

# Operating Lease Recognition and Credit Assessment by Banks

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## **Abstract**

This study examines how the implementation of the new lease accounting standard (ASC 842) affects banks' internal credit ratings for their clients. Leveraging ASC 842's staggered implementation due to different fiscal year ends, we find that, contrary to the concern held by most managers, banks rate firms as less risky post-ASC 842. This improvement is stronger for firms with greater credit assessment uncertainty in the pre-period, more abnormal operating lease activities in the pre-period, and more operating lease-related information disclosed after adopting ASC 842. Overall, our results are consistent with the implementation of ASC 842 reducing firms' credit risk perceived by banks. Answering the call by the FASB for more research on ASC 842 to inform its post-implementation review, our evidence suggests that ASC 842 achieved its intent of improving transparency about operating lease activities.

**Keywords:** ASC 842, Bank Internal Rating, Disclosure, Operating Lease.

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## 1. Introduction

Accounting treatments of leases have been a controversial issue for decades. In December 1978, the Statement of Financial Accounting Standards No. 13, “Accounting for Leases,” mandated the recognition of capital leases on the balance sheet. However, firms were not required to disclose operating leases. As a result, many firms opportunistically structured their lease contracts as operating leases to avoid balance sheet recognition (e.g., Imhoff & Thomas, 1988; Dhaliwal, Lee, & Neamtiu, 2011; Cornaggia, Franzen, & Simin, 2013). The total amount of operating lease commitments by U.S. public firms exceeded \$2.8 trillion in 2016 (IFAC, 2016). Against this backdrop, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update No. 2016-02, *Leases* (codified as ASC 842), which requires firms to recognize operating leases on the balance sheet. The FASB expected ASC 842 to increase transparency and discourage lease transactions motivated by reporting considerations (FASB, 2016). However, the new lease standard was hotly debated over a ten-year period from the initiation of the project in 2006 to its passage in 2016 (Comiran & Graham, 2016; Comiran, 2014). Therefore, it is important to understand the impact of ASC 842 on banks’ credit assessment of firms’ credit risk, and to answer the FASB’s call for research on the new lease standard in order to inform its post-implementation review (FASB, 2021).

In response to the call, this study examines whether the implementation of ASC 842 affects internal credit assessments by banks. We focus on banks’ credit assessments for two reasons. First, banks are one of the most important users of lease information.<sup>1</sup> Second, one of the most commonly cited concerns by managers and opponents of the new lease standard is that the

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<sup>1</sup> In the comment letter to the new lease accounting standard exposure draft, the American Bank Association mentioned that “credit officers at banking institutions probably make up the largest group of users of financial statements that will be affected [by the new lease standard].”

recognition of operating lease assets and liabilities would significantly increase the reported financial leverage ratio. A higher leverage ratio might lead to higher perceived credit risk by banks, which will adversely affect firms' ability to borrow (e.g., Deloitte, 2014).<sup>2</sup>

Contradicting these concerns, ample anecdotal evidence and prior research has pointed out that banks and credit rating agencies (hereafter, CRA) routinely adjust off-balance-sheet operating leases in their risk assessments (e.g., Leftwich, 1983; Altamuro, Johnston, Pandit, & Zhang, 2014; Lipe, 2015; Kraft, 2015; Graden, 2018). Thus, the balance sheet recognition of operating leases after the implementation of ASC 842 may not have a significant negative impact on banks' credit assessment of their clients.

It is also plausible that ASC 842 will lower the perceived credit risk of affected firms by banks. This is due to a decrease in credit assessment uncertainty, achieved through the direct recognition of operating leases on the balance sheet and increased disclosures in the post period (e.g., footnote disclosures on discount rate, related cash flows, and other relevant items). This increased transparency of firms' leasing activities helps to reduce the uncertainties faced by banks, potentially resulting in a decreased perceived risk of these firms.

Given the above competing arguments, the effect of the new lease accounting standard on credit risk assessment is an open question. To empirically test this question and to gauge the impact of ASC 842 on credit assessments by banks, we utilize a novel dataset of internal bank ratings on client firms gathered by Credit Benchmark, a data analytics company specializing in credit risk

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<sup>2</sup> For example, the National Association of Realtors states that “[t]he new lease accounting proposal reduces the overall borrowing capacity of many commercial real estate lessees and lessors, by requiring them to recognize leases on their balance sheets as liabilities and assets, as opposed to their current treatment as operating expenses, which are not reflected on balance sheets. Including leases on balance sheets may have the effect of ‘bloating’ them, and some companies may see their debt-to-equity ratios increase as a result, making it more difficult for them to get credit.” See <https://www.nar.realtor/lease-accounting>.

management. Banks assess their clients' credit risk and assign internal bank ratings based on their clients' estimated probability of default, primarily to monitor client risk and their regulatory capital level.<sup>3</sup> Credit Benchmark aggregates these credit risk estimates across different partner banks and releases firm-specific aggregate ratings monthly.

Using such bank ratings offers several empirical advantages. First, unlike debt contracts or credit ratings—widely used in the literature on credit risk assessment—which are infrequently observed and slowly adjusted (e.g., Cheng & Neamtiu, 2009; White, 2010), our bank rating data are updated monthly. Thus, we could detect changes in bank ratings promptly and thereby sharpen the identification of our analyses. Second, researchers often use loan spreads to measure credit risk, but loan spreads may not accurately reflect banks' perceived risk of a client. That is, banks may adjust covenants or other loan terms instead of loan spreads based on credit risk.<sup>4</sup> By contrast, bank ratings comprehensively and directly measure a client's default risk and are free from the influence of contract terms. Third, debt contracts are observed only when firms obtain new loans from banks. Presumably, firms are more likely to apply for new loans when the circumstances are in their favor (e.g., when the new lease standard reduces or at least does not adversely affect banks' assessments of firms' credit risk), which raises endogeneity concerns. Using bank rating data can help mitigate concerns about this selection issue.

To isolate the impact of ASC 842, we leverage its de facto staggered implementation due to different fiscal year ends in a difference-in-differences framework. Using 13,901 monthly bank

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<sup>3</sup> Under Basel II, large or internationally active banking organizations in the United States—those that have consolidated assets greater than \$250 billion or balance sheet foreign exposure greater than \$10 billion—are subject to the internal ratings-based approach. This approach requires a bank to estimate probability of default, loss given default, exposure at default, and maturity, which in turn determine the risk-based regulatory capital requirement. The bank-rating data we used are based on banks' estimates of default risk.

<sup>4</sup> A significant difficulty with constructing a comprehensive measure of banks' perceived risk based on all bank terms is to set weights for the different terms.

ratings for 618 unique firms in the two years centered around the implementation of ASC 842, we find that on average firms are perceived to be less risky by banks post-ASC 842. These results do not support the concern held by most firms that ASC 842 would make them appear riskier. Instead, our results are consistent with ASC 842 reducing banks' perceived risk of their clients.

To mitigate the concern of confounding events and to examine the parallel trends assumption, we investigate the month-by-month changes in bank ratings in a short window centered around the implementation of ASC 842. We find that banks' perceived risk of their clients falls immediately after the client firms release financial reports that implement ASC 842 for the first time. The sharp change in bank ratings further enhances our confidence in attributing the improvement to the implementation of ASC 842. Moreover, we do not observe significant changes in bank ratings before the implementation of ASC 842, validating the parallel trends assumption.

Next, we perform three cross-sectional tests to investigate whether credit assessment uncertainty prior to ASC 842 implementation drives our results.<sup>5</sup> Our expectation is that the change in bank ratings will be more pronounced for firms with greater credit assessment uncertainty prior to the implementation of ASC 842. To test this, we construct a direct measure of uncertainty faced by banks based on the dispersion in ratings given by different banks. The reasoning behind this measure is that banks are more likely to disagree if there is more uncertainty about a firm's credit risk (Akins, 2018). Our findings support this expectation, showing that the reduction in perceived credit risk of firms by banks is significantly greater for firms with a higher pre-period rating dispersion.

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<sup>5</sup> One limitation of the bank rating data is that we do not have any information about the banks other than the number of banks contributing to the consensus rating. Therefore, we cannot conduct cross-sectional analysis based on bank characteristics.

Our second measure of credit assessment uncertainty consider the extent of abnormal operating lease activities by firms prior ASC 842 implementation. Abnormal operating leases are those not justified by tax or operational requirements and may indicate attempts to conceal financing activities off the balance sheet (Cornaggia, Franzen, & Simin, 2013). Such structuring for reporting purposes can raise concerns about a firm self-serving behavior and increase credit assessment uncertainty for banks (El-Gazzar, Lilien, & Pastena, 1986; Fields, Lys, & Vincent, 2001).<sup>6</sup> Recognition of these leases on the balance sheet can thus alleviate concerns about such rent extraction behaviors, especially for firms with more abnormal operating leases prior to the implementation. Our findings support the hypothesis, showing that firms with more abnormal operating leases prior to ASC 842 experience a greater reduction in perceived credit risk after the implementation of ASC 842.

Third, we categorize firms based on the extent of operating lease information disclosed in their financial statement footnotes following the implementation of ASC 842. The amount of disclosure may differ among firms due to differences in their adherence to the lease standard and the extent of their voluntary disclosures, beyond what is mandated by ASC 842. Our premise is that greater disclose of operating lease information by firms will alleviate credit assessment uncertainty, leading to a reduction in the firm's perceived credit risk. Our findings support this idea, showing that a firm's perceived credit risk decreases more significantly when it discloses more operating lease information in the post-period.

Collectively, these three sets of cross-sectional findings lend further support to the argument that balance sheet recognition and additional disclosures after the implementation of

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<sup>6</sup> Relatedly, prior research suggests that the ability to hide operating leases off the balance sheet enables managers to engage in empire building and gain private benefits at a cost to other stakeholders (e.g., Eaton, Nichols, Wahlen, & Wieland, 2021).

ASC 842 reduce banks' perceived credit risk of borrowers by improving the transparency of firms' operating lease activities, reducing the uncertainty faced by banks.

Our results are robust to several sensitivity tests. First, they are robust to using alternative estimation methods (i.e., stacked regressions and ordered probit regressions) and an extended testing sample period. Second, to mitigate the possibility that changes in bank ratings are solely driven by firms reducing operating lease usage, we exclude firms that reported a reduction in operating leases after the implementation of ASC 842 and obtain similar results.<sup>7</sup> Third, to mitigate self-selection concerns, we exclude firms that voluntarily adopted ASC 842 before the effective date and obtain virtually the same results. Fourth, we obtain similar results when adjusting our control variables for *as-if* capitalized operating leases in the pre-period. Lastly, to address the concern of spurious time trends, we examine bank ratings around a placebo implementation month. We do not find any significant changes in bank ratings in this placebo test, which undercuts the plausibility of spurious time trends and increases our ability to attribute changes in bank ratings to the actual implementation of ASC 842.

Our study makes several contributions to the accounting literature and has important implications for standard setters. First, our findings improve our understanding of the impact of the new lease standard on banks' credit assessment of firms' credit risk and can inform regulators during their post-implementation review process for ASC 842. Concurrent studies find that after the implementation of ASC 842, firms' leverage ratios increase (Palazzo & Yang, 2019) and operating lease activities decrease (Yoon, 2020). In a related contemporaneous study, Ma and Thomas (2022) suggest that firms' credit ratings improved after the issuance of ASC 842 due to

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<sup>7</sup> We cannot rule out this possibility. However, the test suggests that our results are not driven by real changes in leasing behaviors.

the reduced use of operating leases. However, Ma and Thomas do not examine the effect of the implementation of ASC 842. Our study evaluates the impact of the implementation of ASC 842 on banks, one of the most important users of operating lease information. Our results indicate that banks perceive firms to be less risky post-ASC 842, contrasting the widespread belief that ASC 842 would increase firm's perceived risk. Our findings emphasize the benefits of ASC 842 in enhancing transparency and reducing banks' credit assessment uncertainty for operating leases, which the FASB can consider during the post-implementation review of the new lease standard.

Second, our study makes a valuable contribution to the broader literature of credit risk assessment. Prior research on bank loan contracting often uses bank loan spreads or other characteristics (such as covenants) to measure banks' credit risk assessment of a firm. However, these measures have several significant disadvantages, such as being observable only when firms choose to obtain new loans. We introduce a novel measure of credit risk assessment based on banks' internal ratings, which are updated monthly and are less susceptible to selection biases. Our findings that banks react promptly to the new lease standard indicate that these ratings can be used as a measure of credit risk in other settings.

Third, our study adds to the broader literature on disclosure versus recognition (e.g., Davis-Friday, Folami, Liu, & Mittelstaedt, 1999; Michels, 2017; Müller, Riedl, & Sellhorn, 2015; Yu, 2013; Basu and Naughton 2020). Managers often strongly oppose recognition of certain items (e.g., stock-based compensation, investment properties, pension) and perceive off-balance-sheet or off-income-statement treatments to be more beneficial. For operating leases in particular, regulators faced strong opposition to their implementation of Accounting Standards Update No. 2016-02. Our evidence show that the new standard reduces banks' perceived credit risk of their clients. The results suggest that sophisticated financial statement users assign punitive ratings under the



disclosure regime, highlighting an important nuance for regulators and standard setters between disclosing versus recognizing certain items.

## **2. Institutional Background**

Under Statement of Financial Accounting Standards No. 13, Accounting for Leases (SFAS 13), companies were required to classify leases as either capital or operating based on bright-line tests. Specifically, leases were to be classified as capital if they were purchases of the underlying asset as evidenced by meeting one or more of the following four criteria: (1) property ownership is transferred to the lessee, (2) a bargain purchase option exists, (3) the lease term is 75 percent or more of the estimated economic life of the leased property, or (4) the present value of the minimum lease payments is 90 percent or greater than the leased asset's fair value at the beginning of the lease term (ASC 840-10-25-1). Capital leases were recognized on the balance sheet, while operating leases were kept off the balance sheet. For operating leases, a footnote disclosure was required to report the minimum lease commitments for each of the next five years and the total minimum lease commitments beyond the fifth year. Sophisticated accounting information users could undo such differential accounting treatments by using the information from the footnote disclosure to capitalize the operating leases (Kraft, 2015; Sengupta & Wang, 2011). However, disclosure and the corresponding adjustment usually had lower precision and less prominence than recognition (Aboody, 1996; Schipper, 2007; Müller et al., 2015). For example, different accounting information users could choose different methods and assumptions to capitalize operating leases and thus make different adjustments.<sup>8</sup>

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<sup>8</sup> According to its manual, S&P estimates the operating lease asset and liability as the present value of the minimum lease payments with the discount rate determined by the interest expense relative to the average debt outstanding. Moody's applies an industry-specific multiple of rent expense (Moody's 2006). Researchers have developed several

The off-balance-sheet reporting option and the bright-line tests provided managers with incentives and means to structure lease arrangements as “operating leases” rather than “capital leases” (Dhaliwal, Lee, & Neamtiu, 2011; Imhoff & Thomas, 1988; Weil, 2004). According to the estimates by the SEC (2005), there were “approximately \$1.25 trillion in non-cancelable future cash obligations committed under operating leases that are not recognized on issuer balance sheets.” Considering the potential strategic usage of operating leases and the lack of comparability under the legacy standard, the FASB and International Accounting Standards Board initiated a joint project to improve the financial reporting of leasing activities in 2006. They issued joint exposure drafts in 2010 and 2013 (FASB, 2010; FASB, 2013). Except for a few commentators that were positive about the proposed change in consideration of the potential improvement in transparency and comparability,<sup>9</sup> most respondents raised concerns. Analyzing more than 1,400 comment letters, Comiran and Graham (2016) find that over 80 percent of the commentators were against the exposure drafts and identify three main reasons behind the opposition. Specifically, the commentators believed that the change would (i) increase the cost of capital and hurt firms’ external financing capacity (e.g., by forcing firms to report higher leverage ratios or triggering debt covenants violations),<sup>10</sup> (ii) increase the perceived cost of implementation (e.g., by compelling firms to hire tracking staff, update IT systems, as well as spend more on financial

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methods based on S&P’s method with slightly different assumptions. For example, Graham, Lemmon, and Schallheim (1998) capitalize operating leases as the sum of the present value of minimum lease payments over the next five-year period, ignoring lump-sum payments after the fifth year, and ignoring the rent expense; Rauh and Sufi (2012) use the zero-coupon yield associated with A-rated corporate debt as the discount rate; Cornaggia et al. (2013) set the discount rate at 10 percent.

<sup>9</sup> For example, Viacom Inc. posited in the comment letter that “a more principles-based lease classification assessment, such as using the indicators included in IAS 17, would be the most appropriate way to improve comparability.”

<sup>10</sup> According to a survey of more than 2,000 directors and executives by Grant Thornton International Ltd., 8 percent of the respondents believe that recognizing operating leases would cause violations of debt covenants, as reported in a *Wall Street Journal* article accessed in August 2022 via [wsj.com/articles/the-big-number-changes-in-lease-accounting-rules-draw-closer-1409613447?mod=djem\\_jjewr\\_AC\\_domainid](https://www.wsj.com/articles/the-big-number-changes-in-lease-accounting-rules-draw-closer-1409613447?mod=djem_jjewr_AC_domainid).

audits),<sup>11</sup> and (iii) increase financial statement complexity for users (e.g., by overwhelming information users with the lengthy information mandated by the new standard).<sup>12</sup>

Despite the strong resistance, the FASB released the new lease accounting standard (Accounting Standards Update No. 2016-02) in 2016. The new lease standard, codified in ASC 842, eliminates the bright-line rule and classifies leases as finance leases if “the lease term is for *the major part* of the remaining economic life of the underlying asset” and if “the present value of the sum of the lease payments and any residual value guaranteed by the lessee ... equals or exceeds *substantially all* of the fair value of the underlying asset.”<sup>13</sup> Moreover, ASC 842 requires firms to recognize a right-of-use asset and a corresponding lease liability on balance sheets for virtually all operating leases.<sup>14</sup> With such recognition, operating leases are no longer off-balance-sheet items and are explicitly reported on the face of financial statements.

ASC 842 also requires more disclosures about operating leases, which may further improve the transparency of lease reporting. In addition to the minimum lease payments for the next five years required by the legacy standard, ASC 842 requires lessees to provide additional quantitative and qualitative disclosures to enable financial statement users to assess the amount, timing, and uncertainty of cash flows from leases. For example, lessees need to provide qualitative information

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<sup>11</sup> In the comment letter to the new lease accounting standard exposure draft, the retailer Marks and Spencer states that “implementation of the ED [exposure draft] would require significant IT investment to produce the required calculations. Individual leases, and amendments would need to be reviewed in order to gather certain data – a timely and costly exercise.” The American Bank Association’s comment letter states that the “ABA believes that bright-line tests are necessary, in many cases, to limit the costs of compliance and auditing.”

<sup>12</sup> For example, the comment letter by Gap Inc. mentions that “the revised exposure draft allows subjective application for critical elements of guidance, such as lease term and contract modifications. ... The volume of disclosures that would be necessary in order for a user to be able to directly compare one company with another would be cumbersome and lengthy.”

<sup>13</sup> Three other criteria stated in ASC 842 for classifying a lease as a finance lease are similar to ASC 840: “The lease transfers ownership of the underlying asset to the lessee by the end of the lease term”; “the lease grants the lessee an option to purchase the underlying asset that the lessee is reasonably certain to exercise”; and “the underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of the lease term.”

<sup>14</sup> The following types of leases are exempt from the capitalization requirement under ASC 842: short-term leases (i.e., with a lease term less than or equal to 12 months), leases of inventory/construction in progress, intangible assets such as software, natural resources, biological assets, and service concession arrangements.

about the nature of leases that have not yet commenced but that would confer significant rights and obligations as well as significant assumptions and judgments made in applying the requirements of the new lease accounting standard. Additional quantitative disclosures include information on (1) operating versus financing proportion of cash payments related to lease liabilities, (2) lease liabilities arising from obtaining right-of-use assets, (3) weighted-average remaining lease terms as of the reporting date, and (4) weighted-average discount rates.

Given the complexity of the new lease accounting standard, the FASB allowed for an extended transition period of more than two years. For public companies, ASC 842 went into effect for fiscal years beginning after December 15, 2018, with early implementation permitted. Specifically, most calendar-year-end public companies adopted the new lease accounting standard for the first time in their 2019Q1 financial statements, while non-calendar-year-end companies adopted it later.<sup>15</sup> Figure 1 summarizes the timeline of key events related to the development and implementation of ASC 842.

In 2021, the FASB issued a call for more research on the new lease standard in order to inform its post-implementation review (FASB, 2021). The objectives of the FASB's post-implementation review were (1) to determine whether the new standard is accomplishing its stated purpose, (2) to evaluate the implementation and continuing compliance costs, and (3) to provide feedback to improve the standard-setting process.

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<sup>15</sup> For example, Ashland Global Holdings Inc.'s (Ticker: ASH) fiscal year ends in September. As the new lease accounting standard became effective for fiscal years beginning after December 15, 2018, ASH adopted it in the fiscal year 2020 starting in October 2019 and ending in September 2020. Thus, it reported the capitalized operating lease for the first time in the fiscal quarter from October 2019 to December 2019, with the corresponding 10-Q filing released in January 2020. In this case, the adoption month was February 2020 and is excluded from the analysis, as we are unsure whether the bank ratings incorporated the new information or not.

### **3. Hypothesis Development**

We are interested in understanding how the new lease standard affects banks' credit assessment of their clients. Many managers and opponents of the new standard suggest that the balance sheet recognition of operating leases could hurt firms' debt financing capacity by making their financial ratios look worse. For example, in a Deloitte survey of 138 corporate executives, the majority of respondents indicated that the new lease accounting standard would negatively affect firms' balance sheets, leverage, and return on assets, and 42 percent of the executives believed that the new accounting standard would make it more difficult for their firms to obtain debt financing (Deloitte, 2014).

Besides, the recognition of operating leases may affect banks' perceived risk of clients due to their differential treatments of the information presented in recognition versus disclosure. Prior research in this area generally finds that accounting information users discount information in disclosures relative to information recognized on the face of financial statements (Aboody, 1996; Clor-Proell & Maines, 2014; Davis-Friday et al., 1999; Davis-Friday, Liu, & Mittelstaedt, 2004). Such differences can be attributed primarily to the information processing cost and the actual or perceived reliability of disclosures (Clor-Proell & Maines, 2014). In general, disclosures are subject to less scrutiny and considered less reliable, and the user of financial statements can incur higher costs when processing off-balance-sheet disclosures (Müller et al., 2015; Blankespoor, deHann, & Marinovic, 2020). Similar to equity investors, banks have also been found to underweight disclosed operating leases during credit assessments (Dhaliwal et al., 2011). Therefore, after the firm adopts ASC 842, banks could perceive it to be riskier and revise its credit rating accordingly.

However, banks are sophisticated users of financial statements (Bharath, Sunder, & Sunder, 2008). Thus, they are capable of incorporating the implications of operating leases into credit risk assessment, regardless of how the information is presented (whether through disclosure or recognition). Wilkins and Zimmer (1983) suggest that lenders' credit evaluations may not be affected by the lease accounting treatment but affected by the "real" level of leverage of loan applicants. More recent academic research suggests that adjusting for operating leases is a common practice among banks (Bratten, Choudhary, & Schipper, 2013; Altamuro et al., 2014; Caskey & Ozel, 2019). With adequate and accurate adjustments for operating leases disclosed off balance sheets prior to ASC 842, banks should not change their credit assessment of their clients due to the switch from disclosure to recognition under the new lease accounting standard. Thus, the recognition of operating leases on the balance sheet may have little impact on banks' credit assessment of their clients.

ASC 842 may also reduce the perceived credit risk of affected companies in the eyes of banks due to greater transparency. This is achieved through the recognition of operating leases on the balance sheet and increased disclosure of information such as the discount rate, related cash flows, and other relevant details. The enhanced visibility of a company's leasing activities reduces uncertainties for banks, thereby leading to a decrease in perceived risk.

In light of these competing arguments, we believe it is ex ante unclear how the implementation of ASC 842 affects banks' credit assessments. Therefore, we propose our testable hypothesis in the null form:

**Hypothesis: The implementation of ASC 842 does not affect bank ratings.**

#### 4. Data and Sample

We obtain firm-level aggregate internal bank rating data from Credit Benchmark. Since 2015, Credit Benchmark has been collecting internal credit risk estimates from more than forty of the world's leading banks that produce credit risk estimates for regulatory capital computation. Credit Benchmark releases a consensus rating for firms that are rated by at least three banks on a monthly basis. For each firm covered, we observe the firm's identifiers (name, ticker, Legal Entity Identifier, ISIN) and the distributional characteristics of the aggregate bank rating (the average, best, and worst ratings, as well as the rating dispersion measured as the relative standard deviation of the probability of default estimates). The dataset also includes the number of banks that contribute rating information. But, to protect banks' anonymity, Credit Benchmark does not disclose the exact number of bank raters for firms with less than five bank raters.

To study the impact of the implementation of ASC 842, we match these monthly aggregate bank ratings of U.S. companies to the latest financial data prior to the rating month from the Compustat/CRSP merged quarterly database (henceforth, CCM), based on the ticker. We exclude financial industries and firms with missing common firm characteristics (*Ebit\_cov*, *Leverage*, *Debt\_ebitda*, *Size*, *Freecash*, *Ret\_std*). To capture changes in bank ratings caused by the new lease accounting standard, we examine a period of up to 24 months centered around the implementation month of each firm (i.e., 12 months before and 12 months after), where the implementation month is defined as the first rating month after the announcement month of the quarterly filings in which ASC 842 went into effect. We exclude the observations in the implementation month from our sample, because banks may not yet fully incorporate the new information when issuing the rating. Thus, it is unclear whether the implementation month belongs to the pre-period or the post-period. The first firm adopted ASC 842 in January 2019. Thus, our testing sample period starts in January

2018. Further, our sample period ends in March 2021, because we do not have the Credit Benchmark data for the period thereafter. In total, we obtain 13,901 firm-month observations for 618 unique firms from January 2018 to March 2021.

Table 1 reports the descriptive statistics. Panel A compares a typical firm in our sample with the average firm in the CCM quarterly database on the basis of six common firm characteristics for the period from January 2018 to March 2021. Since companies covered by Credit Benchmark are large firms, our sample firms tend to be more financially healthy than the average CCM firm. On average, our sample has a larger coverage ratio, higher free cash flows, larger size, and less volatility than the CCM sample.

Panel B of Table 1 tabulates the timing of the implementation of the new lease accounting standard by our sample firms. As early implementation is permitted, there are four early implementations in January 2019. As most firms start to release quarterly filings under the new lease standard in 2019 Q1, the implementation concentrates in April and May 2019, accounting for 74.75 percent of our sample. One hundred and fifty-two sample firms release the quarterly filings under the new lease accounting standard in later months because they have non-December fiscal ends.

## 5. Primary Empirical Analysis

In this section, we examine how the implementation of the new lease accounting standard affects internal bank credit risk estimates. We begin by investigating whether ASC 842 changes the average internal bank ratings of the adopting firm. To isolate the impact of the implementation of ASC 842, we leverage the staggered implementation due to different fiscal year ends and employ the generalized difference-in-differences (DiD) design described in Equation (1):

$$Bank\_Rating_{i,t} = \beta_0 + \beta_1 Post_{i,t} + \Sigma \beta_k Controls_{i,t} + \gamma_i + \delta_t + \epsilon_{i,t}, \quad (1)$$



where  $i$  indexes firm and  $t$  indexes month. The unit of observation is firm-month. The outcome variable is *Bank\_Rating*, that is, the average internal bank rating converted in rank order with the best rating set at 1 (lowest credit risk) and the worst rating set at 21 (highest credit risk). The variable of interest, *Post*, is a dummy variable indicating the period after the implementation of ASC 842. Its coefficient,  $\beta_1$ , identifies the change in bank ratings around the implementation of ASC 842 for the adopting firms relative to other firms (those that have not adopted yet or have already adopted in the past). A negative (positive) coefficient indicates that adopting firms are perceived to be less (more) risky by banks.

Our main specifications include firm fixed effects ( $\gamma_i$ ) and year fixed effects ( $\delta_t$ ) to control for unobservable attributes of the firm and unobservable macroeconomic factors that affect ratings over time. *Controls* refers to a group of variables that prior studies have found to be associated with the creditworthiness of the firm. Following Graham, Li, and Qiu (2008) and Altamuro et al. (2014), we include a comprehensive set of common firm characteristics that correlate with credit risks and are also closely aligned with the variables used by Standard & Poor's (2006) during the rating process. These specific control variables include *Ebit\_cov* (ratio of EBIT to interest expenses), *Leverage* (ratio of total debt to the sum of total debt and total equity), *Debt\_ebitda* (ratio of total debt to EBITDA), *Size* (natural log of sales), *Freecash* (ratio of free cash flows to total debt), and *Ret\_std* (standard deviation of daily equity returns of the past three years multiplied by 100). Similar to CRA ratings where the number of rating agencies affects credit ratings (Beatty, Gillette, Petacchi, and Weber 2019), the number of bank raters could also affect bank ratings, so we control for the number of bank rating contributors (*Bank\_Rater\_Count*). Again, Credit Benchmark does not disclose the exact number of bank raters for firms with less than five bank raters. Thus, for firms with less than five banks, we set *Bank\_Rater\_Count* to 3. Also, we include

a dummy variable to indicate firms with less than 5 bank raters (*Dummy[Bank\_Rater\_Truncated]*). Following Booth (1992), who suggests that banks incorporate information provided by CRA, we also control for the difference between firms with and without a credit rating using an indicator variable (*Dummy[CRA\_Rated]*) and control for credit rating levels using the average rating levels from three rating agencies (*CRA\_Rating\_Level*). Detailed variable definitions are given in Appendix A.

Table 2 provides summary statistics for key variables used in our tests. All continuous variables are winsorized at the 1st and 99th percentiles. *Bank\_Rating* is the average bank rating in rank order, ranging from 1 to 21, where 1 indicates the lowest credit risk (corresponding to the highest rating AAA) and 21 the highest credit risk (corresponding to the lowest rating C). *Bank\_Rating* has a sample mean of 9.720, indicating that the average bank rating of our sample is between BBB and BBB-. The variable of interest, *Post* (a dummy variable), indicates the post-period of the lease standard implementation. By construction, *Post* has a mean of 0.510, close to 0.5, as we require a window of 24 months centered around the implementation month. The median firm has 5 bank raters, and 36.7 percent of firms have fewer than 5 bank raters.<sup>16</sup> *Dispersion*, the relative standard deviation of the probability of default estimates contributed by different banks for the same firm, has a sample mean of 0.548 and median of 0.5. In our sample, 60.2 percent of firms are rated by at least one of the three major credit rating agencies (S&P, Moody, and Fitch). *CRA\_Rating\_Level* is the numerical CRA rating, and we set it to zero for firms without CRA ratings, indicated by *Dummy[CRA\_Rated]*.

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<sup>16</sup> *Bank\_Rater\_Count* is missing when the number of bank raters is below 5. As Credit Benchmark only covers firms with at least 3 bank raters, we replace the missing values with 3. Truncated observations are indicated by *Dummy[Bank\_Rater\_Truncated]*.

Table 3 presents our main results. Column (1) includes all controls except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*. We cluster standard errors by firm. The coefficient of the variable of interest, *Post* ( $\beta_1$ ), is negative and statistically significant at the 1 percent level. To address the concern that any changes we observe in *Bank\_Rating* might result from changes in ratings issued by CRA, we further control for ratings by CRA (*CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*) in Column (2). The coefficient of *Post* in Column (2) remains negative and significant, suggesting that the change in bank ratings cannot be fully explained by credit rating adjustments issued by CRA.<sup>17</sup> Column (2) suggests that the consensus bank rating for the average firm reduces by 4.1 percent of the standard deviation ( $=0.108/2.646$ ) after the implementation of ASC 842. In comparison, a one-standard-deviation decrease in *Leverage* reduces the bank rating by 13.33 percent of the standard deviation. Thus, the effect of ASC 842 has about one-third of the effect of financial leverage, which is considered to be an important determinant of credit risk (Kraft, 2015). This result indicates that ASC 842 significantly reduces banks' perceived credit risk of their clients.

As for the control variables, results on *Leverage*, *Size*, and *Ret\_std* are consistent with the intuition that firms with lower leverage, larger size, and smaller volatility have better bank ratings. Results on *Dummy[CRA\_Rated]* and *CRA\_Rating\_Level* suggest that firms with credit ratings and with better credit ratings issued by CRAs have better aggregate bank ratings.

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<sup>17</sup> In the untabulated results, we regress credit rating levels (*CRA\_Rating\_Level*) on our variable of interest *Post*, controlling for the same firm characteristics and bank raters as shown in Column (1) of Table 3. We do not find that the adoption of ASC 842 significantly affects credit rating levels. This further mitigates the concern that banks change ratings purely due to the change in ratings issued by CRA after the adoption of ASC 842.

## 6. Additional Analyses

In this section, we provide additional analyses to support our inferences and uncover the underlying mechanism through which the new lease standard improves bank ratings. First, we examine the dynamic effects of the implementation of the new standard. Second, we conduct cross-sectional analyses of credit risk uncertainty in the pre-period, abnormal operating lease activities in the pre-period, and the quantity of new information disclosed under the new lease standard. Finally, we report a battery of alternative tests and robustness checks.

### 6.1. Dynamic Effects

The DiD methodology relies on the assumption of parallel pre-trends between treated and control firms. To inspect the validity of this parallel trend assumption, we examine the dynamic effect of ASC 842 on average bank ratings around the implementation of the new lease accounting standard, relative to the control firms. Specifically, we estimate Model (2), which regresses bank ratings on a series of dummy variables, including six indicators for each of the six months before the implementation month  $t$ , (i.e., Month  $t-6$  through Month  $t-1$ ), five indicators for each of the first five months of the post-period (i.e., Month  $t+1$  through Month  $t+5$ ), and another indicator for the sixth month in the post-period and all subsequent months (Month  $t+6$  to Month  $t+12$ ). Thus, the period before Month  $t-6$  serves as the benchmark period. Formally:

$$\begin{aligned} Bank\_Rating_{i,t} = & \beta_0 + \sum_{\tau=1}^{\tau=6} \beta_{1,\tau} \times Pre[\tau]_{i,t} + \sum_{\tau=1}^{\tau=6+} \beta_{2,\tau} \times Post[\tau]_{i,t} + \sum \beta_k Controls_{i,t} \\ & + \gamma_i + \delta_t + \epsilon_{i,t}. \end{aligned} \quad (2)$$

We report the regression results in Table 4 and plot the point estimates and confidence intervals for the post-period dummies in Figure 2. Two interesting findings emerge. First, the coefficients of the pre-period dummies (i.e., *Pre [6]- Pre [1]*, indicating each of the six months prior to the implementation month) are not significantly different from zero and do not change

significantly. This evidence indicates that bank ratings do not change significantly prior to the implementation of ASC 842, which validates the parallel trends assumption. Second, once firms adopt the new lease accounting standard, their risk ratings significantly fall, as reflected by the negative coefficients of *Post[1]* (-0.094 with a *t*-statistic of -3.88 in Column (1) and -0.084 with a *t*-statistic of -3.31 in Column (2)). The sharp change immediately after the implementation of ASC 842 increases our confidence in attributing the change to ASC 842. In the subsequent months, the change does not reverse. The coefficients of *Post[2]*, *Post[3]*, *Post[4]*, *Post[5]*, and *Post[6+]* are around -0.08 and remain significantly different from zero, suggesting a persistent reduction in banks' perceived risk of their clients.

## 6.2. Cross-sectional Tests

We conduct three cross-sectional tests based to examine whether credit risk uncertainty is the mechanism that drives our results. Banks rely on assumptions when making capitalization adjustments for operating leases. We argue that the new standard affects banks' credit assessment by alleviating uncertainties about assumptions of operating lease cash flows and the discount rate, including self-serving incentives or behaviors behind the use of these operating leases (Altamuro et al., 2014; Cornaggia et al., 2013; Graham et al., 1998; Milian & Lee, 2021; Rauh & Sufi, 2012). Besides, the new standard could also banks' credit assessment by requiring or encouraging firms to provide additional disclosures, which enhance transparency about lease activities and resolve assessment uncertainties. Thus, we expect a larger drop in credit risk perceived by banks in cases where credit risk assessment uncertainty is more pronounced or firms provide more operating-lease-related disclosures in the post-ASC8 842.

Our first measure of credit risk assessment uncertainty is based on the level of dispersion in bank ratings in the pre-period. Prior research (e.g., Morgan, 2002) suggests that uncertainty

about credit risk leads to rating dispersion between credit rating agencies; hence we use bank rating dispersion to proxy for assessment uncertainty. Our test separates the *Post* indicator into two indicators, *Post\_High\_Dispersion* and *Post\_Low\_Dispersion*, to capture differential treatment effects for firms with high versus low rating dispersion in the pre-period. Specifically, we first calculate a firm's pre-period average bank rating dispersion, measured as the relative standard deviation of the probability of default estimates across different banks for a given firm-month. Then we compare the firm's pre-period average rating dispersion with the sample median and set the indicator *Post\_High\_Dispersion* to one for the post-implementation period of firms with above-median pre-period average rating dispersion, and zero otherwise. Similarly, *Post\_Low\_Dispersion* is set to one for the post-implementation period of firms with below-median pre-period average rating dispersion, and zero otherwise.

We report the results in Table 5. In both columns, *Post\_High\_Dispersion* is negative and statistically significant at the conventional level, while *Post\_Low\_Dispersion* is insignificant. Comparing the difference in the two coefficients, we find that *Post\_High\_Dispersion* is significantly more negative than *Post\_Low\_Dispersion* in both columns. In other words, firms with greater pre-period rating dispersion experience a more significant drop in bank ratings after the implementation of ASC 842. These results are consistent with the new lease standard reducing banks' perceived risk of their clients by mitigating banks' perceived assessment uncertainty.

Our second measure of credit assessment uncertainty consider the extent of abnormal operating lease activities by firms prior ASC 842 implementation. While some firms possess operating leases for operational, legal, or tax considerations (Caskey & Ozel, 2019), others structure contracts to be qualified as operating leases in order to keep their lease liabilities off the balance sheet (Cornaggia et al., 2013; Eislefeldt & Rampini, 2009; Lim, Mann, & Mihov, 2017).

The direct balance sheet recognition under ASC 842 could mitigate banks' concerns about such opportunistic behaviors. Therefore, the impact of ASC 842 is expected to be more pronounced for firms with more abnormal operating leases in the pre-period as banks are more concerned about such firms to engage in operating lease activities opportunistically.

To empirically test this idea, we adopt a measure of abnormal operating leases from Cornaggia et al. (2013), which is discussed in detail in Appendix D. These abnormal operating leases are likely attributable to firms' efforts to keep their financing activities off the balance sheet. Based on the intensity of pre-period abnormal operating lease activities, we construct two indicator variables: *Post\_High\_AB\_Lease* is defined for the post-implementation period of firms with above-median pre-period abnormal operating leases and *Post\_Low\_AB\_Lease* for the post-implementation period of firms with below-median pre-period abnormal operating leases. To test the moderating effect of pre-period operating lease activities, we replace *Post* in the main test with these two indicators. The difference in the coefficients of *Post\_High\_AB\_Lease* and *Post\_Low\_AB\_Lease* captures the differential treatment effects due to abnormal operating lease activities in the pre-period.

We report the results in Table 6. In both columns, *Post\_High\_AB\_Lease* is negative and statistically significant at the conventional level, while *Post\_Low\_AB\_Lease* is insignificant. Comparing the coefficients of *Post\_High\_AB\_Lease* and *Post\_Low\_AB\_Lease*, we find that the coefficients of the post-period indicator for more abnormal operating leases, *Post\_High\_AB\_Lease*, are significantly more negative than *Post\_Low\_AB\_Lease*. In other words, the lowered perceived risk post implementation of ASC 842 concentrates on firms with a higher intensity of pre-period abnormal operating lease activities. These results are consistent with the *hypothesis* that ASC 842

reduces banks' perceived risk of their clients as balance sheet recognition reduces banks' assessment uncertainties regarding firms' opportunistic operating lease usage.

Our third cross-sectional test is based on the level of operating lease-related disclosures under ASC 842. The degree of disclosure can vary among firms due to variations in compliance with the lease standard and due to additional voluntary disclosures beyond what is required by ASC 842. Our hypothesis is that increased disclosure of operating lease information will reduce credit assessment uncertainty and result in a decrease in the perceived credit risk of the company.

To empirically test this hypothesis, we measure the new operating lease-related disclosures by the number of tags related to operating leases in 10-Q/K XBRL filings after the implementation of ASC 842 (the 50 most frequent standardized and customized XBRL tags are listed in Appendix B). We then compare the number of tags with the sample median to differentiate firms with more or fewer operating lease-related disclosures under the new lease standard.<sup>18</sup> This allows us to separate our *Post* indicator into two indicators, *Post\_High\_ASC842\_Discl* and *Post\_Low\_ASC842\_Discl*, in order to capture differential treatment effects due to different quantities of operating lease-related disclosures under the new lease standard. *Post\_High\_ASC842\_Discl* is an indicator for the post-implementation period with above-median numbers of operating lease tags under the new lease standard, while *Post\_Low\_ASC842\_Discl* is an indicator for the post-implementation period with below-median numbers of operating lease tags under the new lease standard.

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<sup>18</sup> During the 12-month post-period, new information about operating leases is disclosed in one 10-K filing and three 10-Q filings for each firm. 10-Ks usually have more detailed operating-lease-related disclosures than 10-Qs. To capture the lease disclosures provided under ASC 842 and available to financial information users as of each month, our operating lease disclosure measure updates with new filings until the post-adoption 10-K is filed. If the firm starts to implement ASC 842 in its 10-K, then the measure does not update throughout the post-period.



We report the results in Table 7. In both columns, the coefficients of both *Post\_High\_ASC842\_Discl* and *Post\_Low\_ASC842\_Discl* are negative and statistically significant. However, comparing the coefficients of *Post\_High\_ASC842\_Discl* and the coefficients of *Post\_Low\_ASC842\_Discl*, we find that the coefficients of *Post\_High\_ASC842\_Discl* are significantly more negative than those for *Post\_Low\_ASC842\_Discl*. The significant difference in the two coefficients indicates that firms with more operating lease disclosures under the new lease accounting standard experience a larger drop in banks' perceived risk. This result suggests that the reduction in perceived credit risk is due to a reduction in credit risk assessment uncertainty.

### 6.3. Alternative Tests

We conduct several tests using alternative estimating methods or a longer sample period. First, recent research suggests that the inclusion of already treated firms in the control group could bias the results of the staggered DiD tests when the treatment effect is heterogeneous (Baker, Larcker, & Wang, 2022). Following the suggestions of Baker et al. (2022), Panel A of Table 8 uses stacked regressions to mitigate this potential bias. Specifically, for each treatment cohort (firms that are treated for the first time in each month), we identify a "clean" set of control firms, that is, firms that are not yet treated in the given cohort. We repeat this procedure for each cohort, stack all cohorts together, and run the two-way fixed effects model using this stacked sample. Our results remain similar.

Second, we employ an ordered probit model as opposed to the OLS model used in the main analysis. The ordered probit model considers the discrete, ordinal nature of bank ratings and has been used in some credit rating research (Blume, Lim, & Mackinlay, 1998). As shown in Panel B of Table 8, the ordered probit model produces inferences similar to those of our OLS model.

Lastly, since ASC 842 was released in 2016, we examine the impact of the implementation of ASC 842 on aggregate bank ratings with an extended test window starting from June 2015, the earliest month of the bank rating data, and ending in March 2021, the last month of our bank rating data. This allows us to have a longer pre-implementation window to estimate the impact of ASC 842 on bank credit risk estimates. Again, Panel C of Table 8 shows that our results remain similar.

#### *6.4. Robustness Tests*

To check the robustness of our results, we conduct several sensitivity tests in Table 9. In our first set of robustness tests, we use alternative samples to investigate the impact of the implementation of ASC 842 on firms' bank ratings. First, recent studies (Ma & Thomas, 2022; Yoon, 2020) show that firms reduced operating lease usage after adopting the new lease accounting standard.<sup>19</sup> To mitigate the concern that the change in bank ratings is solely attributable to such changes in real leasing activities, we exclude 147 firms (23.79% of the sample firms) that reduced operating lease usage after adopting ASC 842. As shown in Panel A of Table 9, our results hold.

Second, early adopters may bias our estimates, as these firms voluntarily choose to adopt the new lease accounting standard. For example, firms might choose to capitalize their operating leases as their fundamentals improve, and so the change in bank ratings we document could be primarily driven by the improvement in their fundamentals rather than the capitalization of their operating leases. Thus, we drop early adopters (4 firms, or 0.64% of the sample firms) and repeat the analysis in Panel B of Table 9. Our results remain virtually unchanged.

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<sup>19</sup> Ma and Thomas (2022) find a significant decline in new operating lease commitments after issuance of the new standard (2016–2019) for firms relying more heavily on operating leases before issuance (2011–2014). Exploiting ASC 842's staggered adoption, Yoon (2020) finds a marked decrease in operating lease activities post-ASC 842 and attributes this decrease to firms that benefited the most from prior off-balance-sheet reporting. Taken together, these two papers indicate that ASC 842 has a significant impact on firms' operating lease usage.

In the third set of robustness tests, we adjust all financial statement numbers for *as-if* capitalized operating leases in the pre-implementation period to keep consistency between the pre-implementation period and the post-implementation period. We follow the adjustment procedure in Altamuro et al. (2014), with details provided in Appendix C. Despite a smaller sample, we obtain qualitatively similar results as shown in Panel C of Table 9.

In the last robustness test, we run a placebo test that sets Month -13 relative to the actual implementation month (Month 0) as the placebo implementation month. Similar to our baseline test, we exclude the placebo implementation month. The sample period includes 12 months before (Months -25 to -14) and 12 months after the placebo implementation month (Months -12 to -1). As shown in Panel D of Table 9, there are no noticeable changes in bank ratings in the placebo post-period relative to the pre-period. This non-result undercuts the possibility that our results are driven by spurious trends and increases our confidence in attributing the bank rating changes documented in the main results to the implementation of ASC 842.<sup>20</sup>

## 7. Conclusion

We investigate how the new lease accounting standard, codified in ASC 842, impacts credit risk assessment by banks. Managers strongly opposed the new standard, as operating lease capitalization would inflate leverage ratios and reduce profitability ratios, and they believed the reporting effect would negatively affect their credit risk and access to debt financing. However, prior research suggests that banks and credit rating agencies already adjusted off-balance-sheet

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<sup>20</sup> In untabulated results, we run another placebo test that randomly assigns a month between Month -24 and Month -13 as the placebo adoption month for every firm. Similar to our baseline test, we exclude the randomly assigned placebo adoption month and the sample period includes 12 months before and 12 months after the random placebo adoption month. Similar to Panel F of Table 8, we observe no noticeable changes in bank ratings in the post-period relative to the pre-period.

operating leases in their risk assessments before ASC 842. Thus, the balance sheet recognition of operating leases after the implementation of ASC 842 may not have affected firms' debt financing ability. In addition, the new standard requires firms to provide additional disclosures, which could help improve the transparency of firms' lease activities and mitigate banks' perceived risk. Therefore, the effect of the new lease accounting standard on credit risk assessment is an open empirical question.

We empirically test this question by employing banks' proprietary internal ratings for their clients to capture banks' credit risk assessment. Leveraging ASC 842's staggered implementation due to different fiscal year ends in a difference-in-differences framework, we find that bank ratings fall post-ASC 842 (i.e., firms are perceived to be less risky), contrary to the concern held by most firms that ASC 842 would make them appear riskier. This effect is stronger for firms with greater credit assessment uncertainty in the pre-period, more abnormal operating lease activities in the pre-period, and more operating lease-related information disclosed under ASC 842. We find similar results in the subsample of firms that do not reduce their use of operating leases after ASC 842. Overall, our findings suggest that the new lease standard mitigates banks' perceived risk of their clients. Our study has important implications for practitioners and regulators. Our evidence that banks' perceived credit risk lowers after their clients adopt ASC 842 is supportive of the FASB's goal to increase transparency. Thus, firms' concerns that the new lease accounting standard would constrain their access to credit seem unwarranted.

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## Appendix A. Variable Definition

Variable	Definition
<b>Dependent variable</b>	
<i>Bank_Rating</i>	Consensus bank ratings for the company in each month. It is converted in rank order with the best rating AAA set to be 1, AA+ to be 2, ... , and the worst rating C to be 21. Data source: Credit Benchmark.
<b>Independent variables</b>	
<i>Post</i>	Indicator variable for the postperiod of ASC 842 implementation, equal to one after the announcement month of quarterly filings prepared under ASC 842, as indicated by "ACCTCHGQ"="ASU16-02" in CCM. Data source: CCM Quarterly.
<i>Post_High_AB_Lease</i>	Indicator variable equal to one for the post-implementation period for firms with high prior abnormal operating leases (abnormal operating leases are above the sample median during the preperiod) and zero otherwise. Abnormal operating leases are the residual from the regression of operating lease on firm characteristics following Cornaggia et al. (2013), as described in Appendix E. Data source: CCM Quarterly and Annual.
<i>Post_Low_AB_Lease</i>	Indicator variable equal to one for the post-implementation period for firms with lower prior abnormal operating leases (abnormal operating leases are below the sample median during the preperiod) and zero otherwise. Abnormal operating leases are the residual from the regression of operating lease on firm characteristics following Cornaggia et al. (2013), as described in Appendix E. Data source: CCM Quarterly and Annual.
<i>Post_High_ASC842_Discl</i>	Indicator variable equal to one for the post-implementation period when the number of operating-lease-related items in 10-Q/K XBRL filings is above the sample median and zero otherwise. A list of most frequent XBRL tags related to operating leases is provided in Appendix B. Data source: SEC Financial Statement Data Sets.
<i>Post_Low_ASC842_Discl</i>	Indicator variable equal to one for the post-implementation period when the number of operating-lease-related items in 10-Q/K XBRL filings is below the sample median and zero otherwise. A list of most frequent XBRL tags related to operating leases is provided in Appendix B. Data source: SEC Financial Statement Data Sets.
<i>Post_High_Dispersion</i>	Indicator variable equal to one for the post-implementation period for firms with high prior rating and zero otherwise. We compute the average of bank rating dispersion over the pre-

	implementation period by firm. When this firm-specific average is above sample median, we consider the firm as high dispersion. Data source: CCM Quarterly and Credit Benchmark.
<i>Post_Low_Dispersion</i>	Indicator variable equal to one for the post-implementation period for firms with low prior rating dispersion and zero otherwise. We compute the average of bank rating dispersion over the pre-implementation period by firm. When this firm-specific average is below or equal to sample median, we consider the firm as low dispersion. Data source: CCM Quarterly and Credit Benchmark.
<i>Ebit_cov</i>	$(\text{Operating income after the depreciation} + \text{Nonoperating income} + \text{Interest Expense}) / \text{Interest Expense}$ . CCM tags: (OIADPQ + NOPIQ+ XINTQ)/XINTQ. Data source: CCM Quarterly.
<i>Leverage</i>	Total debt / (Total debt + Equity + Minority interests), where Total debt is the sum of short-term debt and long-term debt. CCM tags: (DLCQ + DLTTQ) / (DLCQ + DLTTQ + SEQQ + MIBTQ). Data source: CCM Quarterly.
<i>Debt_ebitda</i>	Total debt / EBITDA, where Total debt is the sum of short-term debt and long-term debt. CCM tags: (DLCQ + DLTTQ) / OIBDPQ. Data source: CCM Quarterly.
<i>Size</i>	Natural log of sales. CCM tags: ln (SALEQ). Data source: CCM Quarterly.
<i>Freecash</i>	$(\text{Operating cash flow} - \text{Capital expenditure}) / \text{Total debt}$ , where Total debt is the sum of short-term debt and long-term debt. CCM tags: (OANCFY-CAPXY) / (DLCQ + DLTTQ). Data source: CCM Quarterly.
<i>Ret_std</i>	The standard deviation of daily returns of the past three years multiplied by 100. Data source: CRSP.
<i>Bank_Rater_Count</i>	The number of bank rating contributors . The number is truncated at 5, i.e., this variable is missing if a company has less than 5 contributing banks and missing value is replaced by 3. Data source: Credit Benchmark.
<i>Dummy[Bank_Rater_Truncated]</i>	An indicator equal to one if the firm has less than 5 bank raters, and zero otherwise. Data source: Credit Benchmark.
<i>CRA_Rating_Level</i>	The consensus credit ratings by three credit rating agencies (S&P, Moody's, and Fitch) converted in rank orders (AAA/Aaa=1, AA+/Aa1=2, ... , CC/Ca=20, C=21). It is set to be zero for firms without CRA ratings. Data source: Credit Rating History.
<i>Dummy[CRA_Rated]</i>	An indicator equal to one if the firm has a rating from any of the three rating agencies (S&P, Moody's, and Fitch) before the bank rating issuance since the most recent rating date, and zero otherwise. Data source: Credit Rating History.

## Appendix B. Operating-lease-related XBRL tags in 10-Q/K XBRL

Below is a list of XBRL tags related to operating leases for lessees. We present the tags in the order of their frequency. Panel A presents the standardized tags, while Panel B presents the customized tags. For brevity, we tabulate the top 50 most frequent tags. The full lists of tags we use are available upon request.

### Panel A. Standardized tags

#	Tag Name
1	OperatingLeaseRightOfUseAsset
2	LeaseAndRentalExpense
3	OperatingLeaseLiability
4	OperatingLeaseLiabilityNoncurrent
5	OperatingLeaseLiabilityCurrent
6	OperatingLeasesRentExpenseNet
7	OperatingLeaseCost
8	OperatingLeasesFutureMinimumPaymentsDue
9	OperatingLeasePayments
10	OperatingLeasesFutureMinimumPaymentsDueInTwoYears
11	OperatingLeasesFutureMinimumPaymentsDueInThreeYears
12	LeaseCost
13	OperatingLeaseWeightedAverageDiscountRatePercent
14	OperatingLeasesFutureMinimumPaymentsDueInFourYears
15	OperatingLeasesFutureMinimumPaymentsDueCurrent
16	RightOfUseAssetObtainedInExchangeForOperatingLeaseLiability
17	LesseeOperatingLeaseLiabilityPaymentsDue
18	OperatingLeasesFutureMinimumPaymentsDueInFiveYears
19	OperatingLeaseExpense
20	OperatingLeasesFutureMinimumPaymentsDueThereafter
21	LesseeOperatingLeaseLiabilityPaymentsDueYearTwo
22	LesseeOperatingLeaseLiabilityPaymentsDueYearThree
23	LesseeOperatingLeaseLiabilityUndiscountedExcessAmount
24	LesseeOperatingLeaseLiabilityPaymentsDueYearFour
25	VariableLeaseCost
26	LesseeOperatingLeaseLiabilityPaymentsDueYearFive
27	LesseeOperatingLeaseLiabilityPaymentsRemainderOfFiscalYear
28	LesseeOperatingLeaseLiabilityPaymentsDueAfterYearFive
29	LesseeOperatingLeaseLiabilityPaymentsDueNextTwelveMonths
30	RightOfUseAssetObtainedInExchangeForFinanceLeaseLiability
31	OperatingLeasesRentExpenseMinimumRentals
32	PaymentsForRent
33	OperatingLeasesFutureMinimumPaymentsRemainderOfFiscalYear
34	LeaseOperatingExpense

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35	OperatingLeasesRentExpenseSubleaseRentals1
36	OperatingLeaseImpairmentLoss
37	OperatingLeasesRentExpenseContingentRentals
38	LesseeOperatingLeaseDiscountRate
39	OperatingLeasesFutureMinimumPaymentsDueFutureMinimumSubleaseRentals
40	LesseeOperatingLeaseLiabilityPaymentsDueNextRollingTwelveMonths
41	LesseeOperatingLeaseLiabilityPaymentsDueInRollingYearTwo
42	LesseeOperatingLeaseLiabilityPaymentsDueInRollingYearThree
43	MinimumOperatingLeasePayments
44	LesseeOperatingLeaseLiabilityPaymentsDueInRollingYearFour
45	LesseeOperatingLeaseLiabilityPaymentsDueInRollingYearFive
46	LesseeOperatingLeaseLiabilityPaymentsDueAfterRollingYearFive
47	OperatingLeasesFutureMinimumPaymentsNextRollingTwelveMonths
48	OperatingLeasesFutureMinimumPaymentsDueInRollingYearTwo
49	OperatingLeasePaymentsUse
50	MinimumLeasePaymentsReceivableUnderNoncancellableOperatingLease

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**Panel B. Customized tags**

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#	Tag Name
1	RightofuseAssets
2	MinimumLeasePaymentsPayableUnderNoncancellableOperatingLease
3	IncreaseDecreaseInOperatingLeaseLiabilities
4	IncreaseDecreaseInOperatingLeaseLiability
5	OperatingLeaseRightOfUseAssetAmortization
6	IncreaseDecreaseInDeferredRent
7	LeaseRightOfUseAsset
8	LeaseRightofUseAsset
9	DeferredTaxAssetsOperatingLeaseLiabilities
10	OperatingLeaseRightofUseAssetAmortization
11	OperatingLeaseRightOfUseAssetGross
12	DeferredTaxLiabilitiesRightOfUseAssets
13	LesseeOperatingLeaseNumberOfRenewalOptions
14	IncreaseDecreaseinOperatingLeaseLiabilities
15	RightOfUseAsset
16	RentalExpenses
17	OperatingLeaseRightofuseAssetAmortization
18	OperatingLeaseRightOfUseAssetCurrent
19	LesseeOperatingLeaseLeaseNotYetCommencedLiability
20	IncreaseDecreaseinOperatingLeaseLiability
21	OperatingLeaseRightofUseAssetGross
22	RightOfUseAssets
23	AmortizationOfRightOfUseAsset
24	RightOfUseAssetObtainedInExchangeForLeaseLiability
25	OperatingLeaseRightOfUseAssetsAmortization

26	RightOfUseAssetAmortization
27	LesseeOperatingLeaseLeaseNotyetCommencedLiability
28	RightofuseAsset
29	AmortizationOfRightofuseAsset
30	MinimumLeasePaymentsPayableUnderNonCancellableOperatingLease
31	OperatingLeaseRightOfUseAssetAccumulatedDepreciation
32	LeaseRightofuseAsset
33	PaymentsToAcquireLeaseAssets
34	IncreaseDecreaseInOperatingLeaseRightOfUseAssetsAndLiabilitiesNet
35	OperatingLeaseRightofuseAssetGross
36	IncreaseDecreaseLeaseLiability
37	FinanceAndOperatingLeaseLiability
38	OperatingAndCapitalLeasesFutureMinimumPaymentsDueInFourYears
39	OperatingAndCapitalLeasesFutureMinimumPaymentsDueInTwoYears
40	OperatingAndCapitalLeasesFutureMinimumPaymentsDueThereafter
41	OperatingAndCapitalLeasesFutureMinimumPaymentsDue
42	OperatingAndCapitalLeasesFutureMinimumPaymentsDueInThreeYears
43	OperatingLeaseObligationsIncurred
44	OperatingAndCapitalLeasesFutureMinimumPaymentsDueInFiveYears
45	DeferredTaxLiabilitiesRightofUseAssets
46	Increasedecreaseinoperatingleaseliabilities
47	IncreaseDecreaseInOperatingLeaseRightOfUseAssetsAndLiabilities
48	LesseeOperatingLeaseLiabilityImputedInterest
49	RightofuseAssetsObtainedInExchangeForNewOperatingLeaseLiabilities
50	FinanceandOperatingLeaseRightofUseAsset

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## Appendix C. Adjusting financial ratios for *as-if* capitalized operating leases

In Panel A of Table 6, we adjust financial ratios, including *Ebit\_cov*, *Leverage*, *Debt\_ebitda*, and *Freecash*, in the pre-implementation period for the *as-if* capitalized operating leases to keep accurate and comparable controls in the pre-implementation and post-implementation period. We follow S&P's method described in Altamuro et al. (2014) to adjust for these four financial ratios.

First, we calculate the *as-if* capitalized operating leases as the present value of future minimum lease payments following S&P's estimation procedure using the minimum lease payment inputs reported in the CCM annual database.<sup>21</sup> This *as-if* capitalized operating lease can be treated as an asset or a liability, which can be added to the total assets and total liabilities. In addition, the resulting asset can give rise to the implicit depreciation expense and the resulting liability can give rise to the implicit interest expense. The increase in the net present value of lease payments from year to year is shown as an increase in capital spending, and thus can be added to capital expenditures. Specifically, we define the implicit interest expense, implicit depreciation expense, and implicit capital expenditures associated with *as-if* capitalized operating leases as follows:

*As-if capitalized operating leases (PV\_SP)* = Present value of future minimum lease payments following S&P's adjusting procedure, where the discount rate equals *DISCOUNT\_RATE\_SP*.

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<sup>21</sup> We use annual lease inputs because minimum lease payments are required disclosures on the annual basis and these inputs are not available in the CCM quarterly database. To make sure banks can adjust the ratios for the most recent lease information, we match the financials of quarter 4 with the *as-if* capitalized operating lease in the current fiscal year and match the financials of quarter 1 to 3 with the *as-if* capitalized operating lease in the last fiscal year.

*Discount rate (DISCOUNT\_RATE\_SP)* = Interest expense divided by the average debt outstanding. If the discount rate indicates financial distress, we use the average of the previous three years' borrowing rates.

$$\text{Implicit interest expense (II\_SP)} = \text{DISCOUNT\_RATE\_SP} \times (\text{PV\_SP}_t + \text{PV\_SP}_{t-1}) / 2.$$

$$\text{Implicit depreciation expense (IDEPR\_SP)} = \text{Current rent expense (XRENT)} - \text{II\_SP}.$$

$$\text{Implicit capital expenditures (ICAPX\_SP)} = \text{PV\_SP}_t - \text{PV\_SP}_{t-1}.$$

With the potential influence of *as-if* capitalized operating leases on total assets, total liabilities, capital expenditures, interest expenses, and depreciation expenses, we can adjust the four financial ratios in our studies as follows. *Ebit\_cov* is adjusted for implicit interests, where implicit interests (*II\_SP*) are added to both the numerator and the denominator because both the numerator and the denominator contains interest expenses. *Leverage* contains total debt in both the denominator and the numerator, and thus we add *as-if* capitalized operating leases (*PV\_SP*) to the denominator and the numerator. *Debt\_ebitda* has total debt in the numerator and has the interest expense in the denominator. Thus, we adjust *Debt\_ebitda* by adding *as-if* capitalized operating leases (*PV\_SP*) to the numerator and adding the implicit interest expenses (*II\_SP*) to the denominator. *Freecash* has capital expenditures in the numerator and has the total debt as the denominator. Thus, we adjust *Freecash* by reducing the numerator for the implicit capital expenditures (*ICAPX\_SP*) and adding *as-if* capitalized operating leases (*PV\_SP*) to the denominator.

## Appendix D. The procedure to calculate abnormal leases

We follow Cornaggia et al. (2013) to estimate abnormal operating leases, defined as the leasing activities unexplained by theoretical determinants of lease financing. Specifically, our determinant model of operating leases is as follows.

$$Oplease/TV_{i,t} = \beta_0 + \beta_1 MTR_{i,t} + \beta_2 Ecost_{i,t} + \beta_3 Zmod_{i,t} + \beta_4 NegOE_{i,t} + \beta_5 MtB_{i,t} + \beta_5 Coll_{i,t} + \gamma_j + \epsilon_{i,t}$$

where *Oplease/TV* is *as-if* capitalized lease obligations (present value of current rent expenses and the minimum lease payments in the next five years at a discount rate of 10%) scaled by the market value of total assets, *MTR* is the simulated before-interest marginal tax rate,<sup>22</sup> *Ecost* is the ex-ante expected cost of distress (the standard deviation of the first difference in the firm's earnings before depreciation, interest, and taxes divided by the average book value of total assets multiplied by the sum of research and development and advertising expenses divided by assets), *Zmod* is the modified Z-Score (3.3 [EBIT/Total Assets] + 1.0 [Sales/Total Assets] + 1.4 [Retained Earnings/Total Assets] + 1.2 [Working Capital/Total Assets]), *NegOE* indicates negative owners' equity, *MtB* is the market-to-book ratio ((Total Assets – Book Equity + Price\*Shares Outstanding + Oplease)/[Total Assets + Oplease]), and *Coll* is the value of collaterals (Net Property, Plant and Equipment/Total Assets).

We estimate this regression using the universe of CCM firms from 2017 to 2019, which corresponds to the pre-implementation period in our sample. We deviate from Cornaggia et al. (2013) in two aspects. First, we do not include the indicator for the tax policy change in 1986, which is beyond our sample period. Second, instead of controlling for firm fixed effects and using

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<sup>22</sup> We thank John Graham for sharing the marginal tax rate data with us. The simulation procedure of marginal tax rates is described in Graham (1996a), Graham (1996b), Graham and Mills (2008), and Graham et al. (1998).

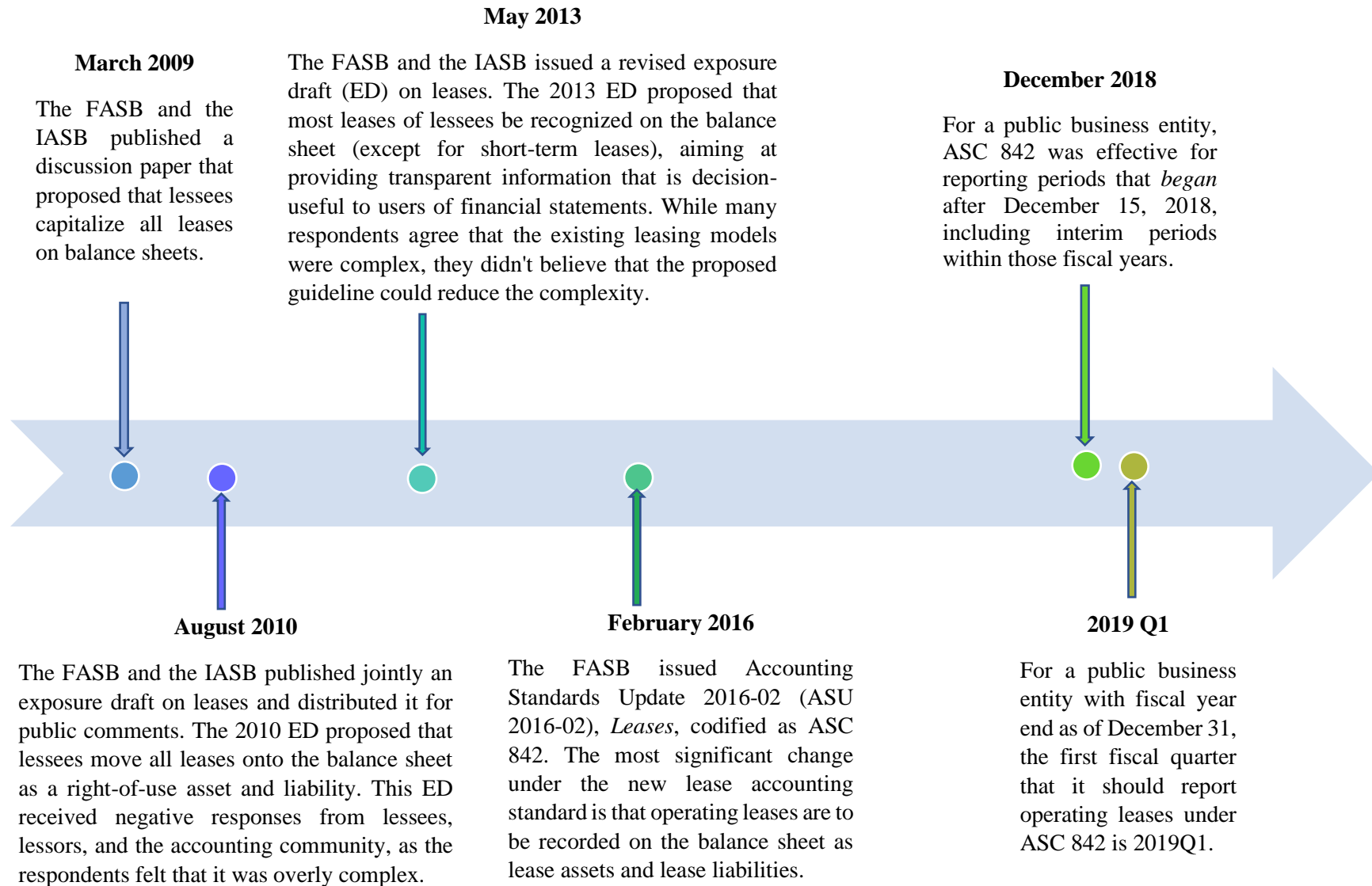


the sum of intercept and residuals to quantify abnormal operating leases, we control for industry fixed effects (one-digit SIC code) and only use the residuals as abnormal operating leases.<sup>23</sup>

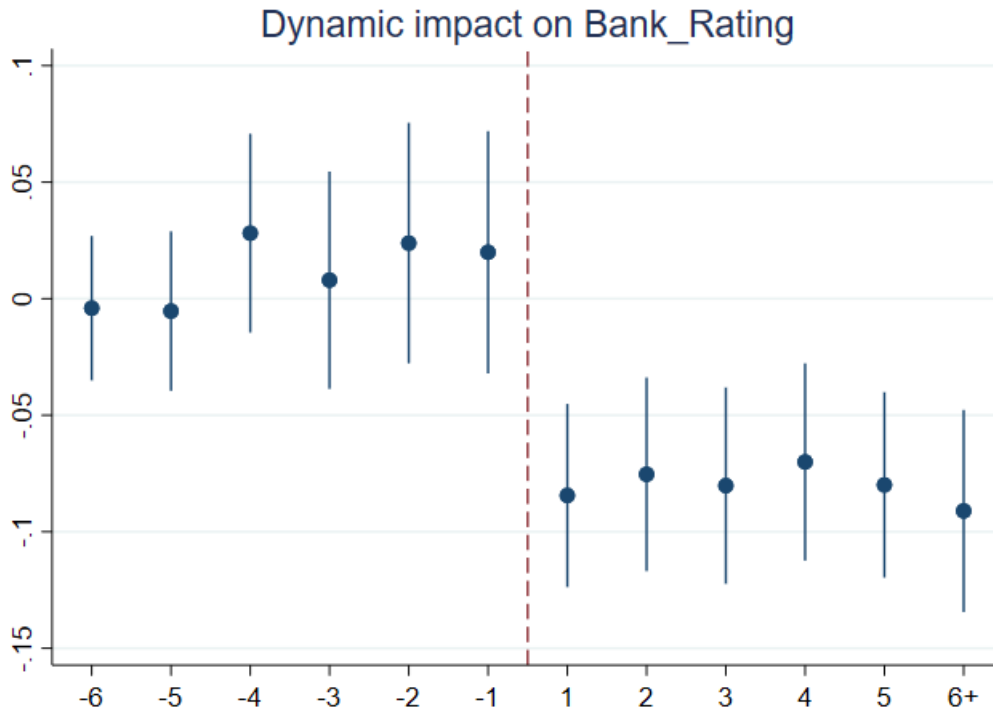
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<sup>23</sup> We use the residual to quantify abnormal operating leases, since we are interested in the variation of abnormal operating lease activities, which is captured by the residual, rather than the constant. We are unable to use firm fixed effects due to our short estimation window (2 years).

**Figure 1. The history of ASC 842**



**Figure 2. Dynamic effects**



The figure plots the dynamic effect of ASC 842 implementation based on the estimates of the following model.

$$Bank\_Rating_{i,t} = \beta_0 + \sum_{\tau=1}^{\tau=6} \beta_{1,\tau} \times Pre[\tau]_{i,t} + \sum_{\tau=1}^{\tau=6+} \beta_{2,\tau} \times Post[\tau]_{i,t} + \sum \beta_k Controls_{i,t} + \gamma_i + \delta_t + \epsilon_{i,t}.$$

Specifically, we plot the coefficient estimates and 90% confidence intervals of the dummy indicators for each event month from Month -6 onward. Month 6+ indicates Month 6 and subsequent months.

**Table 1. Sample characteristics***Panel A. Compare Compustat/CRSP merged sample and our sample*

Variable	Compustat-CRSP merged sample			Our sample		
	Mean	Median	Std.Dev.	Mean	Median	Std.Dev.
<i>Ebit_cov</i>	4.442	3.816	895.900	11.360	6.310	34.460
<i>Leverage</i>	0.483	0.459	2.388	0.534	0.515	0.949
<i>Debt_ebitda</i>	23.520	10.000	2,101.000	24.300	12.050	964.900
<i>Size</i>	5.319	5.556	2.422	7.239	7.158	1.351
<i>Freecash</i>	-0.430	0.024	42.900	0.653	0.055	37.400
<i>Ret_std</i>	3.254	2.648	2.480	2.281	1.974	1.868

*Panel B. Timing of ASC 842 implementation*

Announcement month of implementation	Number of Firms	Percentage	Cumulative Percentage
2019m1	4	0.650	0.650
2019m4	217	35.11	35.76
2019m5	245	39.64	75.40
2019m6	5	0.810	76.21
2019m7	11	1.780	77.99
2019m8	14	2.270	80.26
2019m9	7	1.130	81.39
2019m10	20	3.240	84.63
2019m11	16	2.590	87.22
2019m12	10	1.620	88.83
2020m1	25	4.050	92.88
2020m2	31	5.020	97.90
2020m3	12	1.940	99.84
2020m4	1	0.160	100
Total	618	100	

This table describes our sample characteristics. Panel A compares the mean, median, and standard deviation of the common characteristics (*Ebit\_cov*, *Leverage*, *Debt\_ebitda*, *Size*, *Freecash*, *Ret\_std*) between our sample observations and all observations in the Compustat/CRSP merged quarterly database during the period of January 2018–March 2021. The unit of observation is firm-quarter. We only keep the firm-quarters with nonmissing values of all common firm characteristics. Panel B shows the timing of the new lease accounting standard implementation by our sample firms. We identify ASC 842 implementation based on the quarterly filings with "ACCTCHGQ" containing "ASU16-02" from the Compustat/CRSP merged quarterly database. The implementation month is the first rating month after the announcement month of the quarterly filing in which ASC 842 went into effect. For each month, we report the number, percentage, and cumulative percentage of firms that adopted the new lease standard in the month. All variables are defined in Appendix A.

**Table 2. Summary statistics**

Variable	N	Mean	S.D.	P25	P50	P75
<i>Bank_Rating</i>	13,901	9.720	2.646	8.000	10.000	12.000
<i>Dispersion</i>	13,901	0.548	0.229	0.400	0.500	0.700
<i>Post</i>	13,901	0.510	0.500	0.000	1.000	1.000
<i>Post_High_AB_Lease</i>	11,591	0.379	0.485	0.000	0.000	1.000
<i>Post_Low_AB_Lease</i>	11,591	0.130	0.337	0.000	0.000	0.000
<i>Post_High_ASC842_Discl</i>	13,509	0.251	0.434	0.000	0.000	1.000
<i>Post_Low_ASC842_Discl</i>	13,509	0.245	0.430	0.000	0.000	0.000
<i>Post_High_Dispersion</i>	13,901	0.250	0.433	0.000	0.000	1.000
<i>Post_Low_Dispersion</i>	13,901	0.260	0.439	0.000	0.000	1.000
<i>Ebit_cov</i>	13,901	10.300	14.160	3.804	6.491	11.980
<i>Leverage</i>	13,901	0.533	0.252	0.365	0.507	0.660
<i>Debt_ebitda</i>	13,901	13.910	12.330	7.413	11.680	17.810
<i>Size</i>	13,901	7.311	1.307	6.364	7.223	8.158
<i>Freecash</i>	13,901	0.098	0.243	-0.010	0.053	0.146
<i>Ret_std</i>	13,901	2.321	1.103	1.554	2.033	2.756
<i>Bank_Rater_Count</i>	13,901	6.049	3.205	3.000	5.000	8.000
<i>Dummy[Bank_Rater_Truncated]</i>	13,901	0.367	0.482	0.000	0.000	1.000
<i>CRA_Rating_Level</i>	13,901	6.235	5.514	0.000	8.000	11.000
<i>Dummy[CRA_Rated]</i>	13,901	0.602	0.490	0.000	1.000	1.000

This table reports the summary statistics, including the number of observations, mean, standard deviation, bottom quartile, median, and top quartile. The unit of observation is firm-month. The sample includes 12 months before and 12 months after the implementation of ASC 842, excluding the implementation month. All variables are defined in Appendix A.

**Table 3. Operating lease recognition and bank ratings**

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.114*** (-4.73)	-0.108*** (-4.55)
<i>Ebit_cov</i>	-0.003 (-1.42)	-0.003 (-1.56)
<i>Leverage</i>	1.539*** (5.71)	1.400*** (5.63)
<i>Debt_ebitda</i>	0.001 (0.30)	0.000 (0.09)
<i>Size</i>	-0.604* (-1.67)	-0.568* (-1.69)
<i>Freecash</i>	-0.048 (-0.78)	-0.047 (-0.78)
<i>Ret_std</i>	0.303*** (8.33)	0.288*** (9.08)
<i>Bank_Rater_Count</i>	-0.006 (-0.28)	-0.011 (-0.52)
<i>Dummy[Bank_Rater_Truncated]</i>	-0.019 (-0.26)	-0.036 (-0.50)
<i>CRA_Rating_Level</i>		0.160*** (5.41)
<i>Dummy[CRA_Rated]</i>		-1.498*** (-5.20)
Intercept	12.730*** (4.93)	12.526*** (5.18)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,901	13,901
R-squared	0.959	0.961

This table examines the impact of ASC 842 implementation on bank ratings. The dependent variable is *Bank\_Rating*, 21-notch bank ratings ranging from 1 (best rating) to 21 (worst rating). The key variable of interest is *Post*, which indicates the period after the implementation of ASC 842. Column (1) includes all control variables except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*, while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. We cluster standard errors by firm. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 4. Dynamic effect**

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Pre</i> [6]	0.004 (0.23)	-0.004 (-0.22)
<i>Pre</i> [5]	-0.004 (-0.17)	-0.005 (-0.26)
<i>Pre</i> [4]	0.022 (0.86)	0.028 (1.09)
<i>Pre</i> [3]	0.002 (0.07)	0.008 (0.28)
<i>Pre</i> [2]	0.018 (0.59)	0.024 (0.76)
<i>Pre</i> [1]	0.016 (0.49)	0.020 (0.63)
<i>Post</i> [1]	-0.094*** (-3.88)	-0.084*** (-3.54)
<i>Post</i> [2]	-0.082*** (-3.14)	-0.075*** (-2.99)
<i>Post</i> [3]	-0.088*** (-3.38)	-0.080*** (-3.14)
<i>Post</i> [4]	-0.078*** (-2.93)	-0.070*** (-2.73)
<i>Post</i> [5]	-0.085*** (-3.42)	-0.080*** (-3.31)
<i>Post</i> [6+]	-0.090*** (-3.41)	-0.091*** (-3.46)
Controls	All but CRA ratings	All
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,901	13,901
R-squared	0.959	0.961

This table examines the dynamic impact of ASC 842 implementation on bank ratings. The dependent variable is *Bank\_Rating*, 21-notch bank ratings ranging from 1 (best rating) to 21 (worst rating). The key variable of interest is a series of indicators for the six months before the event month  $t$  (*Pre* $[\tau]$ , where  $\tau$  falls in the range [1, 6]) and months in the post period (*Post* $[\tau]$ , where  $\tau$  falls in the range [1, 6+]). *Post*[6+] indicates Month  $t+6$  and subsequent months. Column (1) includes all control variables except for *CRA\_Rating\_Level* and *Dummy*[*CRA\_Rated*], while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. We cluster standard errors by firm. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 5. Cross-sectional analysis: Prior rating dispersion**

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post_High_Dispersion</i>	-0.208*** (-5.47)	-0.206*** (-5.48)
<i>Post_Low_Dispersion</i>	-0.019 (-0.57)	-0.008 (-0.25)
<i>Ebit_cov</i>	-0.003 (-1.41)	-0.003 (-1.56)
<i>Leverage</i>	1.516*** (5.63)	1.374*** (5.54)
<i>Debt_ebitda</i>	0.001 (0.33)	0.000 (0.11)
<i>Size</i>	-0.593* (-1.66)	-0.557* (-1.68)
<i>Freecash</i>	-0.040 (-0.66)	-0.039 (-0.65)
<i>Ret_std</i>	0.306*** (8.38)	0.291*** (9.14)
<i>Bank_Rater_Count</i>	-0.007 (-0.33)	-0.012 (-0.58)
<i>Dummy[Bank_Rater_Truncated]</i>	-0.020 (-0.27)	-0.037 (-0.52)
<i>CRA_Rating_Level</i>		0.161*** (5.45)
<i>Dummy[CRA_Rated]</i>		-1.501*** (-5.23)
Intercept	12.666*** (4.95)	12.452*** (5.20)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,901	13,901
R-squared	0.960	0.961
<i>Post_High_Dispersion – Post_Low_Dispersion</i>	-0.189*** (-3.62)	-0.198*** (-3.91)
<i>t-statistics</i>		

This table reports the moderating effects of pre-implementation bank rating disagreement. The dependent variable is *Bank\_Rating*, 21-notch average bank ratings ranging from 1 (best rating) to 21 (worst rating). *Post\_High\_Dispersion* (*Post\_Low\_Dispersion*) is an indicator variable for the post-implementation period for firms with a high (low) prior rating dispersion. We compute the average bank rating dispersion over the preperiod and consider the firm as high (low) dispersion when its preperiod average is above (below) the sample median. We test the coefficient difference



between the *Post\_High\_Dispersion* and *Post\_Low\_Dispersion* in the last two rows. Column (1) includes all control variables except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*, while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 6. Cross-sectional analysis: Abnormal operating leases**

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post_High_AB_Lease</i>	-0.163*** (-4.84)	-0.162*** (-4.85)
<i>Post_Low_AB_Lease</i>	-0.011 (-0.22)	0.013 (0.26)
<i>Ebit_cov</i>	-0.004** (-2.49)	-0.004*** (-2.64)
<i>Leverage</i>	1.403*** (5.74)	1.264*** (5.46)
<i>Debt_ebitda</i>	0.004*** (2.71)	0.003** (2.37)
<i>Size</i>	-0.196* (-1.80)	-0.186* (-1.72)
<i>Freecash</i>	-0.077 (-1.22)	-0.081 (-1.30)
<i>Ret_std</i>	0.289*** (9.70)	0.279*** (10.18)
<i>Bank_Rater_Count</i>	0.017 (0.78)	0.012 (0.57)
<i>Dummy[Bank_Rater_Truncated]</i>	0.064 (0.88)	0.049 (0.70)
<i>CRA_Rating_Level</i>		0.138*** (5.53)
<i>Dummy[CRA_Rated]</i>		-1.292*** (-5.31)
Intercept	9.720*** (12.75)	9.708*** (12.80)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	11,591	11,591
R-squared	0.962	0.963
<i>Post_High_AB_Lease - Post_Low_AB_Lease</i>	-0.152**	-0.175***
<i>t-statistics</i>	(-2.40)	(-2.83)

This table reports the moderating effects of pre-implementation abnormal operating leases. The dependent variable is *Bank\_Rating*, 21-notch average bank ratings ranging from 1 (best rating) to 21 (worst rating). *Post\_High\_AB\_Lease* (*Post\_Low\_AB\_Lease*) is an indicator variable for the post-implementation period for firms whose prior abnormal operating leases are above-median (below-median). Abnormal operating leases are the residual from the regression of operating leases on firm characteristics using pre-implementation data following Cornaggia et al. (2013), with the estimation procedure described in Appendix E. The coefficient difference between *Post\_High\_AB\_Lease* and *Post\_Low\_AB\_Lease* is tested in the last two rows. Column (1) includes

all control variables except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*, while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 7. Cross-sectional analysis: New lease disclosures**

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post_High_ASC842_Discl</i>	-0.171*** (-5.13)	-0.163*** (-4.90)
<i>Post_Low_ASC842_Discl</i>	-0.068** (-2.28)	-0.068** (-2.39)
<i>Ebit_cov</i>	-0.002 (-1.20)	-0.002 (-1.33)
<i>Leverage</i>	1.514*** (5.59)	1.375*** (5.53)
<i>Debt_ebitda</i>	0.000 (0.19)	-0.000 (-0.01)
<i>Size</i>	-0.589 (-1.58)	-0.554 (-1.59)
<i>Freecash</i>	-0.061 (-1.01)	-0.063 (-1.06)
<i>Ret_std</i>	0.282*** (7.14)	0.270*** (7.77)
<i>Bank_Rater_Count</i>	-0.014 (-0.72)	-0.018 (-0.94)
<i>Dummy[Bank_Rater_Truncated]</i>	-0.038 (-0.51)	-0.052 (-0.72)
<i>CRA_Rating_Level</i>		0.154*** (4.99)
<i>Dummy[CRA_Rated]</i>		-1.455*** (-4.87)
Intercept	12.685*** (4.73)	12.489*** (4.97)
Firm FE	Yes	Yes
Year FE	Yes	Yes
Observations	13,509	13,509
R-squared	0.960	0.961
<i>Post_High_ASC842_Discl – Post_Low_ASC842_Discl</i>	-0.103**	-0.095**
<i>t-statistics</i>	(-2.59)	(-2.49)

This table reports the moderating effects of operating lease disclosures provided under ASC 842. The dependent variable is *Bank\_Rating*, 21-notch average bank ratings ranging from 1 (best rating) to 21 (worst rating). *Post\_High\_ASC842\_Discl* (*Post\_Low\_ASC842\_Discl*) is an indicator variable for the post-implementation period when the number of operating lease-related items in 10-Q/K XBRL filings under ASC 842 is above (below) the sample median. A list of frequent XBRL tags related to operating leases is provided in Appendix B. We test the coefficient difference between *Post\_High\_ASC842\_Discl* (*Post\_Low\_ASC842\_Discl*) in the last two rows. Column (1)

includes all control variables except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*, while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 8. Alternative estimation methods and sample period***Panel A. Stacked regression*

VARIABLES	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i> × <i>Treat_Cohort</i>	-0.123*** (-4.30)	-0.103*** (-3.80)
Controls	All but CRA ratings	All
Year Cohort FE	Yes	Yes
Firm Cohort FE	Yes	Yes
Observations	404,824	404,824
R-squared	0.954	0.957

*Panel B. Ordered Probit model*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.231*** (-4.03)	-0.226*** (-3.92)
Controls	All but CRA ratings	All
Observations	13,901	13,901
Pseudo R-squared	0.686	0.694

*Panel C. Long window*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.168*** (-5.05)	-0.158*** (-4.75)
Controls	All but CRA ratings	All
Observations	37,669	37,669
R-squared	0.908	0.912

This table provides alternative tests of our hypothesis. In Panel A, we use stacked regressions to mitigate the potential bias brought by using already-treated observations as control groups. In Panel B, treating bank ratings as multinomial variables, we use the ordered Probit model to conduct the ordinal regression. In Panel C, the sample period is a longer fixed window starting from June 2015, the earliest month when the data are available, till March 2021, the last available month. In all tests, we control for all control variables, firm fixed effects and year fixed effects. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.

**Table 9. Robustness checks***Panel A. Exclude firms that reduce total operating leases in the postperiod*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.158*** (-3.44)	-0.149*** (-3.32)
Controls	All but CRA ratings	All
Observations	5,957	5,957
R-squared	0.962	0.964

*Panel B. Drop early adopters*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.116*** (-4.80)	-0.109*** (-4.58)
Controls	All but CRA ratings	All
Observations	13,805	13,805
R-squared	0.959	0.961

*Panel C. Adjust financial ratios in the preperiod*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post</i>	-0.080*** (-2.93)	-0.075*** (-2.79)
Controls	All but CRA ratings	All
Observations	11,832	11,832
R-squared	0.959	0.960

*Panel D. Placebo test*

Dependent Variable=	(1) <i>Bank_Rating</i>	(2) <i>Bank_Rating</i>
<i>Post_Placebo</i>	-0.023 (-0.79)	-0.019 (-0.64)
Controls	All but CRA ratings	All
Observations	14,850	14,850
R-squared	0.955	0.957

This table conducts robustness checks. The dependent variable is *Bank\_Rating*, 21-notch average bank ratings ranging from 1 (best rating) to 21 (worst rating). In Panel A, we exclude firms that reduced total operating lease usage (measured as the most recent annual minimum lease payment in the next year divided by beginning total assets, following Yoon (2021)) after adopting the new

lease accounting standard. In Panel B, we drop firms that adopted the new lease accounting standard in fiscal periods ending before 2019Q1. In Panel C, we adjust preperiod financial ratios, including *Ebit\_cov*, *Leverage*, *Debt\_ebitda*, and *Freecash* for the most recent annual *as-if* capitalized operating leases, following Altamuro et al. (2014) (described in Appendix C). In Panel D, we run a placebo test which sets the placebo implementation month as 13 months before the actual implementation month of ASC 842. Similar to our baseline test, the sample period excludes the placebo implementation month and includes 12 months before and 12 months after the placebo implementation month. *Post\_Placebo* equals one for the period after the placebo implementation month. Column (1) includes all control variables except for *CRA\_Rating\_Level* and *Dummy[CRA\_Rated]*, while Column (2) includes all control variables. In both columns, we control for firm fixed effects and year fixed effects. All variables are defined in Appendix A. \*, \*\*, and \*\*\* indicate significance levels at less than 10%, 5%, and 1% based on two-tailed t-tests.