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

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Abstract

The issuance of ASC 842 and its effect on operating leases boosts resulted in considerable debate among standards setters, managers and stakeholders. In this study, we respond to these discussions by examining the impact of ASC 842 on loan contracting, especially considering the change in the use of different types of debt covenants. Our results indicate that after the adoption of the new operating lease standards, lessee firms experienced more leverage-related (balance sheet-related) covenants than to performance-related (income statement-related) covenants in new loan agreements. The shift from performance-related (income statement-related) covenants to leverage-related (balance sheet-related) covenants is more pronounced for firms with a higher level of financial constraints, with greater reporting incentives to use operating leases, and with higher quality of accounting information prior to the adoption of the new guidance. We also find evidence that the cost of borrowing increased after the adoption of ASC 842. In addition, our findings suggest that the reporting requirements of ASC 842 provide incremental information value in assessing credit quality over that extracted from the prior use of "as if" capitalization techniques using lease footnote disclosures. However, we find no evidence that the adoption of ASC 842 leads to changes in the number covenants amendments, accounting quality, or sales growth. Our study adds to the extant literature examining the real impacts of accounting standard changes on financial statement preparers (lessees) and users (creditors).

Introduction

Prior lease accounting rules did not require firms to recognize long-term operating lease obligations on the balance sheet (ASC 840, FASB 2010). The previous lease guidance was criticized by regulators and other stakeholders because it gave managers the ability to use operating leases as an off-balance-sheet financial technique. In 2016, to improve the transparency of information regarding operating lease obligations and following the implementation of IFRS 16, the FASB issued the final version of revised lease accounting standards that required the capitalization of operating leases by lessees (ASC 842, FASB 2016). The new guidance became effective for public companies with fiscal years beginning after December 15, 2018. Since the issuance of ASC 842, regulators, scholars, and other financial information users raised questions regarding how the new standards would impact stakeholders. A survey published by Deloitte (2014) estimated that 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 (Satow 2010[1]; SEC 2005). The survey showed that main concern regarding the capitalization of operating leases required under ASC 842 was the expected, negative impact on financial ratios, the possibility of loan covenant violations and a resulting increase in the cost of debt financing.

In this study, we provide a comprehensive examination of the implications of ASC 842 for loan contracting. Specifically, we examine whether the structure of covenants changed for loans issued in the post implementation period of ASC 842. One challenge noted in the existing literature studying changes in accounting standards and their effects on the design of debt covenants, was to determine how to best isolate the specific impact of such changes on balance-sheet and income-statement information on the choice of debt covenants. It is not always feasible to differentiate the impact of new or revised information on different types of covenants. As one of the most significant accounting standards in recent years, ASC 842 requires companies to include operating lease debt on their balance sheets, with no significant changes on income statement information. The different effects on the balance sheet and income statement allows us to utilize a research design that isolates the impact of accounting standards on the choice among different types of covenants. Additionally, since whether firms adopted ASC 842 in 2019 or in 2020 is determined

[1] See https://www.nytimes.com/2010/06/23/realestate/commercial/23fasb.html.

by the fiscal year starting date. This timing provides us with an exogeneous shock on the change of accounting information provided in the financial statements.

In our study, we will provide a comprehensive analysis of multiple aspects of the impact of operating lease capitalization on debt contracting. We first examine the impact of ASC 842 on the structure of financial covenants. Traditional contracting theory suggests that creditors always use covenants to control for agency problems and reduce costs of incomplete contracts by binding certain activities and facilitate contingent allocations of control rights. Prior literature shows that accounting information plays an important role in designs of debt covenants in two ways. First, and at the most fundamental level, covenants are often based on accounting ratios. Second, accounting information reflects a borrower's financial condition and provides information for lenders to assess the creditworthiness of borrowers when initiating loan contracts. In the case of the implementation of ASC 842, whether and to what extent the change in balance-sheet information on operating leases can affect the choice of covenants is debated among regulators, scholars, and managers. On one hand, the implementation of ASC 842 provides more information related to operating leases which was previously only disclosed in footnotes under ASC 840. If the new accounting for capitalized operating lease obligations enhances the decision of such information for lenders, we expect to find increases in the use of covenants, particularly covenants employing balance sheet-related information.

It is important to note that opponents of the new standard indicated that sophisticated investors, such as creditors, have always had access to private information about the borrowing firm. Therefore, it is likely that creditors already used analytical methods to capitalize operating leases on an "as if" basis prior to the implementation of ASC 842. If creditors already incorporated operating lease information into the design of contracts, then the new operating lease guidance provides little new information for creditors. In this case, the adoption of ASC 842 is expected to have a minimal or no impact on the choice of covenants in newly originated loan contracts. Therefore, whether the effectiveness of ASC 842 has an impact on the design of covenants in newly issued loan contracts is an important research question.

By using a difference-in-difference (DID) research design, we find a significant increase in the use of balance sheet-related debt covenants after the implementation of ASC 842 for treatment firms

that adopted ASC 842 in 2019. This finding supports that argument that by capitalization operating lease obligations on balance sheets, ASC 842 significantly improved the quality of information provided to lenders and therefore, contractibility of balance sheets. Our results are robust to alternative measurements of the use of balance sheet-related covenants, and controlling for several firm characteristics, loan characteristics, and industry and year fixed effects.

We then exploit the heterogeneous effects of information quality on the relationship between the adoption of ASC 842 and the structure of financial covenants. Previous studies suggest that designs of debt contracts are always based on a cost-benefit analysis (e.g., Frankel et al., 2008). Consistent with the argument that enhanced information quality can improve the usefulness of accounting information in debt contracting process, we find the increase of balance sheet-related covenants is more likely to occur when firms' information quality and information environment is more reliable. We also test whether the relationship between the adoption of ASC 842 and the use of balance sheet-related information is related to the difficulty in incorporating operating leases off-balance prior to ASC 842. Our results indicate that when the unexpected portion of capitalized operating leases is higher, the use of balance sheet-related covenants is more likely to increase due to the increased contractibility. However, for firms with the highest proportion of operating leases with terms greater than 5 years, the use of balance sheet-related covenants decreased dramatically after the adoption of ASC 842 due to higher expected renegotiation costs. Overall, the results of our cross-sectional tests support the conclusion that increases in use of balance sheet-related covenants is likely to be attributable to the net results of cost-benefit analyses.

In addition to increases in the contractibility of balance sheets, the use of balance sheet-related covenants relative to income-statement related covenants also reflects the increased need to align the interests of lenders and borrowers ex ante. This notion is consistent with the results reported by Christensen and Nikolaev (2012) who suggest that balance sheet-related covenants are more likely to be used to align debt-shareholder interests ex ante and income statement-related covenants are more likely to be used as trip wires to reallocate control rights when the creditability of borrowing firm is significantly diminished.[2]

[2] It is not our purpose to compare the different functions between balance sheet-related covenants and income-statement related covenants because 1) the two functions are not necessarily mutually exclusive and 2) no matter the purpose of covenants, covenants will only function as designed when accounting information is contractible.

In the case of the implementation of ASC 842, existing literature shows that the increased conflicts of interests can arise from the increased probability of opportunistic activities. Specifically, Yoon (2022) and Cheng et al. (2022) show significant increases in capital expenditures, (i.e., buy rather than lease), after the adoption of ASC 842 due to the diminished of off-balance sheet benefits. The potential increases in capital expenditures can lead to a higher probability of opportunistic investments. One way to limit such activities is to use covenants to bind certain actions. For example, Aghion and Bolton (1992) indicate that it is optimal to use action restrictions in conjunction with balance-sheet and/or income statement covenants. Accordingly, we next investigate whether there is more need to bind potential wealth redistribution among stakeholders following the adoption of the new lease standard. If lenders anticipate a shift to buying from leasing, they an incentive to restrict such activities. We find evidence consistent with this expectation. The use of capital expenditure-related covenants increases significantly for firms adopting ASC 842 early. These results provide evidence of an increased need align stakeholder interests after the implementation of ASC 842.

We further test whether the implementation of ASC 842 affects other terms of loan contracts and firms' performance. The predicted consequences of the new standard on loan contracts and firm performance is mixed. Many raised concerns that the new standard would negatively affect firms' debt financing and overall financial performance. Conversely, those supporting the new standard argue that the revised lease guidance would provide more information for contracting and thus, alleviating conflicts of interest. Finally, others argued that the ASC 842 was not expected to significantly impact fundamental firm conditions. For our treatment firms, (i.e., adopted ASC 842 in 2019), we found a little increase in the loan spreads and no evidence of negative effects on the maturity of the loans, sales growth, and financial reporting quality relative to later adopting firms. Consistent with Ma and Thomas (2023), we also do not observe evidence of an increase in the probability of negotiations. Overall, our findings support the increase in the cost of loans while not supporting other expected negative effects on contracting terms, sales growth, and accounting quality.

This paper contributes to the existing literature on the usefulness and relevance of accounting information in debt contracting. Specifically, our research centers on the impact of balance sheet recognition of operating leases on the selection of covenants within debt agreements. Barone et al.

(2014) provide evidence that the majority of stakeholders expressed reservations about the proposed lease reporting standards. One of the primary concerns raised pertains to the perceived insignificance of the additional information provided for stakeholders. Implying that the benefits would not justify the cost of the new guidance. Among these stakeholders, lenders hold a pivotal role. A key issue here is whether lenders find value on capitalized lease information on the balance sheet, particularly if much of this information was already captured by "as if" capitalization techniques.

Opponents argue that the additional information holds little or no utility for lenders, contending that lenders either possess access to borrowers' confidential data or have the capability to incorporate operating lease information from existing lease footnotes into contract design. Conversely, proponents believe that, even for highly informed investors, fully integrating the intricacies of operating lease data from disclosure is a formidable task. They maintain that the incremental information derived from capitalized operating leases not only enhances transparency regarding a firm's obligations but it also provides a more holistic depiction of the firm's financial condition. Our study provides empirical evidence that the recognition of operating leases on balance sheets has resulted in increased utilization of balance sheet-related covenants within debt contracts. This effect is likely to be attributed to the improved information quality provided by capitalized leases information and therefore enhanced the feasibility of making contractual commitments based on balance sheet metrics.

Therefore, our study also contributes broadly to the literature covering the economic consequences of footnote disclosure versus financial statement recognition of accounting information. Perspectives on the ramifications of compulsory alterations in accounting standards vary significantly among managers, regulatory bodies, and academics. Managers frequently exhibit reluctance towards embracing new standards, while standard setters and academics often contend that heightened disclosure can yield more pertinent information and foster greater transparency. In line with existing research (e.g., Bratten et al., 2013; Donovan et al., 2024) we find evidence that financial statement recognition relative to footnote disclosure of accounting information facilitates the use of this information in debt contracts.

Specifically, our study sheds lights on the understanding of the economic implications arising from the adoption of ASC 842 in the context of credit market. While existing research has primarily concentrated on various aspects of ASC 842, such as operating 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), our research adds to the extant literature by focusing on the impact of on the design of new debt contracts issued after the implementation of ASC 842.

Unlike existing research that predominantly centers on loans established before ASC 842 took effect, our research examines the implications of the new guidance for contracts executed after its implementation. Although the impact of ASC 842 on pre-existing loan agreements remains relevant, our examination of post-implementation contracts offers deeper insights as to how the new lease accounting standard affects prospective contractual arrangements. This distinction allows us to provide a more comprehensive assessment of the impact of the effectiveness of ASC 842. Moreover, ASC 842 provides an ideal research context for examining the impact of lease accounting on different financial statements as ASC 842 requires modifications to balance sheet information without significantly impacting the income statement. Our analyses provides evidence for the different influence of accounting standards on covenants pertaining to balance sheets from those pertaining to income statements.

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),[3] 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 (Satow 2010[4]; SEC 2005).

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.

There has been a longstanding debate regarding to whether standards should capitalize operating leases and the impact of this capitalization. In the early discuss regarding operating leases proposals, research focuses on the impact of as-if-capitalization. One of the papers is Bennett and Bradbury (2003), who find a significant negative impact of as-if-capitalized operating leases on leverage, liquidity and profitability. Later, (Goodacre, 2003) focuses on UK retail companies and documents a negative effect of as-if-capitalized operating leases on the whole industry. Focusing on US companies, several studies also confirm the negative effect of capitalized operating leases on firm's performance ratios (e.g., Duke et al., 2009; Grossman & Grossman, 2010; Kostolansky & Stanko, 2013; Mulford & Gram, 2007). In the analysis of surveys and comment letters, Comiran (Comiran & Graham, 2016) shows that only a small number of respondents were in favor of the proposed changes. Most of the concerns were related to the possible increases in audit fees, changes of IT systems and increases in the cost of capital.

More recently, ongoing research on the effects of ASC 842 provides additional evidence on the effects of the standard. For example, 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,

[3] See https://www.iasplus.com/en/publications/us/other/leases-survey.
[4] See https://www.nytimes.com/2010/06/23/realestate/commercial/23fasb.html.

Heese et al. (2023) confirm the negative impact of ASC 842 on the use of operating leases. They provide evidence that after the effective date of ASC 842, on average, firms report reduced usage of operating leases. The authors also suggest that variable leases, which may continue to be off-balance-sheet under ASC 842, are common and significant. If such leases were capitalized, reported debt would increase by 8% on average

In the context of loan contracts, two working papers show that among loans initiate before the implementation of ASC 842 and mature after the implementation date are more likely to provide an option for excluding the effects of ASC 842 (Cheng et al., 2022; Gordon et al., 2023). Unlike these two papers, our research specifically focuses on the design of loan covenants written after the implementation of ASC 842. By requiring the capitalization of operating leases, ASC 842 changes balance sheet information while not significantly affecting the income statement. The difference in balance sheet and income statement implications of the change, provides a better setting for us to separate the impact of recognition versus disclosure on the use of balance sheet-related covenants and income-statement-related covenants.

2.2 Hypothesis development

Theories indicate that to be used in contracts, information should be reliable (Watts & Zimmerman, 1986) Prior literature suggests that recognized information has a higher reliability than disclosed information (e.g., DAVIS-FRIDAY et al., 2004; Donovan et al., 2024; Müller et al., 2015). In the setting of debt contracts, the reliability of accounting information can have an impact mainly through two ways. First, due to the reliance of debt contracts covenants on accounting measures, the reliability of accounting information can influence the effectiveness of debt covenants directly. Second, accounting information is instrumental for creditors in assessing the creditworthiness of borrowers, so that enhance the salience of accounting information quality in the crafting of debt contracts (Frankel et al., 2008; Nikolaev, 2010).

The changes from disclosure to recognition alters the reliability and contractability of operating lease information. Prior literature provides evidence regarding how changes in operating lease standards impact the design of debt contracts due to the potential effects on the quality and usefulness of accounting information provided. For instance, Kim et al. (2011) document more lenient covenants for entities compliant with the new IFRS lease accounting standards compared

to their counterparts, attributing this leniency to diminished information asymmetry and increased monitoring efficacy subsequent to the adoption of IFRS operating lease capitalization requirements. However, Chen et al. (2015) and Ball et al. (2015) observe a global contraction in the employment of financial covenants following the mandatory adoption of the IFRS lease guidance due to the decreased reliability and contractibility.

Different from the changes of international lease accounting standards, ASC 842 requires companies to recognize operating leases on the balance sheets rather than only disclosures in the footnotes. The change from disclosure to recognition resulting from the issuance of ASC 842 raised questions regarding degree to which the new standard will affect loan contracts. Critics argue that lenders, who rank among the most informed and skilled market participants, would have preemptively integrated operating lease information into loan agreements using "as-if" capitalization methos, prior to the issuance of ASC 842 (Paik et al., 2015; Skinner, 2011). Therefore, if this is the case, then the disclosure of operating lease commitments on balance sheets as mandated by ASC 842 is purported to exert negligible, if any, influence on the terms of debt contracts.

Nevertheless, as suggested by literature in information frictions (e.g., Blankespoor et al., 2020; Michels, 2017), one difference between disclosure and recognition is that the awareness costs of such information. For example, it can be a costly process to know the existence of the information and to locate it in the footnotes by going through the long annual reports. Prior to the adoption of ASC 842, although the operating lease information is not required to be reported on the balance sheets, companies need to report it in the footnotes. After the adoption of ASC 842, the recognized operating lease represents a separate line item, which highlights and provides a direct and clear picture of operating leases.

Besides, although the awareness costs can be low for even for the most sophisticated investors, the inherent complexity of operating leases suggests that a comprehensive assimilation of "as if" capitalized lease data into the contracting process is a nontrivial endeavor. Exiting research indicates that non-GAAP provisions typically impose greater complexity and expense upon the initiation and monitoring of debt agreements (EL-GAZZAR & Pastena, 1991; Frankel et al., 2008). Prior to the implementation of ASC 842, the present value of operating leases and the as-if-

liabilities required considerable estimation by creditors. While creditors employ a myriad of informational vectors during the preliminary assessment phase, certain aspects of operating leases remain elusive due to ambiguity inaccessible to even the most astute and informed market participants. Therefore, the recognized operating lease information after the implementation of ASC 842 should be more reliable for contracting because operating lease information on the balance sheets requires more scrutiny by management and external auditors.

In our study, we formulate several propositions designed to explain the repercussions of ASC 842 on debt covenants. While extant research has examined the influence of accounting standard modifications on loan covenants (Ball et al., 2015; Chen et al., 2015; Frankel et al., 2008), the promulgation of ASC 842 affords a novel framework to determine the effects of the new operating lease guidance on balance sheet-related versus income statement-related covenants. Specifically, ASC 842's mandate for the recognition of capitalized operating leases alters balance sheet reporting, leaving income statement presentation substantially unchanged. If the recognition of capitalized operating leases results in enhanced information value on the balance sheet for lenders, then one would anticipate an increased contractibility of balance sheet information relative to that of the income statement. Conversely, if lenders have preemptively accounted for operating lease information by using footnotes and "as if" capitalization when writing loan contracts prior to ASC 842, then the utility of balance sheet-related covenants would remain static subsequent to the standard's implementation. However, given the nature and complexity of computing the present value of operating leases on an "as if" basis, it is possible that lenders cannot effectively integrate operating lease debt into their analyses. As a result, the introduction of ASC 842 can enhance the information needed for contracting purposes. 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.

Higher information quality will increase the reliability and the contracting value of accounting information on balance-sheets, increase the efficiency of binding through covenants (Ahmed et al., 2002) and accelerates the timeliness of control allocation (e.g., Nikolaev, 2010; Wittenberg-Moerman, 2008). Borrowers characterized by higher information quality offer more reliable

insights into operating lease commitments as reported on the balance sheet, thereby elevating the contractibility of such information. Consequently, it is reasonable to anticipate a greater propensity for the incorporation of balance sheet-oriented covenants in scenarios where the information presented is deemed more trustworthy. Our second hypothesis is states that use of balance sheet-related covenants increases post ASC 842 is more likely for borrowers with higher information quality. Our second hypothesis is stated as follows.

H2: The increase in the use of balance sheet-related covenants is more likely to occur for borrowers with higher information quality.

It was often challenging for creditors to comprehensively incorporate operating lease data from the footnotes into their analyses and credit evaluations prior to ASC 842. If our first hypothesis is supported by our empirical tests, we should find increases in balance sheet-related debt covenants but that will depend on the duration of their lease terms. Bratten et al. (2013) suggest that the reliability of "as if" capitalized values for operating lease commitments—particularly for the indeterminate "thereafter" segment [5]—is inversely correlated with capital costs, given that estimations for extended-term leases necessitate a broader range of assumptions, potentially influencing investor valuation.

Consider, for instance, leases extending beyond a five-year term that are filled with greater valuation uncertainty. Consequently, a substantial composition of operating leases surpassing this duration complicates the estimation and reduces the reliability of "as if" lease liabilities. Our analysis contemplates the degree to which lenders might have previously considered operating lease data within footnotes before the issuance of ASC 842, to assess the predictive utility of such leases. A greater disparity between pre-ASC 842 capitalized lease estimates and post-ASC 842 disclosed lease obligation amounts signals an enhanced relevance, faithful representation and the information usefulness to lenders from the new guidance.[6]

Yet, it is plausible that a significant "thereafter" component in operating leases could induce more uncertainty on the balance sheet when capitalizing operating leases, potentially diminishing the

[5] The "thereafter" segment refers to the portion of the lease footnotes that included the cumulative amount of future lease payments for agreements more than five years in duration.
[6] The difference between the prior "as if" capitalized lease amounts and the lease information reported on balance sheet under ASC 842 is the unexpected portion of operating leases or the "lease surprise."

post-ASC 842 information usefulness embedded in the right-of-use (ROU) assets and lease liabilities. It might also follow that the exigencies of continuous monitoring and the prospects of renegotiation intensify for firms burdened by a predominant "thereafter" classification in their lease portfolio. Considering that covenant selection is predicated upon a cost-benefit assessment, we accordingly postulate our third hypothesis as follows.

H3: The use of balance sheet-related covenants is not related to the level of unexpected portion of operating lease values resulting from ASC 842 measurement and disclosure.

Based on an agency perspective of the role of accounting information in debt contracting our fourth hypothesis examines the change in the use of negative covenants after the implementation of ASC 842. One challenge facing firms adopting of ASC 842 is the elimination of the benefit of off-balance-sheet debt. One way to address this problem is to shift from leasing to buying. (Ma & Thomas, 2023) and (Yoon, 2022) provide evidence that ASC 842 affects firms' lease-or-buy decisions and firms uses fewer operating leases while increasing capital expenditures in the post-ASC 842 period. Increased capital expenditures can signal a higher probability of opportunistic activities and further induce more conflicts of interests between lenders and borrowers. If lenders perceive such a shift in investing activities in the post-ASC 842 period, then we expect to see that they are more likely to put a limit on the use of capital expenditures ex-ante in order to better minimize conflicts of interests among stakeholders. Therefore, we expect the following:

H4: The use of negative covenants increases in loan contracts issued after the implementation of ASC 842.

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.[7] 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 Jun. 1st of year t, then the fiscal is considered as fiscal year t+1. As a result, we identify a company adopting ASC 842 in 2019 if its fiscal year starting after December 15, 2018 and before May 31, 2019. We then manually identified whether there are firms disclosing operating leases on their balance sheets before 2019 (early adoption) and firms that should adopt ASC 842 in 2019 but actually adopt later (late adoption) using Calcbench. Calcbench provides operating lease information included in footnote disclosures. We identify 3 firms with 7

[7] 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.

deal-year observations with early adoption and no late adoption in our sample and those observations are excluded.[8] Our classification of covenants is listed in the Panel A of Table 2.

Our basic regression model is as followings:

$$Covenants = \beta_0 + \beta_1 Treat \quad + \beta_2 Post \quad + \beta_3 Treat \quad * Post \quad + \beta_4 Controls_{t-1} + \varepsilon_{t-1} \tag{1}$$

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 $Treat \quad * Post \quad$, 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. e 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.

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 industry[9] and year

[8] The three firms include Delta Airlines INC, William Lyon Homes, and Krispy Kreme INC.
[9] 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.

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 Panel B of Table 2.

[Insert Table 2 Here]

4. Results

4.1 Summary statistics

The different types of covenants used in our sample are listed in Panel B of Table2. We define a covenant as balance sheet-related if it derives from balance sheet data, and conversely, classify it as income statement-related if sourced otherwise. Unlike prior research, our methodology categorizes the debt to cash flow ratio as a balance sheet-related covenant. This classification stems from the premise that ASC 842 predominantly impacts balance sheet information rather than income statement data. This categorization is particularly pertinent to our investigation, which attempts to determine the effects of ASC 842 on the contractibility of operating lease information in both the pre- and post-implementation phases, thus aligning with the specific context of our study. Furthermore, we treat metrics such as capital expenditure level, EBITDA level, and the loan to value ratio separately from balance sheet-related and income statement-related covenants as they are not affected by the new guidance.

We present descriptive statistics of our variables at the loan-year level in Panel A of Table 3. 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 (ln(2.056)=0.721) and 1.649 (ln(1. 649)=0.5), 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 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 3, 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 3 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 4 presents the results with two measures of the use of balance sheet-related covenants. The first measurement is the logarithm of one plus the number of the total number of balance sheet-related covenants and income-statement related covenants while the second measurement is the percentage of balance sheet-related covenants out of total number of financial covenants.

Table 4 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, 0.181, 0.202, and 0.21, respectively), all of which are significant at the 1 percent level. Consistent with H1a, the use of balance sheet-related covenants increased with the adoption of ASC 842. The effect is statistically significant. The increase in the number of balance sheet-related covenants for the treatment group after the adoption

of ASC 842 is approximately 20.5 percent of its mean (=0.189/0.923) and 60% percent of its standard deviation (=0.158/0.268).[10]

Conversely, Columns (3) and (4) show a decrease in using income-statement focused covenants for contracts issued after the adoption of new standards. The decrease in the use of income-statement related covenants may appear to be an anomaly because ASC 842 did require significant changes in income statement reporting. However, our results can be supported by considering contracting efficiency where contracting parties will choose between different types of financial covenants. If the increase in the balance sheet-related covenants is enough to address the agency conflicts between lenders and borrowers, it is possible that it becomes less critical to employ income-statement related covenants.

[Insert Table 4 Here]

Hypothesis 2-- does the change in balance sheet-related covenants and income-statements covenants different with different level of accounting information quality?

For the second hypothesis, we argue that borrowers with a higher quality of accounting information or a higher quality in their financial reporting environment, will report more reliable operating leases information. Hence, the use of balance-sheet information is more likely to increase for borrowers with higher contractibility of balance-sheet information. Consistent with this expectation, we find that borrowers with a higher level of timely loss recognition or with a lower number of reported internal control weakness in past three years are likely have more balance sheet-related covenants in their new loan contracts.

Table 5 shows results of OLS regression using triple a Difference-in-Difference design which includes measurements of timely loss recognition (TLR) and internal control weakness. We calculate the level of timely loss recognition based on (Basu, 1997) and measure it at the year immediately before the issuance of loans. TLR typically assumes an important role in debt markets and improves the effectiveness of accounting-based covenants (Ball & Shivakumar, 2005). Compared to accrual quality, which is important for assessing earnings quality and financial

[10] 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.

performance, timely loss recognition provides a more accurate picture of the borrower's financial health, and the potential risks involved.

Next, following Costello and Wittenberg-Moerman* (2011), we use reported internal control weakness to proxy for the quality of the borrower's information reporting environment. Firms with a lower quality information reporting environment are less likely to provide reliable information about the firm's financial condition (e.g., ASHBAUGH-SKAIFE et al., 2009; Beneish et al., 2008). We obtain data on a firm's internal control weaknesses from "ICW" reports filed under Sarbanes-Oxley Section 302.[11] Specifically, we measure internal control weakness using the average material internal control weakness over the three years immediately preceding to the issuance of loans.[12]

Similar to Table 4, in Table 5, we measure the use of balance sheet-related covenants as both the mean percentage out of total financial covenants and out of the standard deviation using the natural logged number. Consistent with second hypothesis (H2), results in Columns 1 and 2 in Table 5 show a significant increase in the use of balance sheet-related covenants for firms with a higher level of timely loss recognition.[13] Such increases are statistically significant at 1% level for balance sheet-related covenants measured using the natural logged number of balance-sheet covenants (0.056 on the interaction variable *TLR_up*Treat*Post*). Similarly, firms with at least one material internal control weakness have less balance sheet-related covenants after the adoption of ASC 842 (0.691 when the use of balance sheet-related covenants measured in the natural logged number). These results indicate that when the accounting information reporting environment quality is higher, the implementation of ASC 842 is more likely to increase the contractability of balance sheets.

[Insert Table 5 Here]

[11] 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.

[12] 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.

[13] Observations with higher *TLR* means observations with TRL that is higher than the median of TRL in 2018.

H3-- Does the impact of ASC 842 differ by the level of operating leases surprise?[14]

We report the results of the third hypothesis in Table 6. Our hypothesis 3 argues that the increase in the use of balance sheet-related covenants will be more prominent for firms with more "thereafter" part in operating leases due to the uncertainty for creditors that use analytically or "as-if" capitalized operating lease liabilities of prior to the adoption of ASC 842. It is also possible that the use of balance sheet-related covenants decreases with the level of leases with maturities greater than five years in the post-ASC 842 period due to a greater likelihood of renegotiation.

Our evidence shows that the use of balance sheet-related covenants is more likely to increase for firms with more long-term (longer than five years) operating leases in 2018. Specifically, Columns (1) – (4) reports the results of our statistical tests after separating our sample into four subsamples using the proportion of operating leases with terms greater than five years . The results show that the use of balance sheet-related covenants increases when firms' operating leases are less than the 75th percentile. Specifically, the coefficients of *Treat*post* are positive and significant in Columns (3), which includes firms with more than median and less than 75th percentile long-term operating leases. These results partially support our expectation that when the computational costs of using capitalized "as if" operating leases using lease disclosure is higher in the pre-adoption period, the adoption of new standard makes the balance sheet information more contractability and more reliable. Notably, Column (4) shows an insignificantly negative coefficient of *Treat*post* and can be due to the increased uncertainty caused by higher portion of long-term operating leases subject to complex estimation. Columns (5) – (8) are regression results when the dependent variable is the number of income statement-related covenants. These results indicate the impact of ASC 842 on the use of income statement-related covenants differ little among different structures of operating leases.

[Insert Table 6 Here]

H4-- Do creditors put more restrictions on capital expenditures levels after the implementation of ASC 842?

[14] As noted earlier, we consider the difference in information quality under ASC 842 and the prior use of analytical capitalization as the "lease surprise."

Prior literature provides evidence that under ASC 842, firms used more "buy" than "lease" options in the post implementation period. Therefore, in the fourth hypothesis, we examine whether lenders anticipated such actions and placed limitations on capital expenditures when designing the contracts. We focus on the use of capital expenditure covenants, which are the most relevant covenants to examining the shifting from leasing to buying. Specifically, we use the two specifications of the use of capital expenditure provision, namely, the logarithm of one plus the count of the total number of capital expenditure covenants and the percentage of capital expenditure covenants out of the total number of all covenants.

Table 7 shows the results. Consistent with our predictions, the coefficients of *Treat*Post* are significant and positive for all specifications of the use of capital expenditure provision. This result implies that lenders consider the possibility of shifting from leases to capital expenditures and choose to bind such activities to a limit. Although the increase in the balance sheet-related covenants is also useful to prohibit opportunistic activities ex ante, we argue that the use of balance sheet-related covenants is not a substitute for the use of capital expenditure restrictions (Christensen & Nikolaev, 2012). The limit on capital expenditures focuses on certain activities, buying assets rather than leasing, which is expected after the implementation of ASC 842.

[Insert Table 7 Here]

4.3 Robustness tests—Falsification tests

Although we expect that the increase in the use of balance sheet-related covenants is more prominent after the adoption of ASC 842, we also consider the possibility that this increase may be a result of alternative explanations. One possible explanation is that the shift to balance sheet-related covenants could have been a trend for all companies, particularly after the release of the final draft of ASC 842 in 2016. To investigate whether the increase in the use of balance sheet-related covenants is a general trend or was a result of the release of the final version of ASC 842, we used falsification tests. Here we changed the Post dummy variable to one for years after 2016. The results of are tests are presented in Table 8. In Table 8, given that firms with more operating leases are more likely to be affected by the new rule, we define the variable of Treat as one if the non-current operating lease debt is more than the median value of operating lease liabilities in fiscal year 2015, and the Post variable equals to one for year 2016 and thereafter. Based on our

robustness testing, the results reported Table 8, indicate that there is no evidence showing that the structure of covenants changed after 2016.

[Insert Table 8 Here]

4.3 Robustness tests—PSM tests

While it is unlikely that firms' fiscal-year-end date is caused by some fundamental factors, an additional concern of our setting is that firms with fiscal-year-end dates fall between Dec. 2019 and May 2020 differ fundamentally from other firms, which would limit the generalization of our results. Consistent with this concern, we find many significant differences in the mean of key borrower characteristics across treated firms and control firms. For example, treated firms are larger, with higher leverage, and do more research and development. To mitigate the concern that these significant differences affect our results, we perform additional robustness test using a propensity-score-matched sample. We matched our treatment group with control group based on control variables in Equation (1). Including these control firms in our analyses ensures that the control variables in the model better reflect any potential changes in the overall economy that may be correlated with ASC842 adoption. Using this matched sample, we find similar results.

[Insert Table 9 Here]

5. Additional tests

5.1 Which provisions of balance sheet-related covenants increased most significantly after the issuance of ASC 842?

Our empirical findings indicate that ASC 842 increased the reliance on balance sheet-related covenants. An interesting question is to examine if there are particular covenants that have predominantly contributed to this increase. An important point of contention between lenders and borrowers is the potential for future debt issuances, which can attenuate the probability of existing debt repayment. Moreover, if new debt assumes a superior repayment hierarchy, borrowers may secure additional capital, potentially to the detriment of existing creditors.

Post-ASC 842, there is an observable strategic pivot from operating leases towards capital expenditures, as the off-balance-sheet advantages of leasing diminish. This shift may necessitate

alternate financing sources. Anticipating an increased debt issuance, lenders are likely to leverage covenants as a mechanism to constrain subsequent borrowing post-contract inception. Additionally, the ASC 842 mandate enhances the visibility of liabilities on the balance sheet—a critical element in creditor assessments of borrower creditworthiness. This augmented contractibility of liability information could result in an upsurge in leverage-related covenants.

Based on these considerations, our study anticipates an upswing in debt-measurement-based covenants following the issuance of ASC 842. Consequently, our subsequent analysis will is designed to determine which specific debt-related covenants constitute the major portion of changes in balance sheet-related covenant usage in the post-ASC 842 period

Our results are reported in Table 9. We consider leverage-related covenants to include specific limits on leverage, debt to cash ratio, debt to net worth and debt to equity while all other balance sheet-related covenants are categorized as non-leverage-related covenants. The first column of Table 10 reports the results when the dependent variable is the number of leverage-related covenants. The results when dependent variable is specified as the number of non-leverage-related covenants are reported in the second column of Table 9. The coefficient of the interaction term of Treat and Post in the first column is positive and statistically significant while it is negative and insignificant in the second column. These results are consistent with our expectations that the adoption of ASC 842 imposes a better vision of liabilities and hence, increase the contractability of leverage-related information.

[Insert Table 10 Here]

5.2 How did the structure of financial covenants versus general covenants change after the issuance of ASC 842?

Our previous results report an increase in the use of balance sheet information in debt contracting. If the new capitalized operating lease information reveals more risks, which were not anticipated before ASC, then lenders may decide to add more financial covenants. However, the increase in balance sheet-related covenants may not necessarily lead to increase in the total number of financial covenants for several reasons. First, Christensen and Nikolaev (2011) suggest that debt contracts always trade-off the costs of using different types of covenants to get contract efficiency.

If increases in the balance sheet-related information is sufficient to address conflicts of interests between lenders and borrowers, the use of income-statement related covenants could be viewed as less desirable because renegotiation is generally costly. Second, Ball et al. (2015) indicates that if the transparency of accounting information increases, the use of financial covenants is likely to decrease. Although the requirements of ASC 842 increase the usefulness of balance sheet information, it is not clear whether overall financial reporting transparency increases. Third, several existing studies show that the implementation of ASC 842 should not change the fundamental risks of firms (Altamuro et al., 2014; IASB, 2016)[15]. Therefore, it is not necessary for lenders to increase the total number of covenants or impose stricter limitations on borrowers. As a result, examine whether the number of financial covenants or the number of general covenants changed with the application of ASC 842.

Table 11 reports the results with and without control variables using a larger sample with at least one financial covenant or at least one general covenant. Although results without control variables show a significant and positive (negative) relationship for the use of general (financial) covenants after the implementation of ASC 842, we did not find a statistically significant relationship between the use of financial and or general covenants when we included control variables to the regression. Once again it is possible that the implementation of ASC 842 mainly affects balance sheet information with minimal impact on the inherent risks of borrowing companies.

[Insert Table 11 Here]

6. Further tests

6.1 Other changes in contracting terms and other economic impact

We are also interested in other economic consequences of firms after the adoption of ASC 842. In a survey of corporate executives (Deloitte, 2014),[16] one of the concerns noted by lenders is that the ASC 842 guidance will significantly affect the balance sheets, increase leverage with a corresponding increase in the probability of covenant violations. Christensen and Nikolaev (2011) suggest that balance sheet-related covenants are more likely to function through binding

[15] See https://www.ifrs.org/news-and-events/news/2016/01/gary-kabureck-article-little-to-fear-in-new-world-of-lease-accounting/.
[16] See https://dart.deloitte.com/USDART/pdf/4cbc79b0-3f81-11e6-95db-87eff75282a0.

mechanisms while income-statement related covenants are more likely to function as trip wires. Based on our previous results, the decrease in the use of income-statement related covenants may not lead to increase in the frequency of amendments. However, it is possible that the actual slack of income-statement related covenants becomes tighter while the number of income-statement related covenants decrease. Thus, it is not quite clear whether the violations of covenants increased after the implementation of ASC 842. Nonetheless, it is interesting to determine if there are any significant changes in the frequency of amendments to debt contracts.

Other concerns noted in the Deloitte survey included a possible negative impact on firms' performance, the costs of debt, and the maturity of new loans. Prior literature shows that mandatory changes in accounting standards can increase costs for both lenders and borrowers. In the case of ASC 842, changes in accounting for operating leases required lenders to assess whether the changes are purely cosmetic or if the additional balance sheet debt better reflects the financial condition of borrowers (Cheng et al., 2022). As for borrowers, the changes in financial ratios may increase the possibility of renegotiation, which is generally costly. However, if firms increase the investment efficiency due to the concerns of worse performance and covenants violation, as suggested in Ma and Thomas (2023) and Altamuro et al. (2014), it is possible that firms' performance is not affected by the new standards.

We further investigate whether firms performed worse or faced more unfavorable terms in new loan contracts. Table 12 shows the results. We find an increase in the spreads of loans, which indicates an increase in the cost of debt after the adoption of ASC 842. We also find a marginal increase in the sales growth while the changes in timely loss recognition and the changes in the number of amendments are not statistically significant.

[Insert Table 12 Here]

7. Summary and Conclusions

Our research provides a comprehensive analysis of how the new lease accounting guidance required under ASC 842 impacted private debt contracts. As one of the first studies to explore detailed changes in covenant information after the implementation of ASC 842, our evidence demonstrates that the adoption of ASC 842 improves the contractability of balance sheet-related

information and increases the use of balance sheet-related covenants in newly issued debt contracts. We extend the previous research by providing evidence that we find that borrowers with a higher level of timely loss recognition or with a lower number of reported internal control weakness in past three years are likely have more balance sheet-related covenants in their new loan contracts. Our evidence also shows that the use of balance sheet-related covenants is more likely to increase for firms with more long-term (longer than five years) operating leases in 2018, while these results indicate that the impact of ASC 842 on the use of income statement-related covenants did not change significantly among term structures of operating leases. Overall, the results are consistent with our expectations that the adoption of ASC 842 increased the transparency of reported liabilities and hence, increase the contractability of leverage-related information.

In this paper, we provide a comprehensive study as to how the new lease accounting guidance required under ASC 842 impacted private debt contracts. As the first study to explore detailed changes in covenant information after the implementation of ASC 842, our evidence demonstrates that the adoption of ASC 842 improves the contractability of balance sheet-related information and increases the use of balance sheet-related covenants in newly issued debt contracts.

Further, we provide evidence as to how firm's information reporting environment and the structure of operating leases impact the structure of debt covenants affect the issuance of ASC 842. We also find an increase in the use of capital expenditure covenants. A possible explanation for this result is that lenders use capital expenditure levels to control for opportunistic activities induced by ASC 842. Finally, we find weak evidence that lenders charged higher interest rates, and no evidence on the changes in the number of amendments after the issuance by ASC 824. Although, sales growth of our sample firms increased slightly, which indicates a little improvement in firms' performance in the post-adoption period.

Our study is subject to two caveats that the focus on ASC 842 limits our sample to firms with operating leases only. Although operating lease liability represent an economically important obligation and firms with operating leases comprise an important part of the macroeconomy, firms in our sample comprise mainly big firms. Therefore, our conclusions may not generalize to all settings. Moreover, the set up of debt covenants lack a typical panel data for DID model due to the

repeated issues of debts from borrowers. We conduct several robustness tests to minimize related issues.

Reference

Aghion, P., & Bolton, P. (1992). An incomplete contracts approach to financial contracting. *The Review of Economic Studies*, *59*(3), 473-494.

Ahmed, A. S., Billings, B. K., Morton, R. M., & Stanford-Harris, M. (2002). The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review*, *77*(4), 867-890.

Altamuro, J., Johnston, R., Pandit, S., & Zhang, H. (2014). Operating Leases and Credit Assessments. *Contemporary Accounting Research*, *31*(2), 551-580. https://doi.org/https://doi.org/10.1111/1911-3846.12033

ASHBAUGH-SKAIFE, H., COLLINS, D. W., KINNEY JR, W. R., & LAFOND, R. (2009). The Effect of SOX Internal Control Deficiencies on Firm Risk and Cost of Equity. *Journal of Accounting Research*, *47*(1), 1-43. https://doi.org/https://doi.org/10.1111/j.1475-679X.2008.00315.x

Ball, R., Li, X., & Shivakumar, L. (2015). Contractibility and Transparency of Financial Statement Information Prepared Under IFRS: Evidence from Debt Contracts Around IFRS Adoption. *Journal of Accounting Research*, *53*(5), 915-963. https://doi.org/https://doi.org/10.1111/1475-679X.12095

Ball, R., & Shivakumar, L. (2005). Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics*, *39*(1), 83-128. https://doi.org/https://doi.org/10.1016/j.jacceco.2004.04.001

Barone, E., Birt, J., & Moya, S. (2014). Lease accounting: A review of recent literature. *Accounting in Europe*, *11*(1), 35-54.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings1. *Journal of Accounting and Economics*, *24*(1), 3-37. https://doi.org/https://doi.org/10.1016/S0165-4101(97)00014-1

Beneish, M. D., Billings, M. B., & Hodder, L. D. (2008). Internal control weaknesses and information uncertainty. *The Accounting Review*, *83*(3), 665-703.

Bennett, B. K., & Bradbury, M. E. (2003). Capitalizing non-cancelable operating leases. *Journal of International Financial Management & Accounting*, *14*(2), 101-114.

Blankespoor, E., deHaan, E., & Marinovic, I. (2020). Disclosure processing costs, investors' information choice, and equity market outcomes: A review. *Journal of Accounting and Economics*, *70*(2-3), 101344.

Bratten, B., Choudhary, P., & Schipper, K. (2013). Evidence that market participants assess recognized and disclosed items similarly when reliability is not an issue. *The Accounting Review*, *88*(4), 1179-1210.

Chen, T.-Y., Chin, C.-L., Wang, S., & Yao, W.-R. (2015). The effects of financial reporting on bank loan contracting in global markets: Evidence from mandatory IFRS adoption. *Journal of International Accounting Research*, *14*(2), 45-81.

Cheng, A., Geng, Y., & Zhao, S. (2022). Operating Leases and the Market's Assessment of Equity Risk: Evidence from the Adoption of ASC 842. *Available at SSRN*.

Christensen, H. B., & Nikolaev, V. V. (2012). Capital versus performance covenants in debt contracts. *Journal of Accounting Research*, *50*(1), 75-116.

Cohen, G. J., Dice, J., Friedrichs, M., Gupta, K., Hayes, W., Kitschelt, I., Lee, S. J., Marsh, W. B., Mislang, N., & Shaton, M. (2021). The US syndicated loan market: Matching data. *Journal of Financial Research*, *44*(4), 695-723.

Comiran, F., & Graham, C. M. (2016). Comment letter activity: A response to proposed changes in lease accounting. *Research in Accounting Regulation*, *28*(2), 109-117. https://doi.org/https://doi.org/10.1016/j.racreg.2016.09.010

Costello, A. M., & Wittenberg-Moerman*, R. (2011). The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports. *Journal of Accounting Research*, *49*(1), 97-136.

DAVIS-FRIDAY, P. Y., LIU, C.-S., & MITTELSTAEDT, H. F. (2004). Recognition and Disclosure Reliability: Evidence from SFAS No. 106. *Contemporary Accounting Research*, *21*(2), 399-429. https://doi.org/https://doi.org/10.1506/T0VC-Q15Y-W5QV-4UKQ

Donovan, J. B., McMartin, A. S., & Phillips, M. A. (2024). Does Recognition versus Disclosure Affect Debt Contracting? Evidence from SFAS 158. *The Accounting Review*, *99*(1), 163-190.

Duke, J. C., Hsieh, S.-J., & Su, Y. (2009). Operating and synthetic leases: Exploiting financial benefits in the post-Enron era. *Advances in Accounting*, *25*(1), 28-39.

EL-GAZZAR, S., & Pastena, V. (1991). Factors affecting the scope and initial tightness of covenant restrictions in private lending agreements. *Contemporary Accounting Research*, *8*(1), 132-151.

Frankel, R., Seethamraju, C., & Zach, T. (2008). GAAP goodwill and debt contracting efficiency: evidence from net-worth covenants. *Review of accounting studies*, *13*, 87-118.
Goodacre, A. (2003). Operating lease finance in the UK retail sector. *The International Review of Retail, Distribution and Consumer Research*, *13*(1), 99-125.
Gordon, E. A., Wang, W., & Zhao, L. (2023). Hidden in Plain Sight: Operating Lease Accounting and Private Loan Contracts. *Available at SSRN 4582752*.
Grossman, A. M., & Grossman, S. D. (2010). Capitalizing Lease Payments. *CPA Journal*, *80*(5).
Heese, J., Shin, A., & Wang, C. C. (2023). Variable leases under ASC 842: First evidence on properties and consequences. *Available at SSRN 4266529*.
Kim, J.-B., Tsui, J. S., & Yi, C. H. (2011). The voluntary adoption of International Financial Reporting Standards and loan contracting around the world. *Review of accounting studies*, *16*, 779-811.
Kostolansky, J., & Stanko, B. (2013). Cross-sectional analysis of operating lease liabilities by industry and firm size. *Academy of Accounting and Financial Studies Journal*, *17*(4), 41.
Li, B., & Venkatachalam, M. (2024). Leasing loses altitude while ownership takes off: Real effects of the new lease standard. *The Accounting Review*, *99*(3), 315-347.
Ma, M. S., & Thomas, W. B. (2023). Economic consequences of operating lease recognition. *Journal of Accounting and Economics*, *75*(2-3), 101566.
Michels, J. (2017). Disclosure Versus Recognition: Inferences from Subsequent Events. *Journal of Accounting Research*, *55*(1), 3-34. https://doi.org/https://doi.org/10.1111/1475-679X.12128
Mulford, C. W., & Gram, M. (2007). The effects of lease capitalization on various financial measures: An analysis of the retail industry. *Journal of Applied Research in Accounting and Finance*, *2*(2), 3-13.
Müller, M. A., Riedl, E. J., & Sellhorn, T. (2015). Recognition versus disclosure of fair values. *The Accounting Review*, *90*(6), 2411-2447.
Nikolaev, V. V. (2010). Debt covenants and accounting conservatism. *Journal of Accounting Research*, *48*(1), 137-176.
Paik, D. G. H., van der Laan Smith, J. A., Lee, B. B., & Yoon, S. W. (2015). The relation between accounting information in debt covenants and operating leases. *Accounting Horizons*, *29*(4), 969-996.
Skinner, D. J. (2011). Discussion of "accounting standards and debt covenants: Has the "balance sheet approach" led to a decline in the use of balance sheet covenants?". *Journal of Accounting and Economics*, *52*(2-3), 203-208.
Watts, R. L., & Zimmerman, J. L. (1986). Positive accounting theory.
Wittenberg-Moerman, R. (2008). The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics*, *46*(2-3), 240-260.
Yoon, Y. S. (2022). *Economic Determinants and Consequences of Corporate Disclosures*. University of California, Berkeley.

Table 1. Determination of Sample Size

	# of deal-year obs	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

Panel A. 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

Panel B. 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 $Loan_t$	An indicator. 1 if debt is secured; 0 otherwise	Dealscan
$Revol_t$	An indicator. 1 if a revolving facility exists in the deal package; 0 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 $Loan_t$	An indicator, 1 if the loan is a term loan	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
$Ratings_t$	S&P credit ratings	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	An indicator equals 1 if year is equal to 2019	
Treat*post	Interaction term of treat and post	

Table 3. Summary: Overall Descriptive Statistics

Panel A shows the descriptive statistics for the whole sample at the loan deal-year level. Panel B shows the descriptive statistics of operating leases for the whole sample at the firm-year level.

Panel A: Descriptive statistics for the whole sample								
	N	Mean	p25	Median	p75	Min	Max	SD
B/S_covt $_t$	1117	.923	1	1	1	0	1	.267
I/S_covt $_t$	1117	.715	0	1	1	0	1	.451
Num_B/S_covt $_t$	1117	.721	.693	.693	.693	0	1.609	.28
Num_I/S_covt $_t$	1117	.5	0	.693	.693	0	1.099	.318
B/S_perct $_t$	1117	.623	.5	.5	1	0	1	.282
I/S_perct $_t$	1117	.377	0	.5	.5	0	1	.282
Treat	1117	.105	0	0	0	0	1	.306
Post	1117	.056	0	0	0	0	1	.231
Treat*Post	1117	.047	0	0	0	0	1	.213
$Size_{t-1}$	1117	7.595	6.379	7.519	8.829	4.015	11.456	1.659
$Cash_{t-1}$	1117	.114	.031	.08	.153	0	.571	.114
Lev_{t-1}	1117	.237	.099	.22	.347	0	.746	.177
RDX $_{t-1}$	1117	.028	0	0	.031	0	.301	.053
Secure Loan $_{t-1}$	1117	.505	0	1	1	0	1	.5
Revol $_{t-1}$	1117	.822	1	1	1	0	1	.383
Deal Amount $_t$	1117	6.143	5.298	6.215	7.103	1.792	10.23	1.367
ROA $_{t-1}$	1117	.046	.018	.051	.085	-.437	.327	.093
CL_{t-1}	1117	.003	0	0	0	-.002	.271	.015
Term $Loan_t$	1117	.092	0	0	0	0	1	.289
$Dual_t$	1117	.489	0	0	1	0	1	.5
Collateral $Release_t$	1117	.414	0	0	1	0	1	.493
Performance Pricing$_t$	1117	.791	1	1	1	0	1	.407
BPS_t	1117	5.217	4.828	5.165	5.521	2.996	7.069	.49
$Maturity_t$	1117	3.873	3.871	4.094	4.094	.123	4.796	.513
Num_Lender_t	1117	1.9	1.386	2.079	2.565	0	3.871	.963
$Ratings_t$	1117	.407	0	0	1	0	1	.492

Panel B: Descriptive statistics of operating leases								
	N	Mean	p25	Median	p75	Min	Max	SD
Non-current part of operating leases	842	.1	.015	.031	.084	0	2.621	.216
Operating lease due in 1 year	842	.25	.171	.233	.295	.024	1	.128
Operating lease due in 2 years	842	.182	.141	.184	.226	0	.452	.067
Operating lease due in 3 years	842	.14	.116	.142	.164	0	.313	.047
Operating lease due in 4 years	842	.105	.088	.107	.124	0	.262	.037
Operating lease due in 5 years	842	.078	.061	.081	.098	0	.734	.042
Operating lease thereafter	842	.245	.098	.222	.369	0	.895	.181

Table 4. Did the structure of financial covenants change after the implementation of ASC 842?

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 financial covenants. 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 Table 2.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Var.	BS	BS	IS	IS	BS%	BS%
Treat_Post	0.189***	0.181***	-0.133***	-0.134***	0.202***	0.210***
	(11.364)	(5.345)	(-4.193)	(-5.070)	(5.939)	(6.913)
Treat	-0.041	-0.050	-0.067	0.018	0.045	-0.028
	(-1.207)	(-1.330)	(-1.204)	(0.379)	(0.962)	(-0.641)
Post	-	-	-	-	-	-
$Size_{t-1}$		-0.026*		-0.058***		0.027**
		(-2.095)		(-5.730)		(2.266)
$Cash_{t-1}$		0.083		-0.125		0.126
		(0.787)		(-1.061)		(0.946)
Lev_{t-1}		0.180*		-0.008		0.047
		(1.941)		(-0.096)		(0.592)
RDX_{t-1}		0.203		0.084		0.058
		(0.942)		(0.344)		(0.238)
Secure $Loan_{t-1}$		-0.068*		-0.037		-0.026
		(-2.202)		(-1.072)		(-1.072)
$Revol_{t-1}$		-0.034		0.018		-0.045
		(-1.357)		(0.638)		(-1.621)
Deal $Amount_t$		0.013		-0.005		0.016*
		(1.198)		(-0.591)		(2.147)
ROA_{t-1}		0.336***		-0.098		0.283***
		(6.776)		(-1.187)		(4.074)
CL_{t-1}		0.531		0.726*		-0.530
		(0.774)		(2.180)		(-1.490)
Term $Loan_t$		0.035		-0.183***		0.149***
		(0.964)		(-5.356)		(5.329)
Collateral $Release_t$		0.021		0.076		-0.029
		(0.798)		(1.674)		(-0.944)

Performance Pricing$_t$		0.003		0.065*		-0.038
		(0.109)		(1.888)		(-1.454)
Ln_bps$_t$		0.052		0.075*		-0.019
		(1.616)		(1.957)		(-0.642)
Maturity$_t$		-0.015		0.052*		-0.039*
		(-1.129)		(2.091)		(-2.009)
Lenders$_t$		0.033**		0.038*		-0.006
		(3.121)		(2.186)		(-0.358)
Ratings$_t$		-0.049*		-0.046		0.013
		(-2.065)		(-1.609)		(0.549)
Constant	0.715***	0.555**	0.514***	0.276	0.608***	0.606**
	(161.573)	(3.128)	(65.137)	(0.933)	(104.511)	(2.735)
Observations	1,114[17]	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

[17] Three singleton observations are dropped automatically during the regression.

Table 5: Does the impact of ASC 842 differ by the level of information reporting quality?

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 the number of balance sheet-related covenants, and the natural logarithm of 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 Table 2.

	(1)	(2)	(3)	(4)
Dependent Var.	BS	IS	BS	IS
Treat*Post	0.075*	-0.070**	0.244***	-0.121***
	(2.225)	(-2.406)	(7.175)	(-4.452)
Treat	-0.025	-0.038	-0.063*	0.025
	(-0.649)	(-0.854)	(-1.985)	(0.498)
Post	-	-	-	-
TLR_up	-0.025	0.047		
	(-0.521)	(0.962)		
TRL_up*Treat	-0.013	0.024***		
	(-0.797)	(4.580)		
TRL_up*Post	-0.036***	0.014*		
	(-4.837)	(2.150)		
TRL_up*Treat*Post	0.056***	-0.023***		
	(4.320)	(-4.604)		
ICW_up			-0.001	-0.020
			(-0.043)	(-1.506)
ICW_up *Treat			0.420*	-0.196
			(2.044)	(-1.815)
ICW_up *Post			0.240***	0.197***
			(3.908)	(3.333)
ICW_up *Treat*Post			-0.691***	0.155
			(-4.306)	(1.387)
Constant	0.657**	0.289	0.549**	0.282
	(3.079)	(0.932)	(2.881)	(0.941)
Observations	1,046	1,046	1,114	1,114
R-squared	0.197	0.288	0.193	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

Table 6: Does the impact of ASC 842 differ by the level of operating leases surprise?

This table presents the results of OLS regressions using a Difference-in-Difference (DID) design where the dependent variables in Column (1) - (4), and Column (5) – (8) are the natural logarithm of the number of balance sheet-related covenants, and the natural logarithm of income statement-related covenants, respectively. Column (1) – (4) and Column (5) – (8) are determined as the subsample divided by the portion of operating leases due after five years. Column (1) – (4) and Column (5) – (8) are subsamples from 0 - 25th, 25th - median, median- 75th, and 75th – 100 percentiles, 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 and limited to deals 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 Table 2.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Var.	BS	BS	BS	BS	IS	IS	IS	IS
	<=25th	25th – 50th	50th – 75th	>=75th	<=25th	25th – 50th	50th – 75th	>=75th
Treat*Post	0.153	0.072	0.747***	-0.197	0.068	-0.479**	-0.154	0.010
	(1.299)	(0.762)	(8.440)	(-1.793)	(0.980)	(-2.990)	(-1.417)	(0.066)
Treat	-0.127*	-0.037	-0.077	0.006	0.033	0.079	0.000	-0.057
	(-1.911)	(-0.778)	(-1.088)	(0.091)	(0.674)	(1.011)	(0.001)	(-0.428)
Post	-	-	-	-	-	-	-	-
Constant	0.421	0.196	0.518*	0.470*	0.429	0.999	0.112	0.347
	(0.779)	(0.485)	(1.904)	(2.076)	(1.084)	(1.289)	(0.158)	(0.781)
Observations	345	211	253	288	345	211	253	288
R-squared	0.338	0.321	0.337	0.321	0.272	0.408	0.432	0.462
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YEAR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Do creditors put more restrictions on capital expenditures and EBITDA?

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 Table 2.

	(1)	(2)
Dependent Var.	The number of Capex	Capex%
Treat*Post	0.072**	0.017**
	(2.903)	(2.334)
Treat	-0.016	-0.006
	(-0.718)	(-1.138)
Post	-	-
Constant	0.221	0.117*
	(1.090)	(2.186)
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

Table 8: Robustness Tests--Did the structure of covenants change after the issuance of ASC 842?

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 in the fiscal year of 2015, and *Post* equals to one if the year is 2016 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 Table 2.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Var.	BS	BS	IS	IS	BS%	BS%
Treat*Post	-0.033	-0.040	-0.037	-0.038	-0.006	-0.009
	(-0.969)	(-1.451)	(-0.841)	(-0.975)	(-0.210)	(-0.323)
Treat	-0.022	-0.027	0.072**	0.042	-0.052*	-0.030
	(-1.070)	(-1.337)	(2.493)	(1.571)	(-1.997)	(-1.389)
Post	-	-				
Constant	0.739***	0.620***	0.464***	0.227	0.652***	0.669***
	(55.914)	(4.480)	(26.065)	(0.780)	(43.913)	(3.276)
Observations	1,129	1,129	1,129	1,129	1,129	1,129
R-squared	0.140	0.185	0.120	0.274	0.126	0.239
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

Table 9: Robustness Tests—PSM

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 Table 2.

	(1)	(2)	(3)
Dependent Var.	BS	IS	BS%
Treat*Post	0.200***	-0.094*	0.187***
	(5.490)	(-2.056)	(4.050)
Treat	-0.051	0.027	-0.032
	(-1.653)	(0.519)	(-0.679)
Post	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Constant	0.514**	0.278	0.666**
	(2.443)	(0.768)	(2.387)
Observations	737	737	737
R-squared	0.151	0.341	0.290
Controls	Yes	Yes	Yes
YEAR FE	Yes	Yes	Yes
Induestry FE	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes

Table 10: Which provision of debt agreements dominate the changes in balance sheet related covenants?

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 the number of leverage-related covenants and 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 Table 2.

	(1)	(2)
Dependent Var.	Leverage-related	Non-leverage-related
Treat*Post	0.168***	-0.013
	(5.533)	(-0.307)
Treat	-0.035	0.008
	(-1.236)	(0.217)
Post	-	-
Constant	0.143	0.587***
	(1.263)	(4.393)
Observations	1,129	1,129
R-squared	0.173	0.286
Controls	Yes	Yes
YEAR FE	Yes	Yes
Industry FE	Yes	Yes
Cluster firm year	Yes	Yes

Table 11: Does the issuance of ASC 842 affect the total number of financial covenants and general covenants?

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 Table 2.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Var.	Financial cov.	Financial cov.	General cov.	General cov.	General%	General%
Treat*Post	-0.108***	-0.038	0.224***	0.083	0.090**	0.037
	(-4.266)	(-0.968)	(3.519)	(1.289)	(3.002)	(1.320)
Treat	0.026	0.029	-0.173***	-0.055	-0.050*	-0.028
	(0.516)	(0.612)	(-3.877)	(-1.293)	(-2.019)	(-1.260)
Post	-	-	-	-	-	-
Constant	0.928***	0.929***	1.299***	-0.279	0.563***	0.123
	(151.103)	(4.721)	(162.543)	(-1.096)	(177.901)	(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

Table 12: Further tests on the consequences of the adoption of adopting ASC 842.

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 Table 2.

VARIABLES	(1) BPS	(2) Sales growth	(3) TLR	(4) Amendments
Treat_Post	0.088**	0.132*	0.193	0.058
	(2.298)	(2.033)	(1.093)	(0.567)
Treat	-0.002	-0.065	-0.098	-0.069
	(-0.075)	(-1.771)	(-0.407)	(-0.915)
Post	-	-	-	-
$Size_{t-1}$	-0.092**	-0.161***	-0.015	-0.133***
	(-3.193)	(-9.659)	(-0.371)	(-5.825)
$Cash_{t-1}$	-0.025	0.365*	-0.337	-0.367**
	(-0.235)	(2.124)	(-1.079)	(-2.658)
Lev_{t-1}	0.330***	0.084	-0.417	0.119
	(4.260)	(0.383)	(-1.682)	(1.404)
RDX_{t-1}	0.085	-0.059	0.036	0.125
	(0.286)	(-0.197)	(0.064)	(0.343)
Secure $Loan_{t-1}$	0.235***	-0.082	-0.028	-0.014
	(7.463)	(-1.620)	(-0.157)	(-0.193)
$Revol_{t-1}$	-0.212***	-0.041	0.046	0.250***
	(-5.619)	(-0.823)	(0.392)	(4.100)
Deal $Amount_t$	-0.002	0.134***	-0.021	0.256***
	(-0.099)	(6.410)	(-0.495)	(8.424)
ROA_{t-1}	-0.968***	-0.374	0.850*	0.038
	(-3.654)	(-0.666)	(2.205)	(0.237)
CL_{t-1}	-1.867***	-0.486	-2.182	-1.000
	(-3.713)	(-0.609)	(-1.626)	(-1.316)
Term $Loan_t$	0.434***	0.001	-0.071	-0.041
	(10.799)	(0.030)	(-0.472)	(-0.388)
Collateral $Release_t$	0.013	0.031	0.010	0.037
	(0.431)	(0.678)	(0.074)	(0.850)
Performance $Pricing_t$	-0.149**	0.032	-0.105	0.004
	(-3.110)	(0.731)	(-1.225)	(0.059)
Ln_bps_t	.	-0.017	0.128	-0.023
	(.)	(-0.343)	(1.168)	(-0.568)
$Maturity_t$	0.069***	-0.017	0.094	0.078**
	(3.282)	(-0.571)	(0.809)	(2.364)
$Lenders_t$	0.020	-0.005	0.116**	0.001
	(1.715)	(-0.139)	(2.459)	(0.023)
$Ratings_t$	0.019	0.040	-0.209**	0.045
	(0.800)	(1.367)	(-2.762)	(1.290)
Constant	5.716***	0.721**	0.907	-0.447
	(23.001)	(2.647)	(1.265)	(-1.489)

Observations	1,229	1,229	1,158	1,229
R-squared	0.591	0.143	0.850	0.271
YEAR FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Cluster firm year	Yes	Yes	Yes	Yes