

Does ASC 842 increase the usefulness of Balance Sheet—Evidence from private debt markets

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Abstract

The issuance of ASC 842 sparked substantial debate among standard setters, managers, and financial statement users regarding the contractual and economic implications of capitalizing operating leases. We examine how ASC 842 affected lenders' covenant design in new loan agreements issued after the standard's implementation. We document a significant shift toward the use of balance sheet–related covenants relative to income statement–related covenants following adoption. This shift is more pronounced for firms with higher-quality accounting information and stronger reporting incentives. We further find that borrowing costs and sales growth increase slightly after ASC 842, but we observe no corresponding effects on covenant amendments or accounting quality. Overall, our evidence suggests that ASC 842 enhances the contractability of balance sheet information relative to the prior “as-if” capitalization approach based on lease footnote disclosures. Our study contributes to the literature on the real effects of accounting standards for both preparers (lessees) and financial intermediaries (creditors).

1. Introduction

To enhance the transparency of operating lease obligations, the FASB issued ASC 842 in 2016, requiring lessees to recognize operating leases on the balance sheet for fiscal years beginning after December 15, 2018. By bringing previously off-balance-sheet lease commitments onto the balance sheet, ASC 842 was intended to improve the usefulness of accounting information and reduce firms' ability to use operating leases as off-balance-sheet financing. The standard, however, raised concerns that lease capitalization would deteriorate key financial ratios, trigger covenant violations, and increase borrowing costs. Deloitte (2014), for example, estimated that ASC 842 would add approximately \$1.3–\$2.0 trillion of lease liabilities to U.S. corporate balance sheets.¹

Responding to the FASB's call for research on the consequences of ASC 842, we examine whether this shift from disclosure to recognition affects the design of financial covenants in newly issued loan contracts. The answer is not obvious. On one hand, recognizing operating lease obligations may make balance-sheet information more visible, standardized, and contractible, leading lenders to rely more on balance-sheet-related covenants. On the other hand, sophisticated lenders may have already incorporated lease obligations using footnote disclosures, "as-if" capitalization, or private information before ASC 842, implying limited incremental effects on covenant design. Whether mandatory recognition changes how lenders write covenants is therefore an empirical question.

Because adoption occurred in 2019 or 2020 depending on firms' fiscal year-ends, ASC 842 provides a plausibly exogenous shock to reported accounting information. Using a difference-in-differences research design, we compare loan contracts issued by firms that adopted ASC 842 in 2019 with contracts issued by firms that had not yet adopted the standard in 2019. We find that contracts issued to 2019 adopters contain significantly more balance-sheet-related covenants after implementation, while income-statement-related covenants decrease. In contrast, we find no significant change in the total use of financial covenants or general covenants. These results indicate that ASC 842 changes the composition of covenant contracting rather than the overall intensity of contractual restrictions. Specifically, lenders appear to reallocate monitoring from income-statement-based measures toward balance-sheet-based measures after operating lease

¹ See <https://www.iasplus.com/en/publications/us/other/leases-survey>.

obligations become recognized on the balance sheet. These results are robust to alternative covenant measures, borrower and loan controls, and propensity-score-matched samples.

We next examine the mechanism underlying this covenant reallocation. We propose a recognition-based contractibility mechanism: by requiring balance-sheet recognition, ASC 842 makes operating lease obligations more visible, standardized, and usable in covenant design. We test this mechanism in two layers. First, we examine whether the effect is tied to the recognized liability information itself. Consistent with this prediction, the increase in balance-sheet-related covenants is concentrated in leverage-related covenants and is stronger for borrowers with larger recognized operating lease liabilities. Second, because recognition alone may not make accounting information useful for contracting, we examine whether the effect depends on reporting reliability. We find that the increase is stronger among borrowers with higher information quality and stronger internal controls, suggesting that lenders rely on recognized lease obligations when the reported amounts are credible and verifiable. Finally, we conduct an announcement-period falsification test using firms with above-median non-current operating lease obligations in fiscal year 2016 as **treated** firms and 2017 onward as the post-announcement period. We find no evidence of a similar covenant shift after the 2016 announcement but before implementation, suggesting that the effect is tied to balance-sheet recognition rather than a general post-announcement trend.

In additional analyses, we examine whether ASC 842 affects other contracting terms and borrower outcomes. We find that capital-expenditure covenants increase after implementation, consistent with lenders imposing targeted restrictions when the reporting advantage of leasing declines (Cheng et al., 2022; Yoon, 2022). We also find a modest increase in loan spreads, but no evidence of adverse effects on loan maturity, amendments, sales growth, or financial reporting quality. These results suggest that ASC 842 primarily affects debt contracting through covenant design and loan pricing, rather than through broader deterioration in contract terms or borrower performance.

This paper contributes to the literature on the debt-contracting usefulness of accounting information. Prior research questions whether ASC 842 provides incremental information to sophisticated lenders, who may already estimate lease obligations using “as-if” capitalization or private information (Barone et al., 2014). We show that ASC 842 nevertheless changes how lenders design covenant packages in newly issued loan contracts. The evidence indicates that recognition

Commented [AS1]: Is this "treated" or "treatment" firms? I know that Treat is one of our variables but I think "treatment" works better in this sentence.

reallocates covenant monitoring toward balance-sheet measures without increasing overall covenant intensity, consistent with a recognition-based contractibility channel.

Second, our study contributes to the broader literature on the economic consequences of disclosure versus recognition. Prior research debates whether recognition provides incremental benefits over footnote disclosure, particularly when sophisticated users can process disclosed information (e.g., Bratten et al., 2013; Donovan et al., 2024). ASC 842 provides a powerful setting for this question because operating lease obligations were disclosed before the standard but recognized afterward. We provide evidence that recognition matters for debt contracting by making lease obligations more visible, standardized, and contractible. We also extend the growing literature on ASC 842 by showing that lease recognition reshapes the design of new debt contracts, complementing prior studies on lease structures (Heese et al., 2023), capital expenditures (Ma & Thomas, 2023; Yoon, 2022), perceived equity risks (Cheng et al., 2022), changes in ownerships (Li & Venkatachalam, 2024), and contracting clauses (Gordon et al., 2023).

Unlike prior studies that primarily examine loan agreements written before ASC 842 became effective (Cheng et al., 2022; Gordon et al., 2023), our study focuses on contracts issued after implementation. This distinction is important because post-implementation contracts allow lenders and borrowers to incorporate the new lease accounting regime directly into covenant design, rather than renegotiating or interpreting provisions written under the prior standard. Thus, our examination of post-implementation contracts offers deeper insights as to how the new lease accounting standard affects prospective contractual arrangements.

Moreover, ASC 842 also provides a useful setting for examining how changes in accounting recognition affect the relative use of different financial statement measures in debt contracts. The standard primarily changes balance-sheet recognition by requiring operating lease liabilities to be recognized, while leaving income-statement presentation largely unchanged. This feature allows us to examine whether lenders shift covenant design toward the financial statement most directly affected by the standard. Our evidence that balance-sheet-related covenants increase while income-statement-related covenants decrease suggests that accounting recognition can reshape the allocation of covenant monitoring across financial statement measures.

2. Institutional background and hypothesis development

2.1 Institutional Background

In the dynamic landscape of financial reporting and regulatory compliance, the Financial Accounting Standards Board (FASB) issued Accounting Standards Codification (ASC) 842, a landmark standard that significantly impacts the way organizations recognize and report lease transactions. Effective since its implementation in December 2018 for public companies and later for private companies, ASC 842 replaces the previously established ASC 840 guidance and introduces fundamental changes in lease accounting practices. This standard is of paramount importance for businesses, as leases are a common form of financing and have significant implications on a company's financial health, performance, and decision-making processes. As indicated by a survey published by Deloitte (2014),² after the adoption of ASC 842, an additional \$1.3–\$2.0 trillion of lease liabilities will be reported on the balance sheets of U.S. companies.

As compared to ASC 840, ASC 842 introduces a new approach to lease classification based on the lessee's assessment of whether a lease conveys the right to control the use of an identified asset for a period of time in exchange for consideration. Under ASC 842, lessees must recognize a right-of-use asset and a corresponding lease liability for nearly all leases, including operating leases, on the balance sheet. The lease liability represents the present value of lease payments, and the right-of-use asset represents the lessee's right to use the leased asset over the lease term. After adopting ASC 842, companies disclosed both quantitative and qualitative information about a company's leasing activities. This includes information about lease terms, payment obligations, significant judgments, etc., providing stakeholders with greater insight into a company's lease obligations.

2.2 Related literature

A longstanding debate in accounting research concerns whether operating leases should be capitalized and how such capitalization affects firms and financial statement users. Early studies examining proposed capitalization requirements focused on as-if-capitalized operating leases, finding substantial impacts on key financial ratios. For example, Bennett and Bradbury (2003), noted a significant negative impact of as-if-capitalized operating leases on leverage, liquidity and profitability and (Goodacre, 2003) reports similar findings for UK retailers. Research on U.S. firms

² See <https://www.iasplus.com/en/publications/us/other/leases-survey>.

likewise shows that capitalizing operating leases materially alters performance ratios (e.g., Duke et al., 2009; Grossman & Grossman, 2010; Kostolansky & Stanko, 2013; Mulford & Gram, 2007). Stakeholder feedback echoed these concerns: Comiran and Graham (2016) report that only a minority of survey and comment-letter respondents supported capitalization, largely due to anticipated increases in audit fees, IT adjustments, and the cost of capital.

More recently, ongoing research on the effects of ASC 842 provides additional evidence on the effects of the standard. Yoon (2022) and Ma and Thomas (2023) show that after the effective date of ASC 842, companies were more likely to “buy” rather than “lease”. Similarly, Heese et al. (2023) confirm the negative impact of ASC 842 on the use of operating leases. In the debt contracting setting, two contemporaneous papers (Cheng et al., 2022; Gordon et al., 2023) find that loans written before ASC 842 but maturing afterward often include contractual provisions allowing borrowers to exclude ASC 842’s effects.

2.3 Hypothesis development

Theories of contracting suggest that accounting information is useful in contracts only when it is sufficiently reliable and contractible (Watts & Zimmerman, 1986). Prior literature further suggests that recognized accounting information is generally more reliable and salient than disclosed information because recognized amounts are subject to greater managerial attention, audit scrutiny, and standardization (e.g., Davis-Friday et al., 2004; Donovan et al., 2024; Müller et al., 2015). In debt contracting, the reliability of accounting information can affect covenant design in at least two ways. First, because many debt covenants are written directly on accounting measures, the reliability of those measures affects the effectiveness of covenant monitoring. Second, accounting information helps creditors assess borrower creditworthiness and therefore influences how lenders design contract terms and allocate control rights (Frankel et al., 2008; Nikolaev, 2010).

ASC 842 provides a useful setting to examine this issue because it changes the accounting treatment of operating leases from disclosure to recognition. Prior to ASC 842, operating lease commitments were disclosed in the footnotes but were not recognized as liabilities on the balance sheet. Some critics argue that sophisticated creditors could already incorporate operating lease obligations into debt contracts using footnote disclosures and “as-if” capitalization methods before ASC 842 (Paik et al., 2015; Skinner, 2011). Under this view, mandatory recognition should have

little effect on covenant design because creditors already understood and incorporated lease obligations into contracts even without ASC 842.

However, information-friction theory suggests that disclosure and recognition are not equivalent. Disclosed information can be less salient, less standardized, and more costly to process than recognized information (e.g., Blankespoor et al., 2020; Michels, 2017). In the operating lease setting, creditors had to extract lease commitments from footnotes, estimate present values, and make assumptions about discount rates, lease terms, and renewal options. These adjustments involve judgment and may increase contracting and monitoring costs. Prior research also suggests that non-standardized contract provisions and accounting adjustments can increase complexity in debt contracting (EL-Gazzar & Pastena, 1991; Frankel et al., 2008). By requiring operating lease liabilities to be recognized on the balance sheet, ASC 842 provides a more standardized and auditable measure of lease obligations, potentially increasing the usefulness of balance-sheet information in debt contracts.

These arguments suggest that ASC 842 may change financial covenant design by increasing the contractibility of balance-sheet information. Because ASC 842 primarily recognizes operating lease obligations on the balance sheet, while leaving income-statement presentation largely unchanged, lenders may shift toward balance-sheet-based covenants after implementation. If creditors had already fully incorporated operating lease commitments from footnote disclosures, however, the shift from disclosure to recognition should not materially affect covenant design. Thus, whether ASC 842 increases lenders' reliance on balance-sheet-related covenants is an empirical question.

Accordingly, we present our first hypothesis as follows.

H1: The use of balance sheet-related covenants increases relative to the use of income statement-related covenants in the loans issued after the implementation of ASC 842.

Although H1 predicts a shift in financial covenant design, the economic interpretation of this shift depends on whether ASC 842 leads to broad contractual tightening or to a targeted reallocation of covenant monitoring. If the recognition of operating lease liabilities causes lenders to reassess borrowers as fundamentally riskier, lenders may respond by increasing the total use of financial

covenants or adding more general restrictions (Altamuro et al., 2014; IASB, 2016)³. In contrast, if ASC 842 primarily increases the usefulness of balance-sheet information for contracting, lenders may substitute toward balance-sheet-based covenants without increasing overall covenant intensity. We therefore examine the total use of financial and general covenants as a supplementary analysis to H1. This test helps distinguish broad contractual tightening from covenant reallocation and provides the basis for examining the recognition-based contractibility mechanism in the next tests.

We next examine the recognition-based contractibility mechanism underlying the predicted covenant reallocation. We conceptualize this mechanism as having two related dimensions. First, recognized lease liabilities must be relevant to covenant design: if ASC 842 makes lease obligations more contractible, the increase in balance-sheet-related covenants should be concentrated in covenants that directly monitor leverage, debt capacity, and liability structure. Second, recognized lease liabilities must be reliable: because these amounts continue to involve estimates and judgments, lenders should rely on them more when the borrower's financial reporting environment supports credible measurement. We first examine the relevance dimension in H2 and then examine the reliability dimension in H3.

The central accounting change under ASC 842 is the recognition of operating lease liabilities. Before implementation, operating lease commitments were disclosed in footnotes, and lenders had to make assumptions about discount rates, lease terms, renewal options, and present values to incorporate these obligations into covenant design. After implementation, operating lease liabilities are recognized on the balance sheet, making liability information more standardized, visible, and verifiable. If recognition makes lease obligations relevant for covenant design, the post-ASC 842 increase in balance-sheet-related covenants should be more pronounced for leverage-related covenants and for borrowers with larger recognized operating lease liabilities.

We state our second hypothesis as follows:

³ See <https://www.ifrs.org/news-and-events/news/2016/01/gary-kabureck-article-little-to-fear-in-new-world-of-lease-accounting/>.

H2-- Recognition relevance: The post-ASC 842 increase in balance-sheet-related covenants is more pronounced for leverage-related covenants and for borrowers with larger recognized operating lease liabilities.

Recognition alone, however, may not be sufficient to make accounting information useful for contracting. Although ASC 842 requires firms to recognize operating lease liabilities on the balance sheet, these amounts continue to depend on managerial estimates and reporting systems, including judgments about lease terms, renewal options, discount rates, and lease modifications. Thus, the effect of recognition on covenant design should depend on whether lenders view the newly recognized amounts as credible and verifiable.

Higher information quality increases the reliability of accounting measures and improves their usefulness in debt contracting. Timely loss recognition provides creditors with more timely information about downside risk and can improve the effectiveness of accounting-based covenants (Ahmed et al., 2002; Ball & Shivakumar, 2005; Nikolaev, 2010; Wittenberg-Moerman, 2008). Similarly, stronger internal controls increase lenders' confidence that reported accounting amounts faithfully reflect the borrower's financial condition, whereas material internal control weaknesses reduce reporting reliability and can weaken lenders' willingness to rely on accounting-based covenants (Ashbaugh-Skaife et al., 2009; Beneish et al., 2008; Costello & Wittenberg-Moerman, 2011).

Accordingly, the recognition-based contractibility mechanism should be stronger when borrowers have higher-quality financial reporting. If lenders view recognized lease liabilities as credible and verifiable, they should be more willing to incorporate balance-sheet information into covenant design. We therefore state our third hypothesis as follows:

H3—Recognition reliability: The increase in the use of balance sheet-related covenants is more likely to occur for borrowers with higher information quality.

Commented [AS2]: Keeping H2 and H3 separate now makes perfect sense.

3. Data and sample

Information about the terms of the debt covenants was obtained from Dealscan. Dealscan includes both loan deal-level and tranche-level information and provides detailed covenant and amendment

information. Because the covenants should be the same for each loan, our final sample extracted at the loan level.

To eliminate the impact of the financial crisis in 2008 and 2009 on an entity's lease decision, we initiated our data collection in 2010. Our initial sample starts from 466,322 tranche-level data including loans initiated during 2010-2019. To match loan deal data with companies' financial data in Compustat, we follow and use the name-match program provided in Cohen et al. (2021). Next, we manually check each covenant-financial data pair to ensure the validity of the matched pair.⁴ This matching step yields 127,452 tranche-year observations with 1,973 unique borrowers.

We then exclude deal-year observations that are without covenants, without bps and maturity information. After combining the data from tranche level to loan deal level, we get 4,846 deal-year observations issued by 1,442 unique borrowers. We also limit loan issues to origination which further drop 2,868 observations. We then exclude firms in highly regulated industries (SIC 4900-4999 and 6000-6999), firms with early adoption of ASC 842, firms with negative equity in the current and previous years. To clearly identify the impact of ASC 842, we restrict our sample to firm observations with operating leases, because firms without operating leases are unlikely to be affected by the new standard. This also mitigates the concerns of inherent or fundamental differences between firms with operating leases and firms without operating leases. The final sample with non-missing control variables contains 1,117 deal-year observations from 774 unique borrowers.

The process of sample selection is shown in Table 1.

[Insert Table 1 Here]

According to the requirements of ASC 842, firms with fiscal years beginning after December 15, 2018 should begin to use the new lease standards. Compustat's year-end policy indicates that if the fiscal year started later than June 1st of year t , then the fiscal is considered as fiscal year $t+1$. As a result, we identify a company as adopting ASC 842 in 2019 if its fiscal year started after

⁴ Although most of the previous studies use the Dealscan-Compustat linking table provided by Chava & Roberts (2008), we could not employ this linking table because it provides no matches for loans originated after 2017. Since the firms were required to adopt ASC 842 in fiscal 2019, the lack of updated loan matching information makes the Chava & Roberts linking table less suitable for our research.

December 15, 2018 but before May 31, 2019. We then used Calcbench to manually identify firms disclosing operating leases on their balance sheets before 2019 (early adoption) and firms that should have adopted ASC 842 in 2019 but actually adopt later (late adoption) using. Calcbench provides operating lease information included in footnote disclosures. We identify 3 firms with 7 deal-year observations with early adoption and no late adoption in our sample and those observations are excluded.⁵ Our classification of covenants is listed in the Appendix 2.

To test the impact of ASC 842 on the design of debt covenants, we use a Difference-in-Difference research design. Our basic regression model is as follows:

$$\begin{aligned} \text{Covenants} = & \beta_0 + \beta_1 \text{Treat} + \beta_2 \text{Post} + \beta_3 \text{Treat} \times \text{Post} \\ & + \beta_4 \text{Controls}_{i,t-1} + \varepsilon_{i,t-1} \end{aligned} \quad (1)$$

Post is a dummy variable set to one for the year of 2019 and zero otherwise. Treat is a dummy variable equals to one if the borrower adopted ASC 842 in 2019 and zero otherwise. The key variable is $\text{Treat} \times \text{Post}$, which indicates the impact of ASC 842 on debt covenants of firms adopting ASC 842 in the fiscal year of 2019 compared to those of firms adopting ACS 842 after the fiscal year of 2019. A positive (negative) β_3 indicates an increase (decrease) in the use of covenants. The dependent variable is a set of variables relating to the use of covenants.

Following the theory and predictions developed in the hypothesis section of this paper, we use a set of firm-level and loan deal-level control variables that might affect the design of covenants. These variables include firm size, the level of cash holdings, the level of leverage, profitability and the need to invest in research and development. The existence of such variables is more likely to affect information quality and agency costs of debt and hence affect the need to use the covenants. Consequently, we control for firm size, level of cash holdings, leverage, profitability and research and development expenditures. These control variables are measured as of the fiscal year ended just prior to the origination of the loan contract. Additionally, we also control for the use of finance leases, which reflects borrowers' additional lease debt in compliance with ASC 842.

⁵ The three early adoption firms include Delta Airlines INC, William Lyon Homes, and Krispy Kreme INC.

To control for loan-level characteristics, we include the following control variables: debt size, maturity, loan spreads, the total number of lenders, and whether there is a bond rating. In addition, we also include a set of indicators for secured loans, revolving loans, term loans, and whether the loan contains performance pricing provisions. We also include fixed effects for industry⁶ and year to control for unobserved industry and year-specific factors and estimate standard errors clustered at the firm and year level. All control variables are defined in Appendix 1.

[Insert Appendix 1 Here]

4. Results

4.1 Summary statistics

We classify covenants based on the primary contracting construct used in the covenant calculation. Consistent with prior research that distinguishes balance-sheet-based covenants from income-statement-based covenants, we classify covenants as balance-sheet-related when they are written primarily on stock measures of financial position, such as assets, liabilities, debt, leverage, net worth, or equity, and as income-statement-related when they are written primarily on flow measures of performance or coverage, such as earnings, cash flow, interest coverage, fixed-charge coverage, or debt-service coverage (Christensen & Nikolaev, 2012; Demerjian, 2011). In our main analyses, we classify debt-to-cash-flow covenants as balance-sheet-related because our research question focuses on ASC 842's recognition of lease liabilities and its effect on debt-capacity monitoring. Although debt-to-cash-flow covenants include a flow denominator, the contractual restriction is centered on the borrower's debt burden and is therefore more closely related to leverage and debt-capacity covenants in our setting. We verify that our inferences are robust to alternative classifications.

We classify capital expenditure covenants, EBITDA-level covenants, and loan-to-value covenants separately from balance-sheet- and income-statement-related covenants because they serve distinct contracting functions. Capital expenditure covenants directly restrict investment decisions rather than measure financial position or operating performance, consistent with prior research that

⁶ The industry classification uses Fama-French 49 industries due to limited number of total observations in our sample. In the unreported results, we also used SIC 2-digit to classify industries. This did not affect our results.

distinguishes covenant types based on their contracting roles (Christensen & Nikolaev, 2012) and treats capital expenditure restrictions as creditor controls over borrower investment policy (Nini et al., 2009). EBITDA-level covenants impose minimum operating-performance thresholds rather than coverage ratios, while loan-to-value covenants primarily capture collateral protection. Accordingly, we report these covenant types separately in Appendix 2. Importantly, our main inferences are unchanged when capital expenditure covenants are included in the broader financial covenant classification.

We present descriptive statistics of our variables at the loan-year level in Panel A of Table 2. We list the summary statistics for the entire sample with at least one financial covenant. In our sample of loan contracts, 92.3% included a balance sheet-related covenant and 71.5% included an income statement-related covenant. The mean number of balance sheet-related covenants and income statement-related covenants used in each loan contract is approximately 2.056 ($e^{0.721}=2.056$) and 1.649 ($e^{0.5}=1.649$), respectively. For each loan contract in our sample, balance sheet-related covenants account for 62.3% of the total with income statement-related covenants accounting for the remaining 37.7%.

We also provide summary statistics for our sample firms as well as for loan contracts. For example, the mean size of firms including in our sample is around 7.568 (\$1,935 million) and the mean deal amount of loan contracts is around \$1,055 million. The mean maturity of loan contracts in our sample is about 53 months and the mean number of lenders for each loan contract is 9.6. There are 9.1% term loans. 41.7% loan contracts have a collateral release requirement and 78.8% contains a performance grid. Approximately 40.7% of borrowers in our sample report having a bond rating.

In Panel B of Table 2, we show the summary statistics for operating leases for our sample firms at the firm-year level. The non-current part of operating leases includes all operating leases except for operating leases that are due in one year. The mean of non-current part of operating leases divided by total assets are around 10% while the max value is around 2.621 times total assets. Operating leases that are due in one year and operating leases due after 5 years (i.e., the “thereafter” segment of operating leases) account for about half of the total operating leases combined (25% and 24.5%, respectively).

[Insert Table 2 Here]

4.2 Regression results

Hypothesis 1: Did the structure of financial covenants change after the implementation of ASC 842?

Our first research question examines how the issuance of ASC 842 affected the structure of covenants in new loan contracts. We employ model (1) to test our hypothesis. Table 3 presents the results with two measures of the use of balance sheet-related covenants. The first measure is the natural logarithm of one plus the number of balance-sheet-related (income-statement-related) covenants. The second measure is the percentage of balance-sheet-related covenants relative to the total number of financial covenants.

Table 3 summarizes the results for our first hypothesis using the sample with at least one financial covenant. For each type of financial covenants, we report results without (Columns 1, 3, and 5) and with (Columns 2, 4, and 6) including control variables. The coefficients on *Treat*Post* are all positive for Columns 1- 2 and Columns 5-6 (0.189, 0.18, 0.202, and 0.21, respectively), all of which are significant at the 1 percent level. These results are consistent with H1 and indicate that the adoption of ASC 842 is associated with a significant increase in the use of balance-sheet-related covenants in newly issued loan contracts. The economic magnitude is also meaningful. The estimated increase in balance-sheet-related covenants for treated firms after ASC 842 adoption represents approximately 20.5 percent of the sample mean, calculated as 0.189 divided by 0.923. It also represents a 60% percent of its standard deviation ($=0.158/0.268$).⁷

Columns (3) and (4) show that the use of income-statement-related covenants decreases for contracts issued after ASC 842 adoption. Although ASC 842 primarily affects balance-sheet recognition and does not substantially change income-statement reporting for operating leases, this decline is consistent with a covenant-substitution interpretation. Loan contracts contain packages of covenants, and lenders choose among covenant types to achieve efficient monitoring and control. If recognizing operating lease obligations makes balance-sheet information more useful for contracting, lenders may rely more on balance-sheet-based covenants and less on income-statement-based covenants. Thus, the increase in balance-sheet-related covenants and the decline

⁷ The mean and the standard deviation of the natural log number of balance sheet-related covenants is 0.923 and 0.268 for the treatment group, respectively.

in income-statement-related covenants together suggest a reallocation of covenant monitoring from flow-based measures toward stock-based measures following ASC 842 adoption.

[Insert Table 3 Here]

Following Table 3, we examine whether the documented shift in covenant design reflects a broader change in covenant intensity. Specifically, we test whether ASC 842 changes the total use of financial covenants or general covenants. This analysis complements H1 by distinguishing covenant reallocation from broad contractual changing.

Table 4 reports the results using a larger sample of contracts with at least one financial covenant or at least one general covenant. In specifications without control variables, the coefficient on $\text{Treat} \times \text{Post}$ is positive for general covenants and negative for financial covenants. However, after including contract- and borrower-level controls, neither coefficient remains statistically significant. Taken together with Table 3, these results suggest that ASC 842 affects the composition of covenant contracting rather than the overall level of contractual restrictions. Lenders increase their reliance on balance-sheet-related covenants and reduce their reliance on income-statement-related covenants, while the overall use of financial and general covenants remains largely unchanged.

[Insert Table 4 Here]

Hypothesis 2: Is the increase in balance-sheet-related covenants driven by recognition relevance?

The preceding results suggest that ASC 842 changes how lenders use financial covenants, rather than how much covenant protection they demand. We next examine the first layer of the recognition-based contractibility mechanism: whether the covenant reallocation is tied to the relevance of the liability information newly recognized under ASC 842. If the increase in balance-sheet-related covenants reflects lenders' response to recognized operating lease obligations, the effect should be concentrated in covenants that directly use liability and leverage information. In addition, the effect should be stronger when the recognized lease obligations are economically material.

Table 5 reports the results. We classify leverage-related covenants as covenants that impose limits on leverage, debt-to-cash ratios, debt-to-net-worth ratios, and debt-to-equity ratios. All other

balance-sheet-related covenants are classified as non-leverage-related covenants. Column (1) uses the number of leverage-related covenants as the dependent variable, while Column (2) uses the number of non-leverage-related balance-sheet covenants. The coefficient on $\text{Treat} \times \text{Post}$ is positive and statistically significant in Column (1), but statistically insignificant in Column (2). Thus, the post-ASC 842 increase in balance-sheet-related covenants is concentrated in leverage-related covenants. This pattern is consistent with the recognition-based contractibility mechanism: by recognizing operating lease liabilities on the balance sheet, ASC 842 makes liability and leverage information more visible and usable in covenant design, leading lenders to rely more heavily on covenants that monitor borrowers' leverage and debt capacity.

[Insert Table 5 Here]

We further test the recognition relevance by examining whether the effect is stronger when the newly recognized lease obligations are economically material. In Table 6, we measure lease materiality using operating lease liabilities recognized in firms' 2019 annual reports, scaled by pre-adoption sales. This measure captures the magnitude of recognized lease obligations relative to the borrower's operating scale.

Consistent with H2, we find that the post-ASC 842 increase in balance-sheet-related covenants is more pronounced for firms with larger recognized operating lease liabilities. This result further supports the view that ASC 842 affects covenant design by making material lease obligations more visible, verifiable, and contractible in newly issued debt contracts.

[Insert Table 6 Here]

Hypothesis 3: Is the increase in balance-sheet-related covenants driven by recognition reliability?

H2 provides evidence that the covenant reallocation is tied to the relevance of newly recognized operating lease liabilities. We next examine the second layer of the recognition-based contractibility mechanism: whether lenders rely more on these recognized amounts when they are supported by a reliable reporting environment. Because recognized lease liabilities continue to involve estimates and judgments, lenders may be more willing to contract on these amounts when the borrower's accounting information is more credible. H3 therefore tests whether the post-ASC

842 increase in balance-sheet-related covenants is stronger for borrowers with higher information quality and stronger internal controls.

Table 7 reports the results from triple-difference specifications using two measures of financial reporting quality: timely loss recognition and internal control weaknesses. We measure timely loss recognition following (Basu, 1997) and calculate it using information available immediately before loan issuance. Timely loss recognition is particularly relevant in debt markets because it facilitates the timely incorporation of downside risk into accounting numbers and improves the effectiveness of accounting-based covenants (Ball & Shivakumar, 2005). We also use internal control weaknesses to capture the quality of the borrower's financial reporting environment. Following Costello and Wittenberg-Moerman (2011), we expect weaker internal controls to reduce lenders' willingness to rely on accounting-based covenants. We obtain internal control weakness data from SOX Section 302 reports⁸ and measure internal control quality using the average incidence of material internal control weaknesses over the three years preceding loan issuance.⁹

Consistent with H3, Columns (1) and (2) of Table 6 show that the post-ASC 842 increase in balance-sheet-related covenants is significantly stronger for firms with higher timely loss recognition. When the dependent variable measures the number of balance-sheet-related (income-statement-related) covenants, the coefficient on $TLR_up \times Treat \times Post$ is 0.062 (-0.032) and statistically significant at the 1 percent level. This result indicates that lenders increase their reliance on balance-sheet covenants more when borrowers' accounting systems recognize losses in a timely manner.

The internal control results provide consistent evidence. Firms with material internal control weaknesses experience a weaker increase in balance-sheet-related covenants after ASC 842 adoption. When balance-sheet-related covenant use is measured as the natural logarithm of one plus the number of balance-sheet-related covenants, the coefficient on the interaction involving internal control weakness is -0.297 and statistically significant at the 1 percent level. This result

⁸ Section 302 refers to the "Corporate Responsibility for Financial Reports" and requires that chief executive officers and chief financial officers evaluate the design and effectiveness of internal controls and report their overall conclusions on a quarterly basis. Any company filing periodic reports under Sections 13(a) or 15(d) of the Exchange Act, without exception for firm size, must comply with the rule.

⁹ In our unreported tables, when we also change the definition of *ICW* to whether there is internal control weakness in the previous year or in previous five years, our results keep.

confirms that lenders are less likely to expand the use of balance-sheet covenants when the borrower's reporting environment is weaker.

Taken together, the timely loss recognition and internal control results support H3. Combined with the H2 evidence, these findings suggest that the covenant reallocation depends not only on the relevance of newly recognized lease liabilities, but also on the reliability of the reporting environment. Lenders are more likely to incorporate ASC 842 lease obligations into covenant design when those obligations are supported by credible and verifiable accounting information.

[Insert Table 7 Here]

4.3 Robustness tests—announcement-period falsification test

We next conduct an announcement-period falsification test to examine whether the shift toward balance-sheet-related covenants began after ASC 842 was announced in 2016, rather than after the standard became effective. This test addresses the possibility that lenders adjusted covenant design in anticipation of the new standard or that balance-sheet covenant use followed a broader post-announcement trend. Because firms with larger operating lease obligations were more likely to be affected by ASC 842, we define treated firms as those with above-median non-current operating lease obligations in fiscal year 2016. We define the post-announcement period as fiscal years 2017 and thereafter.

Table 8 reports the results. We find no evidence that firms with greater operating lease exposure experienced a significant increase in balance-sheet-related covenants after the 2016 announcement but before implementation. This finding suggests that the covenant reallocation documented in our main analyses is not driven by a general post-announcement trend. Instead, the evidence is more consistent with lenders responding when operating lease liabilities became recognized on the balance sheet and directly usable in covenant definitions.

[Insert Table 8 Here]

4.4 Robustness tests—Propensity Score Matching tests

Although firms' fiscal year-end dates are unlikely to be determined by factors directly related to ASC 842's effect on covenant design, a potential concern is that firms adopting ASC 842 in 2019

differ systematically from firms that had not yet adopted the standard in 2019. Such differences could limit the comparability of treated and control firms and affect the generalizability of our results. Consistent with this concern, we find significant differences in several borrower characteristics across the two groups. For example, treated firms are larger, have higher leverage, and report higher research and development expenditures.

To mitigate the concern that these observable differences drive our findings, we conduct an additional robustness test using a propensity-score-matched sample. Specifically, we match treated firms to control firms based on the control variables included in Equation (1), thereby creating a more balanced comparison group. This procedure helps ensure that the control firms used in the analysis are more comparable to treated firms along observable borrower and loan characteristics. Using the matched sample, we continue to find similar results. This evidence suggests that our main inferences are not driven by observable differences between firms adopting ASC 842 in 2019 and firms that had not yet adopted the standard in 2019.

[Insert Table 9 Here]

5. Additional tests

5.1 Do creditors put more restrictions on capital expenditures levels after the implementation of ASC 842?

Building on the preceding evidence, we next examine whether lenders adjust covenants that restrict borrowers' future investment decisions. The prior results suggest that ASC 842 leads lenders to reallocate monitoring toward balance-sheet-based and leverage-related covenants when lease obligations become recognized and contractible. However, ASC 842 may also affect borrowers' real financing and investment choices. Prior literature suggests that, after ASC 842, firms may substitute away from leasing and toward asset purchases because the off-balance-sheet reporting advantage of operating leases is reduced. If lenders anticipate this shift, they may respond not only by monitoring recognized liabilities more directly, but also by restricting future capital expenditures.

Accordingly, our fourth hypothesis examines whether ASC 842 increases the use of capital expenditure covenants. CAPEX covenants are particularly relevant in this setting because they

directly limit borrowers' ability to purchase assets rather than lease them. We measure the use of capital expenditure provisions in two ways: the natural logarithm of one plus the number of capital expenditure covenants, and the percentage of capital expenditure covenants relative to the total number of covenants.

Table 10 reports the results. Consistent with our prediction, the coefficients on $\text{Treat} \times \text{Post}$ are positive and statistically significant across all specifications. These findings suggest that, following ASC 842 implementation, lenders are more likely to include capital expenditure restrictions in newly issued loan contracts. This evidence is consistent with lenders anticipating that borrowers may respond to the reduced reporting advantage of operating leases by shifting toward asset purchases, and therefore imposing limits on such investment activities at contract initiation.

Importantly, we view the increase in CAPEX covenants as a complementary contracting response rather than a substitute for the increase in balance-sheet-related covenants. Balance-sheet covenants help lenders monitor borrowers' recognized obligations and leverage positions, whereas CAPEX covenants directly restrict future investment decisions. Consistent with Christensen and Nikolaev (2012), different covenant types serve distinct contracting roles. Thus, the increased use of CAPEX covenants suggests that lenders respond to ASC 842 not only by relying more on recognized balance-sheet information, but also by placing targeted restrictions on investment activities that may become more relevant when firms substitute asset purchases for leases.

[Insert Table 10 Here]

5.2 Other changes in contracting terms and the economic impact

We next examine whether ASC 842 affects other loan contract terms and borrower outcomes. A common concern surrounding ASC 842 was that lease capitalization would increase reported leverage, tighten covenant slack, increase the likelihood of covenant violations, and raise borrowers' financing costs (Deloitte, 2014).¹⁰ Although our main results suggest that lenders redesign covenant packages by reallocating monitoring toward balance-sheet-based measures, it remains unclear whether this redesign is accompanied by changes in other contracting outcomes.

¹⁰ See <https://dart.deloitte.com/USDART/pdf/4cbc79b0-3f81-11e6-95db-87cff75282a0>.

We first examine loan amendments. Christensen and Nikolaev (2011) suggest that balance-sheet covenants and income-statement covenants can serve different contracting roles, with balance-sheet covenants functioning more through binding constraints and income-statement covenants serving more as trip wires. Because we find that income-statement-related covenants decrease after ASC 842, the effect on amendments is ambiguous. On the one hand, fewer income-statement-related covenants may reduce the likelihood of technical violations and subsequent amendments. On the other hand, newly recognized lease liabilities may tighten covenant slack or increase renegotiation needs. We therefore examine whether amendment frequency changes after ASC 842 implementation.

We also examine whether ASC 842 affects loan pricing, loan maturity, and borrower performance. Prior concerns suggested that recognizing operating lease liabilities could increase borrowing costs or lead to less favorable loan terms if lenders perceive borrowers as riskier. However, ASC 842 changes accounting recognition rather than firms' underlying economics, and prior studies suggest that firms may respond to lease capitalization by improving investment efficiency or adjusting real activities (Ma and Thomas, 2023; Altamuro et al., 2014). Thus, the effect on loan terms and borrower performance is ultimately an empirical question.

Table 11 reports the results. We find that loan spreads increase after ASC 842 adoption, suggesting that lenders price the newly recognized lease obligations into the cost of debt. In contrast, we find no statistically significant changes in loan maturity, amendment frequency, or timely loss recognition. We also find a marginal increase in sales growth. Overall, these results suggest that ASC 842 affects debt contracting through covenant design and loan pricing, but we do not find evidence of broader adverse effects on loan maturity, renegotiation activity, sales growth, or financial reporting quality.

[Insert Table 11 Here]

7. Summary and Conclusions

This paper examines whether the balance-sheet recognition of operating lease obligations under ASC 842 affects the design of financial covenants in newly issued private debt contracts. Using a difference-in-differences design that compares loan contracts issued by firms adopting ASC 842

in 2019 with contracts issued by firms that had not yet adopted the standard in 2019, we provide evidence that ASC 842 changes the composition of covenant contracting. After implementation, contracts issued to 2019 adopters contain more balance-sheet-related covenants and fewer income-statement-related covenants. In contrast, we find no robust evidence that ASC 842 changes the total use of financial covenants or general covenants. These results suggest that lenders reallocate covenant monitoring toward balance-sheet-based measures rather than broadly increasing covenant intensity.

We provide further evidence consistent with a recognition-based contractibility mechanism. The increase in balance-sheet-related covenants is concentrated in leverage-related covenants and is stronger for borrowers with larger recognized operating lease liabilities. These findings suggest that lenders respond to the liability information made more visible, standardized, and usable by ASC 842. We also find that the covenant response is stronger for borrowers with higher information quality and stronger internal controls, indicating that recognition affects covenant design when the recognized amounts are credible and verifiable. In addition, our announcement-period falsification test provides no evidence of a similar covenant shift after ASC 842 was announced in 2016 but before implementation. This evidence supports the interpretation that the covenant reallocation is tied to balance-sheet recognition rather than to a general post-announcement trend.

Additional analyses show that ASC 842 affects other dimensions of debt contracting. We find that capital-expenditure covenants increase after implementation, consistent with lenders imposing targeted investment restrictions when the reporting advantage of leasing declines. We also find a modest increase in loan spreads, but no evidence of adverse effects on loan maturity, amendments, sales growth, or financial reporting quality. Overall, these results suggest that ASC 842 primarily affects debt contracting through covenant design and loan pricing, rather than through broader deterioration in contract terms or borrower performance.

Our study contributes to the literature on the debt-contracting usefulness of accounting information by showing that recognition can reshape covenant design even when sophisticated lenders may have had access to related footnote disclosures before the accounting change. The evidence suggests that recognized lease obligations are more contractible than disclosed lease commitments

because they are more visible, standardized, and verifiable. Our study also contributes to the literature on the economic consequences of disclosure versus recognition and to the growing literature on ASC 842 by showing that the standard affects prospective debt-contracting choices in newly issued loan contracts.

This study is subject to several caveats. First, because ASC 842 primarily affects firms with operating leases, our sample is concentrated among firms for which lease obligations are economically relevant. The results therefore may not generalize to firms with limited leasing activity or to settings in which the accounting change affects less contractible information. Second, our setting focuses on newly issued loan contracts rather than a balanced firm-year panel, because firms issue debt contracts irregularly. Although we include extensive borrower and loan controls and conduct several robustness tests, including propensity-score matching, unobservable differences in contract issuance or borrower characteristics may still affect covenant design. These limitations notwithstanding, our findings provide evidence that accounting recognition can meaningfully affect how lenders design covenant packages in new debt contracts.

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Table 1. Determination of Sample Size

	Number of Deal-Year Observations	Unique Borrowers
U.S. tranche-level observations for loans issued 2010-2019	466,322	
Match with CRSP-Dealscan link table	127,452	1,973
Drop loans without covenants, bps and maturity information	(50,465)	(483)
Combine into deal-level observations	4,846	1,442
Keep loans that are originated	1,978	1,319
Drop firms in highly regulated industries	(529)	(333)
Drop firms with early adoption	(7)	(3)
Drop firms with negative equity in year t or in year t-1	(116)	(62)
Drop observations without operating leases	(24)	(16)
With non-missing control variables	1,233	856
With at least one financial covenant	1,117	774

Table 2. Descriptive statistics

Panel A: Descriptive statistics at the deal-year level								
	N	Mean	p25	Median	p75	Min	Max	SD
<i>B/S_covt_t</i>	1117	0.923	1	1	1	0	1	0.267
<i>I/S_covt_t</i>	1117	0.715	0	1	1	0	1	0.451
<i>Num_B/S_covt_t</i>	1117	0.721	0.693	0.693	0.693	0	1.609	0.28
<i>Num_I/S_covt_t</i>	1117	0.5	0	0.693	0.693	0	1.099	0.318
<i>B/S_perct_t</i>	1117	0.623	0.5	0.5	1	0	1	0.282
<i>I/S_perct_t</i>	1117	0.377	0	0.5	0.5	0	1	0.282
<i>Treat</i>	1117	0.105	0	0	0	0	1	0.306
<i>Post</i>	1117	0.056	0	0	0	0	1	0.231
<i>Treat*Post</i>	1117	0.047	0	0	0	0	1	0.213
<i>Size_{t-1}</i>	1117	7.595	6.379	7.519	8.829	4.015	11.456	1.659
<i>Cash_{t-1}</i>	1117	0.114	0.031	0.08	0.153	0	0.571	0.114
<i>Lev_{t-1}</i>	1117	0.237	0.099	0.22	0.347	0	0.746	0.177
<i>RDX_{t-1}</i>	1117	0.028	0	0	0.031	0	0.301	0.053
<i>Secure Loan_{t-1}</i>	1117	0.505	0	1	1	0	1	0.5
<i>Revol_{t-1}</i>	1117	0.822	1	1	1	0	1	0.383
<i>Deal Amount_t</i>	1117	6.143	5.298	6.215	7.103	1.792	10.23	1.367
<i>ROA_{t-1}</i>	1117	0.046	0.018	0.051	0.085	-0.437	0.327	0.093
<i>CL_{t-1}</i>	1117	0.003	0	0	0	-0.002	0.271	0.015
<i>Term Loan_t</i>	1117	0.092	0	0	0	0	1	0.289
<i>Dual_t</i>	1117	0.489	0	0	1	0	1	0.5
<i>Collateral Release_t</i>	1117	0.414	0	0	1	0	1	0.493
<i>Performance</i>	1117	0.791	1	1	1	0	1	0.407
<i>Pricing_t</i>								
<i>BPS_t</i>	1117	5.217	4.828	5.165	5.521	2.996	7.069	0.49
<i>Maturity_t</i>	1117	3.873	3.871	4.094	4.094	0.123	4.796	0.513
<i>Num_Lender_t</i>	1117	1.9	1.386	2.079	2.565	0	3.871	0.963
<i>Ratings_t</i>	1117	.407	0	0	1	0	1	0.492

Panel B: Descriptive statistics of operating leases at the firm-year level								
	N	Mean	p25	Median	p75	Min	Max	SD
Non-current part of operating leases	842	0.1	0.015	0.031	0.084	0	2.621	0.216
Operating lease due in 1 year	842	0.25	0.171	0.233	0.295	0.024	1	0.128
Operating lease due in 2 years	842	0.182	0.141	0.184	0.226	0	0.452	0.067
Operating lease due in 3 years	842	0.14	0.116	0.142	0.164	0	0.313	0.047
Operating lease due in 4 years	842	0.105	0.088	0.107	0.124	0	0.262	0.037
Operating lease due in 5 years	842	0.078	0.061	0.081	0.098	0	0.734	0.042
Operating lease thereafter	842	0.245	0.098	0.222	0.369	0	0.895	0.181

Note: Panel A shows the descriptive statistics for the when entire ole sample at the loan deal-year level. Panel B shows the descriptive statistics of operating leases for the entire sample at the firm-year level.

Table 3. Did the structure of financial covenants change after the implementation of ASC 842?

Dependent Var.	(1) BS	(2) BS	(3) IS	(4) IS	(5) BS%	(6) BS%
<i>Treat_Post</i>	0.189*** (11.816)	0.180*** (5.435)	-0.133*** (-4.231)	-0.134*** (-5.134)	0.202*** (5.939)	0.210*** (6.889)
<i>Treat</i>	-0.041 (-1.207)	-0.049 (-1.327)	-0.067 (-1.204)	0.018 (0.383)	0.045 (0.962)	-0.028 (-0.642)
<i>Post</i>	-	-	-	-	-	-
<i>Size_{t-1}</i>		-0.026* (-2.081)		-0.057*** (-5.679)		0.027* (2.258)
<i>Cash_{t-1}</i>		0.077 (0.734)		-0.123 (-1.064)		0.121 (0.915)
<i>Lev_{t-1}</i>		0.180* (1.950)		-0.007 (-0.083)		0.046 (0.588)
<i>RDX_{t-1}</i>		0.208 (0.967)		0.083 (0.341)		0.062 (0.255)
<i>Secure Loan_{t-1}</i>		-0.068* (-2.198)		-0.037 (-1.071)		-0.026 (-1.063)
<i>Revol_{t-1}</i>		-0.034 (-1.349)		0.019 (0.658)		-0.045 (-1.630)
<i>Deal Amount_t</i>		0.012 (1.173)		-0.005 (-0.650)		0.016* (2.168)
<i>ROA_{t-1}</i>		0.354*** (7.283)		-0.095 (-1.088)		0.295*** (4.125)
<i>CL_{t-1}</i>		0.531 (0.776)		0.726* (2.181)		-0.530 (-1.494)
<i>Term Loan_t</i>		0.035 (0.962)		-0.183*** (-5.349)		0.149*** (5.329)
<i>Collateral Release_t</i>		0.021 (0.801)		0.076 (1.680)		-0.029 (-0.945)
<i>Performance Pricing_t</i>		0.003		0.065*		-0.038
<i>Ln_bps_t</i>		(0.104) 0.053		(1.889) 0.076*		(-1.457) -0.019

		(1.661)		(1.979)		(-0.635)
<i>Maturity_{it}</i>		-0.015		0.052*		-0.039*
		(-1.124)		(2.088)		(-2.008)
<i>Lenders_{it}</i>		0.033**		0.039*		-0.006
		(3.145)		(2.200)		(-0.361)
<i>Ratings_{it}</i>		-0.049*		-0.046		0.013
		(-2.059)		(-1.618)		(0.561)
Constant	0.715***	0.550**	0.514***	0.272	0.608***	0.605**
	(161.573)	(3.095)	(65.137)	(0.919)	(104.511)	(2.733)
Observations	1,114 ¹¹	1,114	1,114	1,114	1,114	1,114
R-squared	0.148	0.189	0.119	0.277	0.131	0.247
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table presents the results of OLS regressions using a Difference-in-Difference (DID) design where the dependent variables in Column (1) – (2) and (3) – (4) are the natural logarithm of the number of balance sheet-related covenants and income statement-related covenants, respectively. The dependent variables in Column (5) – (6) are the percentage of balance sheet-related covenants out of the number of total financial covenants. All regressions use the sample with at least one financial covenant. The sample is at the deal/loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

¹¹ Three singleton observations are dropped automatically during the regression.

Table 4: Does the issuance of ASC 842 affect the total number of financial covenants and general covenants?

Dependent Var.	(1) Financial cov.	(2) Financial cov.	(3) General cov.	(4) General cov.	(5) General%	(6) General%
<i>Treat*Post</i>	-0.108*** (-4.266)	-0.038 (-0.968)	0.224*** (3.519)	0.083 (1.289)	0.090** (3.002)	0.037 (1.320)
<i>Treat</i>	0.026 (0.516)	0.029 (0.612)	-0.173*** (-3.877)	-0.055 (-1.293)	-0.050* (-2.019)	-0.028 (-1.260)
<i>Post</i>	-	-	-	-	-	-
Constant	0.928*** (151.103)	0.929*** (4.721)	1.299*** (162.543)	-0.279 (-1.096)	0.563*** (177.901)	0.123 (0.956)
Observations	1,229	1,229	1,229	1,229	1,229	1,229
R-squared	0.114	0.278	0.348	0.694	0.353	0.524
Controls	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table reports the results of OLS regressions using the same model used in Table 4, except for changing the dependent variable to the natural logarithm of the number of financial covenants, the natural logarithm of the number of general covenants, and the percent of general covenants out of all covenants in Column (1) – (2), (3) – (4), and (5) – (6), respectively. The sample used in this table includes all observations with at least one financial or one general covenant. The sample is at the loan level. All regressions use the sample with at least one financial covenant or at least one general covenant. The sample is at the deal/loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 5: Recognition relevance--Is the increase in balance-sheet-related covenants driven by leverage-related covenants?

Dependent Var.	(1) Leverage-related	(2) Non-leverage-related
<i>Treat*Post</i>	0.176*** (6.120)	0.007 (0.187)
<i>Treat</i>	-0.039 (-1.331)	-0.011 (-0.314)
<i>Post</i>	-	-
Constant	0.109 (0.848)	0.590*** (4.148)
Observations	1,114	1,114
R-squared	0.174	0.288
Controls	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Cluster firm year	Yes	Yes

Note: This table provides the OLS regression results using the same model used in Table 4, except for changing the dependent variable to the natural logged number of one plus the number of leverage-related covenants and one plus non-leverage-related covenants in Column (1) and (2), respectively. The leverage-related covenants include leverage, debt to cash ratio, debt to net worth and debt to equity as leverage-related covenants while the non-leverage-related covenants include all other balance sheet-related covenants. The sample used in this table includes all observations with at least one financial covenant. The sample is at the loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 6: Recognition relevance--Is the increase in balance-sheet-related covenants driven by the level of recognized operating leases?

Dependent Var.	(1) BS	(2) IS
<i>Treat*Post</i>	0.136** (2.925)	-0.072* (-2.129)
<i>Treat</i>	-0.058 (-0.810)	0.006 (0.105)
<i>Post</i>	-	-
<i>OL_up</i>	0.001 (0.013)	0.235*** (4.225)
<i>OL_up*Treat</i>	0.018 (0.217)	-0.210* (-2.207)
<i>OL_up*Post</i>	-0.118** (-2.704)	-0.095** (-3.144)
<i>OL_up*Treat*Post</i>	0.152*** (3.796)	0.025 (0.497)
Constant	0.556** (3.136)	0.265 (0.897)
Observations	1,114	1,114
R-squared	0.190	0.278
Controls	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Cluster firm year	Yes	Yes

Note: This table reports the results of OLS regressions using a triple Difference-in-Difference (DID) design where the dependent variables in Column (1) and Column (2) are the natural logarithm of the number of one plus balance sheet-related covenants, and the natural logarithm of the number of one plus income statement-related covenants, respectively. *OL_up* is indicator equal to one if the recognized operating lease value is higher than the sample median in 2019. All regressions use the sample with at least one financial covenant. The sample is at the loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 7: Recognition reliability--Does the impact of ASC 842 differ by the level of reporting quality and reporting environment?

Dependent Var.	(1) BS	(2) IS	(3) BS	(4) IS
<i>Treat*Post</i>	0.092* (2.217)	-0.098*** (-3.360)	0.234*** (5.885)	-0.116*** (-4.112)
<i>Treat</i>	-0.047 (-1.069)	-0.003 (-0.058)	-0.053 (-1.308)	0.020 (0.377)
<i>Post</i>	-	-	-	-
<i>TLR_up</i>	0.062 (1.369)	-0.099 (-1.164)		
<i>TRL_up*Treat</i>	-0.018 (-1.076)	0.031*** (4.212)		
<i>TRL_up*Post</i>	-0.041*** (-4.556)	0.022** (2.360)		
<i>TRL_up*Treat*Post</i>	0.062*** (4.546)	-0.032*** (-3.275)		
<i>ICW_up</i>			0.017 (0.387)	0.245*** (4.240)
<i>ICW_up *Treat</i>			0.023 (0.445)	-0.246 (-1.492)
<i>ICW_up *Post</i>			0.222*** (5.844)	-0.046 (-1.203)
<i>ICW_up *Treat*Post</i>			-0.297*** (-6.170)	0.187*** (3.409)
Constant	0.630** (2.885)	0.324 (1.019)	0.551** (3.112)	0.262 (0.893)
Observations	1,046	1,046	1,114	1,114
R-squared	0.198	0.288	0.190	0.279
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes

Note: This table reports the results of OLS regressions using a triple Difference-in-Difference (DID) design where the dependent variables in Column (1) and Column (3), Column (2) and Column (4) are the natural logarithm of one plus the number of balance sheet-related covenants, and the natural logarithm of one plus the number of income statement-related covenants, respectively. *TLR_up* and *ICW_up* are indicators equal to one if the value is higher than the sample median in 2018. All regressions use the sample with at least one financial covenant. The sample is at the loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. *TLR*, *ICW* and all variables are defined in Appendix 1.

Table 8: Robustness tests--Did the structure of covenants change after 2016?

Dependent Var.	(1) BS	(2) IS	(3) BS%	(4) Fin	(5) Gen	(6) Fin%
<i>Treat*Post</i>	-0.017 (-0.637)	-0.103* (-1.934)	0.012 (0.303)	-0.047 (-1.100)	-0.014 (-0.158)	0.005 (0.108)
<i>Treat</i>	-0.031 (-1.503)	0.068** (2.455)	-0.050* (-2.117)	-0.003 (-0.144)	0.014 (0.738)	-0.008 (-0.525)
<i>Post</i>	-	-	-	-	-	-
Constant	0.568*** (3.413)	0.227 (0.792)	0.634** (2.974)	0.923*** (4.856)	-0.293 (-1.124)	0.792*** (4.676)
Observations	1,114	1,114	1,114	1,229	1,229	1,229
R-squared	0.189	0.284	0.248	0.279	0.694	0.549
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table presents the results of OLS regressions using the same model used in Table 4, except for changing the definitions of the *Treat* and the *Post* variables. *Treat* equals to one if the non-current operating leases are more than the median value of operating leases scaled by sales in the fiscal year of 2016, and *Post* equals to one if the year is 2017 and afterwards. The sample used in this table includes all observations with at least one financial covenant. The sample is at the loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 9: Robustness test—PSM

Dependent Var.	(1) BS	(2) IS	(3) BS%
<i>Treat*Post</i>	0.200*** (5.490)	-0.094* (-2.056)	0.187*** (4.050)
<i>Treat</i>	-0.051 (-1.653)	0.027 (0.519)	-0.032 (-0.679)
<i>Post</i>	-	-	-
Constant	0.514** (2.443)	0.278 (0.768)	0.666** (2.387)
Observations	737	737	737
R-squared	0.151	0.341	0.290
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes

Note: This table presents the results of OLS regressions using a Difference-in-Difference (DID) design where the dependent variables in Column (1), (2) and (3) are the natural logarithm of the number of balance sheet-related covenants, the natural logarithm of the number of income statement-related covenants, and the percentage of balance sheet-related covenants out of the number of total financial covenants, respectively. All regressions use a matched sample with financial covenants matched by the set of control variables. The sample is at the deal/loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 10: Do creditors put more restrictions on capital expenditures?

Dependent Var.	(1) The number of Capex	(2) Capex%
<i>Treat*Post</i>	0.073** (2.925)	0.017** (2.350)
<i>Treat</i>	-0.016 (-0.717)	-0.006 (-1.139)
<i>Post</i>	-	-
Constant	0.225 (1.106)	0.118* (2.218)
Observations	1,229	1,229
R-squared	0.184	0.157
Controls	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Cluster firm year	Yes	Yes

Note: This table presents the results of OLS regressions using triple a Difference-in-Difference (DID) design where the dependent variables in Column (1) and Column (2) are the natural logged number of CAPEX covenants, and percentage of CAPEX covenants out of all financial covenants and general covenants, respectively. All regressions use the sample with at least one financial covenant or at least one general covenant. The sample is at the loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Table 11: Other changes in contracting terms and other economic impact

Dependent Var	(1) BPS	(2) Sales growth	(3) TLR	(4) Amendments
<i>Treat_Post</i>	0.089** (2.336)	0.129* (1.993)	0.208 (1.215)	0.055 (0.539)
<i>Treat</i>	-0.002 (-0.059)	-0.065 (-1.798)	-0.098 (-0.411)	-0.068 (-0.908)
<i>Post</i>	-	-	-	-
Constant	5.716*** (22.927)	0.626*** (3.478)	1.637** (2.767)	-0.577** (-2.484)
Observations	1,229	1,229	1,158	1,229
R-squared	0.591	0.142	0.849	0.271
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes

Note: This table provides the OLS regression results using a Difference-in-Difference (DID) design where dependent variables in Column (1), (2), (3), and Column (4) are the logarithm of BPS, sales growth, TLR and the natural logarithm of the number of amendments, respectively. All regressions use the sample with at least one financial covenant or at least one general covenant. The sample is at the deal/loan level. All regressions are with industry and year fixed effects, standard errors are clustered at the firm and year level. All variables are defined in Appendix 1.

Appendix 1. Variable definitions

Variable Names	Definitions	Data Sources
Dependent Variables		
B/S_t	Natural logarithm of one plus number of BS covenants	Dealscan
I/S_t	Natural logarithm of one plus number of IS covenants	Dealscan
B/S_perct_t	The percentage of BS covenants to total financial covenants	Dealscan
$Financial\ Cov_t$	Natural logarithm of one plus number of financial covenants	Dealscan
$Num_gen_covt_t$	Natural logarithm of one plus number of general covenants	Dealscan
Fin_perct_t	The percentage of financial covenants to total covenants	Dealscan
Gen_perct_t	The percentage of general covenants to total covenants	Dealscan
Control Variables		
$Size_{t-1}$	Natural logarithm of beginning total assets	Compustat
$Cash_{t-1}$	Cash scaled by total assets	
Lev_{t-1}	Ratio of long-term debt to market value of beginning total assets	Compustat
RDX_t	R&D expense divide by beginning total assets	Compustat
$Secure\ Loan_t$	Equal to one if debt is secured and zero otherwise	Dealscan
$Revol_t$	Equal to one if a revolving facility exists in the deal package and zero otherwise	Dealscan
$Deal\ Amount_t$	Natural logarithm of total deal amount	Dealscan
ROA_{t-1}	Return on assets (income before extraordinary items divided by total assets)	Compustat
CL_{t-1}	Capital Lease scaled by total assets	Dealscan
$Term\ Loan_t$	Equal to one if the loan is a term loan, and zero otherwise	Dealscan
$Collateral\ Release_t$	The percentage of lenders required to release the borrower from collateral covenants.	Dealscan
$Performance\ Pricing_t$	Indicator for use of Performance Pricing Provision	Dealscan
Ln_bps_t	Natural logarithm of one plus BPS	Dealscan
$Ln_maturity_t$	Natural logarithm of one plus the length of loan term in months	Dealscan
$Lenders_t$	Natural logarithm of one plus the number of lenders	Dealscan
$Ratings_t$	Equal to one if the company has a S&P credit ratings, and zero otherwise	Capital IQ
TLR_{t-1}	Timely loss recognition based on Ball and Shivakumar (2006)	Compustat/ CRSP
$ICW_{t-3-t-1}$	The number of internal control weakness in prior three years	Audit Analytics
$Amendment_t$	Natural logarithm of one plus the number of amendments	Dealscan
Main Independent Variables		
$Treat$	Equals to 1 if a firm has a fiscal year ending date between Dec, 2019 and May 2020	
$Post$	Equal to one if year is equal to 2019, and zero otherwise	
$Treat*post$	Interaction term of treat and post	

Appendix 2. Covenant Definitions

Covenant Types	Covenant Names
Financial Covenants--BS covenants (Balance-sheet related covenants)	Leverage Net Worth Current Ratio Debt to Cash Senior Debt to Cash Tangible Net Worth Debt to Tangible Net Worth Debt to Net Worth Debt to Equity
Financial Covenants--IS covenants (Income-statement related covenants)	Fixed Charge Interest Coverage Cash Interest Coverage Debt Service
Others	Capex Level EBITDA Level Loan to Value
General Covenants (Non-accounting covenants)	Dividends Cash Sweep Collateral Release Interest Sweep Assets Sale Sweep Debt Issue Sweep Equity Issue Sweep Required Lenders Term Changes

