) divided by total assets (Compustat data item 6).
MB	Market-to-book ratio, measured as the market value of equity plus the book value of debt (Compustat data item 6 − Compustat data item 60 + Compustat data item 25 × Compustat data item 199) divided by total assets (Compustat data item 6).
Profitability	EBIDTA (Compustat data item 13) divided by total assets (Compustat data item 6).
Tangibility	Net PP&E (Compustat data item 8) divided by total assets (Compustat data item 6).
CashVol	Cash flow volatility, measured by the standard deviation of quarterly cash flows from operations (change in quarterly Compustat data item 108) scaled by total assets (Compustat data item 6) over the past five fiscal years.
RDefault_Risk	Decile rank of the first principal component of three commonly used default risk proxies: Altman's (1968) z-score, Ohlson's (1980) O-score, and Shumway's (2001) probability of bankruptcy ($-0.7999 \times$ *z-score* + $0.8948 \times$ *O-score* + $0.6239 \times$ *Probability of Bankruptcy*). Larger values indicate higher default risk.
AbsAccr	The absolute value of abnormal accruals obtained from the modified Jones model (Dechow et al. 1995) considering accounting conservatism (Ball and Shivakumar 2006).
Restate	An indicator variable that equals 1 if the firm restates its financial statements in the year of disclosing ICWs under SOX 404.
Rated	An indicator variable that equals 1 if the borrower has an S&P Domestic Long Term Issuer Credit Rating (Compustat data item 280), and 0 otherwise.
Big4	An indicator variable that equals 1 if the auditor of a borrower is one of the Big 4 auditors, and 0 otherwise.
Age	The number of years the firm has data in Compustat.
Log_Age	The natural log of *Age*.
NSegment	The number of the firm's business segment reported by Compustat segments.
Log_Segment	The natural log of *NSegment*.
Inventory	Inventory (Compustat data item 3) divided by total assets (Compustat data item 6).
M&A	An indicator variable that equals 1 if the firm is involved in mergers or acquisitions, and 0 otherwise (Compustat AFNT item 1).

Foreign	An indicator variable that equals 1 if the firm has a nonzero foreign currency translation (Compustat data item 150), and 0 otherwise.
Restructure	An indicator variable that equals 1 if any of Compustat data items 376, 377, 378, and 379 are nonzero, and 0 otherwise.
Sale_Growth	Growth rate in sales (Compustat data item 12).
Loss	An indicator variable that equals 1 if the firm has negative aggregate earnings before extraordinary items (Compustat data item 18) in the last and current fiscal years, and 0 otherwise.
Loan-Specific Variables	
AIS	The dependent variable, which is measured by the drawn all-in spread charged by the bank over the LIBOR for the drawn portion of the loan facility, obtained from the DealScan database.
Maturity	The maturity of the loan in months.
Log_Maturity	The natural log of *Maturity*.
Loan_Size	The amount of the loan facility in millions of dollars.
Log_Loan_Size	The natural log of *Loan_Size*.
Deal_Size	The dollar amount of the loan deal.
Log_Deal_Size	The natural log of *Deal_Size*.
NLenders	The number of banks in the loan deal.
Log_NLenders	The natural log of *NLenders*.
Performance_Pricing	An indicator variable that equals 1 if the loan contract includes performance pricing provisions, and 0 otherwise.
DSecured	An indicator variable that equals 1 if the loan facility is secured with collateral, and 0 otherwise.
FinCovIndex	Financial covenant index constructed by counting the number of financial covenants included in a loan contract.
GenCovIndex	General covenant index constructed by counting the number of general covenants included in a loan contract.
Loan_Concentration	*Deal_Size* divided by the sum of *Deal_Size* and the borrower's total liabilities (Compustat data item 181).
Prior_Lead	An indicator variable that equals 1 if at least one of the lead arrangers for the current deal has been a lead arranger of previous deals for the same borrower during the past five years, and 0 otherwise.
Lead_Reputation	An indicator variable that equals 1 if at least one of the lead arrangers for the loan deal was a top-25 U.S. lead arranger (in terms of loan volume) in the year before the initiation of the loan based on the loan data from DealScan, and 0 otherwise.
Loan_Purpose_Indicators	A series of the indicator variables for the purposes of loan facilities in DealScan, including corporate purposes, debt repayment, working capital, CP backup, takeover, and acquisition line.
Loan_Type_Indicators	A series of indicator variables for the types of loan facilities in DealScan, including term loan, revolvers, and 364-day facilities.
Macroeconomic Variables	
Term_Spread	Difference in the yield between ten-year and two-year U.S. Treasury bonds measured one month before the loan becomes active, obtained from the Federal Reserve Board of Governors.
Credit_Spread	Difference in the yield between BAA- and AAA-rated corporate bonds measured one month before the loan becomes active, obtained from the Federal Reserve Board of Governors.