Anticipatory Effects of Accounting Standards: The Case of Lease Standard*

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Abstract

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We examine whether market perception of firms' future default risk increases, as manifested in market measures of risk, upon issuance of the 2010 exposure draft (ED) proposing capitalization of most operating leases. Employing a difference-in-differences design, we find a significant increase in loan spread and credit default swap (CDS) premia for firms with high operating leases. Cross-sectional tests show the effect to be more pronounced in firms with lower disclosure reliability and longer lease maturity. This study innovates by considering anticipatory effects of exposure drafts.

JEL classifications: G14, G29, G32, M41

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1. Introduction

On February 25, 2016, the FASB issued a new standard, Leases (ASC 842). There are elements of the new standard that impact almost all entities, although lessees will likely see the most significant changes. The biggest change for lessees, and one of the key objectives of the project, is that these parties will need to recognize virtually all of their leases on the balance sheet by recording a right-of-use asset and lease liability. A *Wall Street Journal* article[1] estimates this could swell balance sheets by as much as $2 trillion.

Following the dissemination of the exposure draft (FASB, Proposed Accounting Standards Update, "ED") on leases issued on August 17, 2010, but prior to its implementation, there was a period during which the capital markets anticipated the new standard, but not necessarily the exact date of its issuance. While FASB deliberations may have foreshadowed the ED, there is good reason to believe the ED and its specific contents were somewhat of a surprise. The short window market reaction was -0.003, *p*-value 0.000, suggesting it is akin to an exogenous shock.

Similar to the finalized standard, the ED stipulates that essentially all operating leases -- barring those of intangibles, biological assets, or certain commodities -- be capitalized. This includes leases still outstanding at the beginning date of the anticipated standard's effective implementation.[2]

The pre-existing standard, SFAS 13, specifies criteria to distinguish operating and capital leases for accounting purposes, but the ED sees lease arrangements as embodying rights and obligations that qualify as a right-of-use asset and a liability. Prior to the ED, operating leases were

[1] https://www.wsj.com/articles/new-rule-to-shift-leases-onto-corporate-balance-sheets-1456414200

[2] While the ED modifies how the capitalized leases would be measured relative to the pre-existing FAS 13 (using an expected outcome technique including contingent rentals and expected payments and to be updated upon changes in circumstances), it continues to require recording of an asset and liability based on the present value of expected payments using the incremental borrowing rate or the discount rate inherent in the lease agreement.

off-balance-sheet, meaning they were not included as assets or liabilities on the balance sheet, but (imperfect) information on the expected payments was provided in footnote disclosures.[3]

Financial analysts, credit-rating agencies, creditors, and investors could utilize required disclosures to create financial statements that reflect the operating leases as if they were capitalized. We argue here that, despite these adjustments, the ED likely affected market expectations to an extent that manifests in increased cost of debt and credit default swaps ("CDS") premia. To understand why this would be the case, note that the ED requires capitalization of operating leases utilizing more precise information that was not made available in the past (e.g., the schedule of lease payments beyond five years was disclosed in one lump sum amount). Thus, the market should expect higher precision in the quantification of the lease liability (and asset) on the balance sheet once the proposed standard is implemented, as compared with the as-if-capitalized operating leases outstanding when the ED was disseminated.[4] The expectation that spreads on loans and CDS premia would increase upon the issuance of the ED in advance of actual implementation of the proposed standard is based on the Hirshleifer (1971) Effect. Under this channel, a competitive risk-averse lender,[5] expecting a more precise and public on-balance sheet quantification of capital leases in the future – and hence, a more precise quantification of both leverage and default risk – faces uncertainty surrounding the anticipated capital lease quantification. Hence, his ex-ante expected utility reduces. Being able to hedge against this uncertainty before the anticipated implementation of the standard, the lender demands a higher price for the loan – and equivalently, the CDS writer demands a higher premium for the insurance – such as to restore his expected utility to the level he enjoyed prior to the enhanced uncertainty the ED created (See the appendix

[3] Similar disclosures were also provided for leases that were capitalized and included as assets and liabilities on the balance sheets.
[4] The effective date of implementation was left unspecified in the ED, to be inserted after exposure (paragraph 87).
[5] See Zarruk (1989), Wong (1997), Chen et al. (2013), Cheng et al. (2010), and Brochet and Srinivasan (2014).

for an elaboration of this argument).[6] The longer the maturity of the loan, the greater the uncertainty the lender faces upon the future capitalization and hence the larger the required premium.

We may expect higher loan spread and CDS premiums as a result of the ED issuance also through another channel. It has been empirically documented (Dhaliwal et al., 2011, Rauh and Sufi, 2012; Andrade et al., 2014) recognized capital leases are more strongly associated with the cost of debt or equity than as-if-capitalized operating leases computed on the basis of footnote disclosures. This stronger association may be either due to higher perceived accuracy (Bratten et al., 2013) or because of behavioral biases triggering heightened attention to recognized numbers than merely disclosed numbers (Koonce et al., 2005; Maines and McDaniel, 2000). Thus, even if the anticipated standard-mandated on-balance-sheet capitalized operating leases are quantified at the same level as the pre-existing as-if-capitalized operating leases disclosed in footnotes, they would invite heightened attention by market participants (i.e., a larger weight would be attached to them). As a result, greater weight would be attached to leverage metrics including these capitalized operating leases as compared with pre-standard-implementation as-if-capitalized operating leases. This would consequently result in heightened perceived default risk which in turn would be expected to reduce financial flexibility and the ability to refinance. Accordingly, this will increase the cost of debt and CDS premia, which are seen as proxies for default risk. Thus, through either the Hirshleifer Effect channel or because of heightened attention. To reiterate, we expect the market to respond at the time of the ED because lenders, reckoning a high probability of the standard becoming effective, anticipate the future impact of lease capitalization on the cost of debt.

[6] In a similar vein, Christensen et al. (2010) show within a rational expectation model that if a forthcoming public report will be more informative, then more uncertainty will be resolved upon the report's release, and hence the return on the shares for the period leading up to the release of the public report will be more risky; therefore, the risk premium for that period increases.

Moreover, lenders who underwrite loans over periods expected to span the issuance of the final standard will perceive higher anticipated default uncertainly – shorter maturity loans would be less likely to be subject to capitalization since they would mature before the standard is anticipated to become effective – and will charge a higher spread to compensate for the elevated risk.[7] Our empirical tests confirm these hypothesized effects.

This paper contributes to the debate surrounding the effects of recognition versus disclosures. More importantly, to our knowledge this is the first study to investigate the anticipatory effects of exposure drafts as opposed to the actual implementation of effective standards.

The rest of the paper is structured as follows. In Section 2, we provide institutional background. Section 3 summarizes prior literature. We develop hypotheses in Section 4 and discuss research design, variables and tests in Section 5. The main test results are presented in Section 6 and we offer robustness and additional tests in Section 7. Section 8 concludes.

2. Background

2.1 Accounting and Disclosure Requirements for Leases Prior to the ED

SFAS 13 governed the accounting for leases before the ED. Under SFAS 13, four criteria are applied to determine whether an arrangement is an operating lease or a capital lease.[8] If operating, the lessee recognizes lease (rental) payments as expense, and neither an asset nor a liability is included on the balance sheet. If capital, an asset and a liability are recognized at the inception of

[7] Also, the longer the time to maturity, the more likely it is that events will cause the firm to become financially constrained over time, such as to require refinancing.

[8] For the lessee, an arrangement is a capital lease if the contract specifies (1) transfer of ownership of the leased asset, (2) a bargain purchase option, (3) a lease term equal to 75 percent or more of the asset's life, or (4) minimum payments equal to 90 percent of the fair value of the asset.

the lease and measured as the present value of the contractually specified lease payments; during the lease term, interest expense and depreciation are recognized. For both operating and capital leases, the firm discloses minimum payments for the next five years and a single lump sum amount for the years thereafter. Using these disclosures and employing few assumptions, market participants can, and typically do, estimate operating lease obligations and include them on the balance sheet. These obligations thus become as-if-capitalized operating leases. In a field experiment, Wilkins and Zimmer (1983) suggest that lenders take into account information in financial leases for credit evaluations.

Operating leases account for a much larger part of firms' capital structures than capital leases (Graham et al., 1998). Their common use is seen as partly due to the benefit of balance sheet management: when SFAS No. 13 was implemented, the terms of most leases were structured to avoid balance sheet recognition (Imhoff and Thomas, 1988) and effected lessees experienced negative market returns and tightened debt covenant restrictions (El-Gazzar, 1993)

Cornaggia et al. (2013) document a steady increase in operating leases since 1980. This finding is consistent with the increasing trend of off-balance sheet financing use, such as the 250% increase of special purpose vehicles between 1997 and 2004 (Feng et al., 2009).

2.2 The ED

While operating leases create economic obligations (and assets), they are not reflected as such on the balance sheet, as arrangements that satisfy the criteria for an operating lease are deemed to be rental arrangements under which the lessee does not bear the risk of ownership. However, firms can structure their leases to make them appear as operating even when they do give rise to risk of ownership, hence creating an economic liability with the corresponding asset.

Seeking to remedy this loophole and enhance comparability of economically similar firms with different leasing structures, the FASB issued the August 17, 2010 ED. The new main requirements of interest to our study are: (1) the lessee recognizes its right to use the leased asset for the lease term and the liability to make lease payments, (2) assets and liabilities will be measured such as to assume the longest possible lease term that is more likely than not to occur (taking into account options to extend or terminate the lease), (3) the lessee uses an expected outcome technique to reflect the lease payments including contingent rentals and residual value guarantees, and (4) lessees update the measures when changes in facts or circumstances are significant. Thus, essentially all leases will be reflected as assets and liabilities, no longer distinguishing between operating and capital leases; the terms of the leases dictate the measurement.

3. Prior Research

3.1 Recognition vs. Disclosure in General

Bratten et al. (2013) list three views about how market agents react to recognized versus disclosed amounts: (1) no difference: both recognized and disclosed information is treated the same way, (2) recognized and disclosed items differ in their information content and hence affect decisions differently, and (3) behavioral biases affect how recognized and disclosed items are used. Schipper (2007, 322) suggests the weight of the evidence points to users of financial reports underweighting or even ignoring disclosed information. Müller et al. (2015) also address the issue of reliability of the disclosed information within fair values context. Specifically, they find lower association

between equity prices and disclosed relative to recognized investment property fair values, but the difference in association decreases in lower information processing cost and higher reliability.

Other representative studies include Davis-Friday et al. (2004) and Ahmed et al. (2006). The former show that the disclosed post-retirement benefit (PRB) liabilities prior to adoption of SFAS No. 106 are perceived as less reliable than recognized PRB liabilities. The latter investigate differences in the valuation of the fair value of derivative financial instruments between the pre-SFAS No. 133 disclosure regime and the mandatory recognition regime post SFAS No. 133. The authors find that only the recognized fair values are priced whereas the disclosed are not, which is consistent with limited attention or costly information processing models. [9]

3.2 Recognition versus Disclosure in the Context of Leases

Of direct relevance to our research are the archival studies exploring, directly or indirectly, potentially differential market reactions to disclosed (operating) versus recognized (capital) leases. The evidence that managers structure arrangements to avoid lease capitalization suggests a belief that markets underweight non-capitalized operating leases, hence miscalculating leverage and underestimating default risk.

A number of studies directly address whether investors and credit rating agencies appear to treat operating leases as debt (e.g., Altamuro et al., 2014; Callahan et al., 2012; Dhaliwal et al., 2011; Eisfeldt and Rampini, 2009; Ely, 1995; Kraft, 2014; Rauh and Sufi, 2012). Lim et al. (2017)

[9] Bratten et al. (2013) rightly point out that the comparison of recognized versus disclosed PRB does not control for differences in information characteristics, such as ranges versus point estimates for a majority of the sample firms. They argue that these differences in information characteristics could affect how investors use the information. Contrasted with the complex measurement of PRB, the estimation of lease obligations is simpler. With respect to Ahmed et al. (2006), Bratten et al. (2013) emphasize that the derivatives in their sample can be either assets or liabilities and can change between the two over time depending on interest rate movements; this cannot occur in the case of leases.

document that borrowing costs and credit ratings are less sensitive to off-balance sheet lease obligations than to on-balance sheet debt, which implies that leasing is advantageous in lowering borrowing costs. Testing a theoretical model of leasing, Eisfeldt and Rampini (2009) find that more financially constrained firms lease more than less financially constrained firms, since they value the additional debt capacity more. They hence conclude that, since the more constrained firms lease more, it is critical to consider the implicit debt due to leasing when measuring leverage. While the model and the empirical analysis do not directly address the accounting issue of recognition versus disclosure of leases, the finding that firms with more leverage and financial constraints lease more suggests these firms believe they can conceal true leverage (increasing debt capacity) by leasing rather than borrowing. Andrade et al. (2014) find that as-if capitalized operating leases and debt are differentially associated with CDS premia, a proxy for credit default risk. Dhaliwal et al. (2011) provide evidence that capital leases and operating leases exhibit different associations with the cost of capital. Rauh and Sufi (2012) capitalize operating leases and find that the comparability between firms operating in the same output market increases significantly. They conclude that ignoring operating leases leads to a significant overestimation of within-industry variation in leverage ratios. Callahan et al. (2012) study firms affected by FIN 46 and find evidence that their cost of equity increased significantly with the consolidation of previously off-balance sheet leases arrangements.

Information embedded in leases matters for credit market participants. Previous researchers suggest that that loan spreads and credit ratings are better explained by interest coverage ratios and leverage ratios that are adjusted to capitalize operating leases (Altamuro et al., 2014) and credit rating agencies such as Moody's use of off-balance sheet debt information to adjust firms' reported financial statement numbers (Kraft, 2014). Andrade et al. (2014, working paper) find that the effect

of operating leases on credit spreads is substantially larger than the effect of purchase obligations. The authors hypothesize that credit markets likely perceive operating leases to be more senior to unsecured debt in bankruptcy compared with purchase obligations. Therefore, operating leases require a higher spread ex-ante. Their results suggest that credit markets view operating leases similarly to on-balance sheet debt while purchase obligations are perceived as less onerous.

Another set of studies shed indirect light on whether market participants' decisions appear to be consistent or inconsistent with as-if-capitalization of operating leases. When firms believe lenders and/or investors to discount operating leases, they likely prefer leasing, especially when financially constrained or in situations that appear to be risky. Among these studies are Sharpe and Nguyen (1995), Mills and Newberry (2005), and Graham and Leary (2011). Sharpe and Nguyen (1995) find that firms facing higher cost of external capital can raise cheaper capital by leasing. In particular, the percentage of operating leases is significantly higher for firms that pay no dividends, have lower earnings to sales ratio, have lower credit ratings, and are smaller. Mills and Newberry (2005) find that riskier firms use more off-balance sheet debt. Graham and Leary (2011) find that firms that use more leases relative to debt are smaller, younger, less profitable, faster growing, have fewer tangible assets, and pay fewer dividends.

The literature disagrees on whether leases and debt are substitutes. Ang and Peterson (1984) document a positive correlation between lease and debt scaled by book value of equity, which indicates a complementary relation. However, theory suggests that debt and leases are substitutes. The authors therefore conclude that there is a leasing puzzle. On the other hand, more recent empirical work such as Yan (2006) provides evidence supporting the notion that leases and debt are substitutes if endogeneity and firm fixed effects are properly controlled for.

Our study is also related to Bratten et al. (2013). Using a sample of firms with both capital leases and operating leases, they test for differences in how recognized and disclosed amounts are used, holding constant their reliability. Arguing that operating lease disclosures are easy to process -- they merely require present value calculations of disclosed amounts -- they find that, when disclosed information about operating leases is reliable, as-if-capitalized operating leases and capital leases are positively and not differently associated with proxies for the cost of debt and equity. Importantly, however, they find that as-if-recognized (capitalized) operating leases and recognized capital leases are statistically distinguishable when the former are imputed from less reliable disclosures. Specifically, the result is consistent with investors placing less weight on less reliable as-if-capitalized operating leases.

The ED affords a stronger test as to whether recognition matters beyond mere disclosure. The issuance of the ED and the deliberations surrounding it are exogenous changes, akin to a shock for firms with operating leases. Although firms with a high portion of operating leases could be inherently different from firms with little operating leases, increases in default risk proxies following the ED if documented, and as corroborated by comparing performance-score-matched samples, can be reasonably attributed to the effect of anticipating the mandate of capitalization of operating leases. This enables the testing of the impact of anticipated enhanced recognition beyond the mere association tests employed in prior research. In our set of hypotheses, we test whether the required anticipated enhanced recognition affects the market value of financial instruments that reflect default risk.[10]

[10] A recent 2018 working paper by Chen et al., exploiting intertemporal variations in lease accounting rules in 41 countries over the 1995-2015 period, shows that lease capitalization rules negatively affect firm level investment and profitability and that the effects appear to be partially driven by a financing channel. However, note that this paper is distinctly different from this study in that it investigates the effects of *actual implementation* of cross-

4. Hypothesis Development

The ED requires operating leases to be capitalized, thus increasing liabilities on the balance sheet. The mechanism described in the introduction, i.e., the Hirshleifer-Effect-implied increase in loan spread and CDS premia to compensate for the adverse effect of uncertainty induced by the anticipated ED, are hypothesized to trigger an immediate re-pricing of loans and CDS contracts (upon the release of the ED). In other words, lenders will demand higher spreads for loans they grant, especially for those with longer maturities, and CDS writers will demand higher premia for the insurance they provide, especially for firms with higher operating leases, all else equal.[11]

H1: Loan spread increases after the ED; the increase of loan spread is greater for firms with more operating leases.

As in Bratten et al. (2013), the market seems to treat operating leases and financial leases in a similar way when the disclosure is reliable. This implies that the most serious information asymmetry lies in firms with unreliable disclosure. Unlike the case with securitization footnote disclosure, operating leases are disclosed in a rather clear and uniform manner. The main source of ambiguity is the lump sum part after five years, or the "thereafter" portion. Firms are considered to be of lower reliability in operating leases disclosure if they have higher portion of "thereafter" amount. After the ED, we expect the difference in loan spread between firms with more and less operating leases to be more pronounced for firms with low disclosure reliability.

country standards mandating capitalization of leases, whereas we test for *anticipatory* effects of leases capitalization and recognition upon the issuing of the exposure draft.

[11] We do not expect to observe higher loan spreads if lenders fully incorporated the impact of operating leases on leverage, and hence default risk, before the ED. However, empirical evidence described above (e.g., Bratten et al., 2013; Callahan et al., 2012) suggests this is not the case.

H2: The increase in loan spread after the ED is greater for high operating leases firms with low reliability in disclosure than for high operating leases with high reliability in disclosure.

5. Research Design, Variables, and Tests

We evaluate the impact of the ED on loan spreads. We employ a difference-in-differences design to test whether loan spreads increased more for firms with a large amount of operating leases than for firms with a small amount of operating leases. We also use propensity score matching to identify a control sample with a similar ex-ante probability of being high operating lease firms.

Facility level loan data is obtained from DealScan. The sample period is from 2006 to 2012.[12] We exclude financial and utility firms and drop firms with missing operating leases data, as there is no good way to distinguish between missing operating leases activity and missing reporting. Following Rauh and Sufi (2012), we obtain operating leases data from variables in Compustat: MRC1-MRC5, which represent "Rental Commitments Minimum 1st Year," "Rental Commitments Minimum 2nd Year," etc., and MRCTA, which represents "Thereafter Portion of Leases." To measure the intensity of using operating leases, we first capitalize the disclosed operating leases (DOLO), treating the portion after five years as annuity. Specifically,

$$DOLO = \Sigma_{i=1}^{5} \frac{Rent_i}{(1+r)^i} + \frac{1}{(1+r)^6}\left[\frac{RentThereAfter}{T} * \frac{1-\frac{1}{(1+r)^T}}{1-\frac{1}{1+r}}\right],$$

where $Rent_i$ is the minimum operating leases payment within future five years (MRC1-MRC5) and $RentThereAfter$ is thereafter a lump sum portion (MRCTA). We treat the portion after five

[12] The link table from DealScan to Compustat is only available until 2012.

years as annuity following Damodaran (2006) and estimate the thereafter term $T = \frac{RentThereAfter}{\frac{1}{5}\sum_{i=1}^{5} Rent_i}$.

We assume the discount rate r is 10%. We measure operating leases' intensity with OLR, which is defined following Beatty et al. (2010) as the ratio of capitalized operating leases divided by the sum of capitalized operating leases and PP&E (including capital leases). Firms with higher than median pre-ED operating leases intensity are labeled as high operating leases firms and all other firms are otherwise labeled as low operating leases firms. Control variables including firm characteristics such as size, market to book ratio, leverage, and return on assets are from Compustat.

5.1 Loan Spread Test

The ED proposes to move operating leases information from footnotes onto the balance sheet, increasing book leverage. The empirical question is whether the pre-ED disclosure of operating leases enabled the market to assess the underlying risk adequately. The change in leverage may trigger an increase in anticipated default risk. To investigate this, we examine first the potential impact on the pricing of loans. We estimate the following regression (we henceforth omit firm and time subscripts for brevity):

$$Loan\ Spread = \alpha + \beta_1 Treat + \beta_2 Post + \beta_3 Treat * Post + Controls + \varepsilon. \quad (1)$$

As in the banking literature (e.g., Acharya et al., 2013), we use $Allindrawn$ as the measure of $Loan\ Spread$, which is the annual spread over LIBOR for each dollar drawn from the facility. *Treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *Post* is an indicator equal to 1 if the facility is issued after the FASB ED date (August 17, 2010) and 0 otherwise. The variable of interest is the interaction term *Treat*Post*, which captures the incremental change in loan spread for high operating leases firms before and after the ED compared with that of low operating leases firms. If banks had fully and properly

incorporated the disclosed operating leases into loan pricing, the coefficient of the interaction term should be insignificant. We control for firm size, market to book ratio, profitability (operating margin and return on assets), leverage, coverage, and loan characteristics such as loan size, maturity, and seniority. We also control for industry, since operating leases' intensities vary substantially across industries.

5.2 Subsample Test of Firms with Low Reliability Lease information

The efficient market hypothesis implies that no difference exists between disclosed information and recognized information, all else equal. Yet it is often empirically observed that the market seems to treat information on balance sheets and in footnotes differently. Researchers propose various explanations including information processing cost, limited attention, and different reliability of information (Barth et al., 2003; Hirst et al., 2004; Koonce et al., 2005; Maines and McDaniel, 2000; Schipper, 2007). While complicated disclosures such as those related to securitization may require expertise and effort to process, operating leases are disclosed in a uniform and clear manner and require modest information processing (Bratten et al., 2013). Therefore, we hypothesize that any difference in treating recognized versus disclosed amounts is due to the reliability of the information. Specifically, perceived differences between the recognized versus disclosed amounts could be affected by either the amounts to be discounted or by the discount rate. We partition the sample into two groups based on disclosure reliability and conduct the loan spread test. Following Bratten et al. (2013), the reliability of disclosure is measured by the "thereafter" portion in operating leases disclosure. Specifically, we measure reliability as the "thereafter" portion of undiscounted operating lease payments divided by the sum of total undiscounted operating lease payments. The higher the portion, the less reliable the disclosed information.

We estimate regression (1) for the high reliability and the low reliability sample. Presumably, capitalization of operating leases should not affect the loan spread for firms with highly reliable disclosure since the information is precise and clear, leaving little room for uncertainty and misinterpretation. Hence, the impact of the ED should be more pronounced for firms with less reliable disclosure. To the extent that operating leases would now be shown explicitly as liabilities, the higher precision-induced uncertainty (as per the Hirshleifer Effect mechanism), coupled with the uncertainty surrounding the proportion of operating leases whose imputed value may be less reliable because of the "thereafter" portion, is likely to increase perceived risk and, hence, expected loan yields.

6. Results

6.1 Descriptive Statistics

Summary statistics are provided in Table 1. The mean (median) Operating Leases Ratio (OLR) is 0.259 (0.181).[13] Firm size is log of total asset in millions, with a mean (median) of 7.83 (7.719). The sample mean (median) leverage ratio is 0.279 (0.239). Consistent with Eisfeldt and Rampini (2009), firms with high operating leases have smaller size, lower leverage, and higher market to book ratio. We later address the potential concern of fundamental differences between the two groups as evident in Table 1A by using propensity score matching tests for our main results. Table 1B lays out the industry distribution of our sample. Industries such as transportation, retail, and

[13] Beatty et al. (2010) use a similar definition, *lease*= *rent**10/(*rent**10+PPE), and report a high lease mean (median) of 0.650 (0.652) and a low lease mean (median) of 0.223 (0.223), but their sample is restricted to manufacturing firms.

manufacturing have more observations, consistent with their heavier usage of operating leases. The correlations in Table 2 show OLR to be negatively correlated with size (-0.37) and leverage (-0.10), consistent with the finding that small and more financially constrained firms lease more (Eisfeldt and Rampini, 2009).

[Insert Table 1, Table 1A, Table 1B and Table 2 here]

6.2 Evidence on Loan Spread

Table 3 reports the parameters' estimates of the difference-in-differences regression with loan spread as the dependent variable. Column 1 lists the baseline variables, and Column 2 adds controls and industry-fixed effects. The coefficient of *Treat*Post* is statistically significant and suggests that the loan spread of high operating leases firms increases by approximately 23 basis points compared with low operating leases firms after the ED. This magnitude is also economically meaningful and corresponds to an approximately 10% increase relative to the unconditional average during the sample period. The control variables exhibit the expected signs: decrease in firm size, increase in leverage, and decrease in profitability are associated with higher loan spreads.

[Insert Table 3 here]

6.4 Partitioning on High and Low Reliability Subsamples

We hypothesize that the impact of the ED is more pronounced for firms with less reliable disclosures. Column 1 of Table 4 indeed shows that the coefficient on the interaction term $Treat * Post$ is insignificant for the high reliability subsample, whereas Column 2 shows that the coefficient on the interaction term is positive and significant for the low reliability subsample. High operating leases firms experience greater increase in loan spread after the ED only for firms with low reliability of operating leases disclosure. This is consistent with Bratten et al. (2013), who argue that recognized financial statement items such as assets and liabilities have stronger

effects on market beliefs than merely disclosed information about these items, when the latter are not as reliable as the former.

[Insert Table 4 here]

7. Robustness and Additional Tests

7.1 Parallel Trends

An important assumption for the difference-in-differences research design is parallel trends. As suggested by previous studies (Eisfeldt and Rampini, 2009; Gorton and Souleles, 2007; Mills and Newberry, 2005), firms with intense use of operating leases may be inherently riskier than firms using fewer operating leases. Hence, a differential pre-ED time trend of the dependent and independent variables across the high and the low operating leases cohorts could have conceivably extended beyond 2010 to exhibit the same pattern we observe in the post-period, irrespective of the ED. To rule out this possibility, we test for the validity of the parallel trend assumption for the loan spread. As shown in Figure 1, the trend in annual loan spread for high operating leases firms and low operating leases firms is largely parallel up to 2010 when the ED is issued. After the 2010 issuance, the gap in loan spread diverges between the two groups. Results hold with different time window specifications. Figure 2 shows the trend in the control variables such as size, market to book ratio, and leverage.

Table 5 further tests for the trend in the effect on loan spread for the treatment firms and shows that the loan spread increases incrementally for high operating leases firms after the ED. The effect seems to drift over two years after the ED, although the significance of the effect in the second year after the ED seems to be smaller than the first year. This suggests that the market has gradually

absorbed the information and reacted in a weaker fashion as time elapsed. To formally test the parallel trend assumption, in Table 6 we decompose the interaction terms into individual years preceding the ED. Coefficients are insignificant except for treat_pre-year 2, which happens to be the August 2008 to August 2009 period, right in the middle of the financial crisis.

[Insert Figure 1 and Figure 2 here]

[Insert Table 5 here]

[Insert Table 6 here]

7.2 Alternative Measure of Default Risk—CDS Tests

We hypothesized that the ED affected the perception of firms' future financial flexibility and, therefore, future default risk. It is then natural to look at whether it also affected credit default swaps (CDS) premia. Compared with loan spreads, CDS is considered to aggregate more information through active trading and to be more reflective of default risk as distinct from other factors that may affect loan spreads. We investigate whether CDS premia had already incorporated the off-balance sheet operating leases information into their prices, as CDS traders are sophisticated and may possess insider information. However, it is not a priori clear whether and how CDS traders accounted for operating leases in the assessment of default risk. Table 7 reports the test results using CDS premia as a dependent variable for the non-financial-crisis period defined as the period before November 15, 2007, and after July 21, 2010, following Jankowitsch et al. (2017). We restrict the test to the non-financial-crisis period since CDS trading patterns during the financial crisis were not well behaved and exhibited a spike that cannot be attributed to the lease accounting, but rather to the financial market disturbance and insider trading. Like bonds, the CDS market is highly sensitive to illiquidity, and the illiquidity contribution to bond spreads

increases dramatically in crisis period (Dick-Nielsen et al., 2012). Similar to our findings on loan spread, firms with high operating leases experience greater increases in CDS premia after the ED compared with those with low operating leases.

[Insert Table 7 here]

7.3 Distinguishing between the Pre-Financial Crisis Period and the Financial Crisis Period

One potential concern is that our sample period overlaps with the financial crisis. To partially address the concern that the financial crisis period may contaminate our results, we further break down the pre-ED period into the period preceding and during the financial crisis. The results of difference-in-differences tests with loan spread as a dependent variable are shown in Table 8. Columns 1 and 2 show the test results for the pre-ED period broken down into before and during-financial-crisis, respectively. The coefficient on the difference-in-differences interaction term $Treat * Post$ is positive and significant for both tests, suggesting that the results are not driven by the financial crisis.

[Insert Table 8 here]

7.4 Propensity Score Matching Test

To partially alleviate the concern of endogeneity, we show that the results on loan spread and CDS premia hold for the propensity score matched samples. As in Chang et al. (2016), we construct a control group similar to the treatment group (Rosenbaum and Rubin, 1983). We describe the procedure using the loan spread test as an example. We first estimate the propensity of being high operating leases firms using the Probit regression:

$$\Pr(Treat) = \varphi + \gamma Match\ Variables + \delta OtherControls + \eta. \quad (3)$$

The match variables include size, market to book ratio, leverage, interest coverage, operating margin, ROA, maturity, and deal amount. We then match each high operating leases firm with only one low operating leases firm that has the nearest propensity score within common support and without replacement, using a caliper distance of 0.0001. We then run the loan spread test using the propensity-matched sample. Table 9 presents the results of the loan spread test with the propensity score matched sample. The coefficient of the difference-in-differences interaction term is positive and significant, suggesting that the loan spread increases incrementally for high operating leases firms in anticipation of leases capitalization. Results for CDS premia presented in Table 10 are similar. The control and treated samples are balanced after propensity score matching as shown in Table 11.

[Insert Table 9 here]

[Insert Table 10 here]

[Insert Table 11 here]

7.5 Short versus Long Maturity Loan Spread Test

Under the mechanism of the Hirshleifer Effect, lenders would demand higher spreads for longer maturity loans, because the uncertainty surrounding the effect of leverage (more precisely measured due to capitalizing operating leases) on default risk over a longer period before repayment would be compounded by a higher probability of the firm becoming financially distressed. As a consequence, they would demand higher spreads for loans they grant, especially those with longer maturity. If, with some probability, the proposed standard becomes binding GAAP, this will more likely happen during the time a longer maturity loan is outstanding, affecting firms with high operating leases to a greater extent, all else equal. Even though our argument

implies perceived default risk would increase right after the ED, shorter maturity loans are less vulnerable: adverse credit events are more likely over the longer term. We test this by partitioning the sample based on loan maturity. Table 12 shows that the incremental increase in loan spread for high operating leases firms manifests only for the long maturity sample.

[Insert Table 12 here]

8. Conclusion

We examine the impact of the leases ED on market perception and the information environment. Specifically, we find that, in anticipation of the capitalization of operating leases, firms with high operating leases face a greater increase in loan spread after the issuance of the ED than firms with low operating leases. This is consistent with the notion that, pre-ED, firms with high operating leases were less transparent. Economically similar firms can structure the same leases agreement as operating leases or capital leases with discretion. For firms with high reliability of disclosure, the information is relatively precise and therefore should be priced in loan spreads and CDS premia correctly. For firms with low reliability of disclosure, the anticipated recognition of operating leases as liability and the consequent market's anticipation of higher book leverage translates into higher loan spreads. We document the impact of operating leases capitalization on loan spread, CDS premia and show that the effect is more pronounced for firms with low disclosure reliability. This suggests the market reacts to such anticipated changes in accounting rules by adjusting the risk premia of firms with high operating leases.

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Appendix A: Variable Definition

Variable	Description
OLR	Operating leases ratio; firms are characterized as high operating leases firms if this ratio is above median and low operating leases firms if this ratio is below median
Size	Log of total assets
Q	Market to book ratio
Leverage	Ratio of debt to total assets
Int_coverage	Interest coverage; equals the ratio of EBIT to interest expense
Op_margin	Operating margin; ratio of operating profit to revenues
ROA	Ratio of operating profit to total assets
Maturity	Loan maturity in months
Senior	Indicator equals 1 if the loan is senior
Loan Size	Log of loan amount
Allindrawn	Describes the amount the borrower pays in basis points over LIBOR for each dollar drawn down. It adds the spread of the loan with any annual (or facility) fee paid to the bank group
Low_reliability	Firms are characterized as high reliability firms if the portion of thereafter amount in operating leases disclosure is below median and firms are low reliability firms if the portion is above median. Higher value indicates lower reliability of disclosure

Appendix B: Numerical Example for Hirshleifer Effect

Consider a risk-averse lender in a competitive lending market with negative exponential utility function (with a risk aversion parameter that equals one) who has decided to grant a loan of one dollar at time zero. Right after the decision to grant the loan but before the lease exposure draft is publicized, i.e. before the knowledge that a public signature will be provided at time one about the precise magnitude of the capitalized operating leases in accordance with a final lease standard based on the provisions of the exposure draft. In the absence of an exposure draft, the lender does not anticipate a public signal at time one and proceeds to price the loan so as to break even.

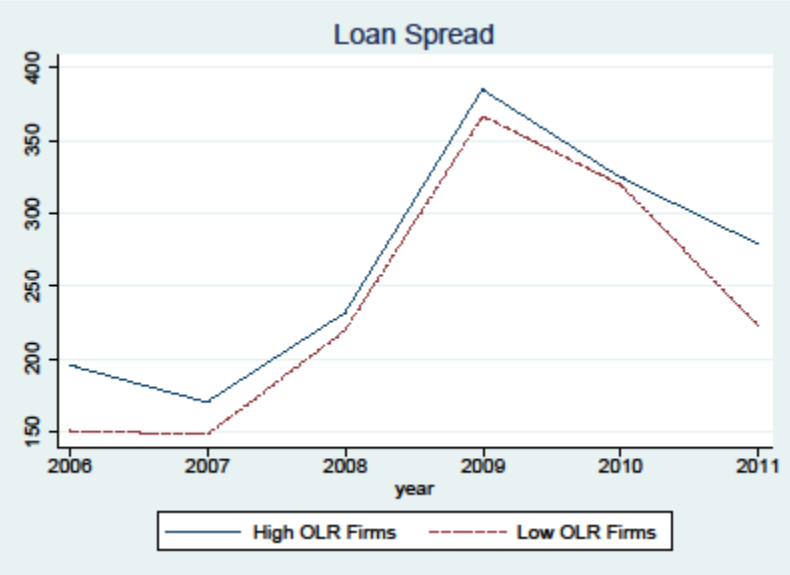
Assume further that, other things equal, the as-if-capitalized operating leases based on footnote disclosures maps one to one with perceived default risk. Suppose, based on the as-if-capitalized operating leases the consensus estimated maps into a default risk distribution that corresponds to a certainty equivalent for the loan of $0.96, representing a negative exponential utility of -0.38289. In order to break even, the lender will thus charge a spread (premium for Risk) above the interest-free rate of four cents, i.e. 4%.

Now suppose the lease exposure draft is issued before the pricing decision. Assume with no loss of generality the lender believes with certainty the exposure draft will become a standard at time one and will be fully implemented then. Assume the lender expects the time one balance sheet to more precisely measure the time zero as-if-capitalized operating leases. Specifically, one of two possible magnitudes will be shown, each with 50% probability. Suppose these magnitudes map into default risks of either 1% or 7%, or equivalently, payoffs on the loan of either $0.99 or $0.93. This would yield a utility of -0.38306 which translates into a certainty equivalent of $0.95955, which falls short of the certainty equivalent of $0.96 the lender will have enjoyed in the absence of an exposure draft. To make himself whole, i.e., to restore his no-exposure-draft (and hence no-standard) expected utility, the lender will have to charge a spread of 4.045%, 1% more than the no-exposure-draft spread.

The additional spread, of course, will vary depending on what the lender expects the time one balance sheet to reveal, and it can easily exceed the percentage increase in spread illustrated above. For example, if the time one revealed two magnitudes of the time zero as-if-capitalized operating leases correspond to default risks of 0.001 or 0.099, the percentage increase in the spread would be 28% with a total spread of 5.12%. With magnitudes that correspond to default risks of 0.0001 or 0.15, the percentage increase in the spread would be a whopping 95% with a total spread of 7.79%.

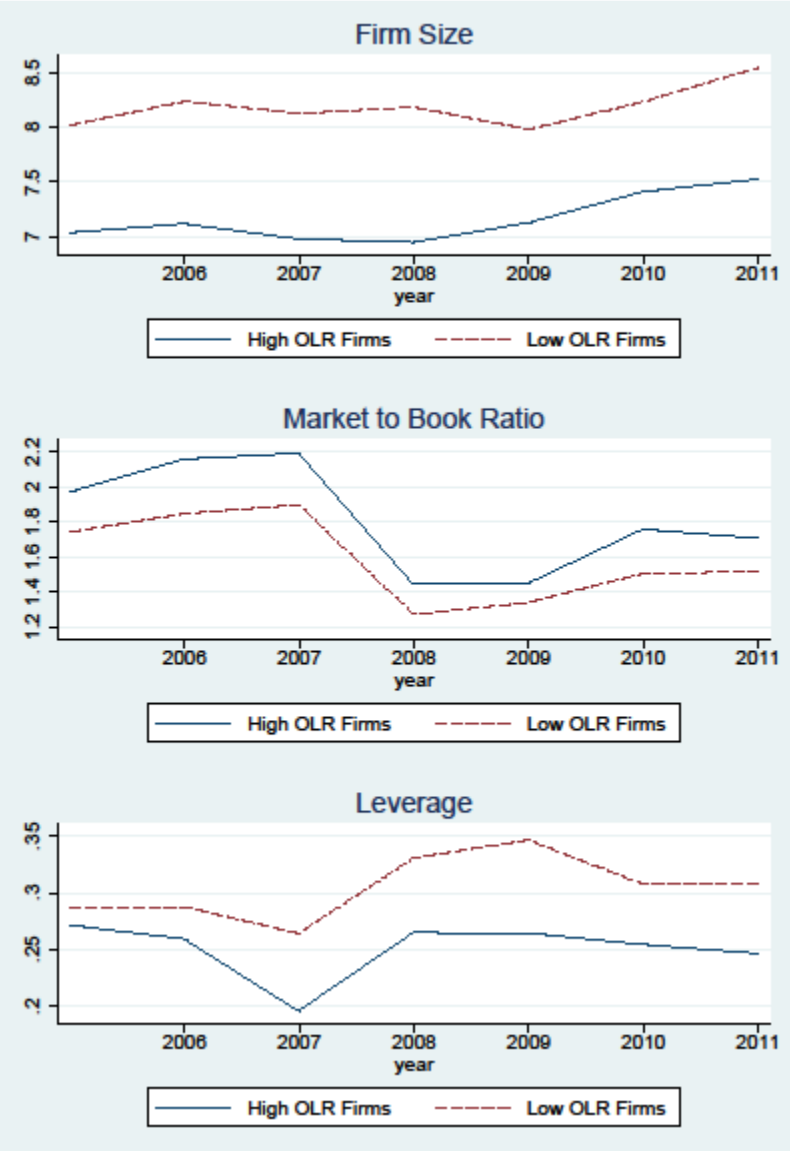
Note that this result is not affected by whether the loan matures at time one or later. It suffices to posit an above zero probability that the market value of the loan at time one is relevant to the lender's decisions at time one – for example, the lender may wish to sell the loan at time one because of liquidity or other reasons that cause him to change his portfolio of securities.

Figure 1. Loan Spread Parallel Trend



This figure shows the mean of annual loan spread for high operating leases firms (treatment group) and low operating leases firms (control group). The solid line represents high operating leases firms and the dashed line represents low operating leases firms.

Figure 2. Control Variables Trend



This figure shows the mean of control variables such as size, market to book ratio (Q), and leverage ratio for high operating leases firms (treatment group) and low operating leases firms (control group). The solid line represents high operating leases firms (treatment group) and the dashed line represents low operating leases firms (control group).

Table 1 Summary statistics

Table 1 presents descriptive statistics. *olr* is operating leases ratio. *allindrawn* is loan spread from DealScan, which measures the sum of annual spread over LIBOR for each dollar drawn from the facility. *size* is log of total assets. *leverage* is ratio of debt to total assets. *q* is market to book ratio. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is the indicator equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *low_reliability* is the portion of undiscounted thereafter operating lease payment divided by the total undiscounted operating leases payment. *int_coverage*, *op_margin,* and *roa* are winsorized at 1%.

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
OLR	4368	0.259	0.181	0.235	0.002	0.984
Allindrawn	4090	226.727	200	158.238	8.5	1300
Size	4348	7.83	7.719	1.677	4.268	12.337
Leverage	4336	0.279	0.239	0.261	0	3.975
Q	4166	1.683	1.422	0.901	0.379	13.753
Int_coverage	4217	14.987	4.186	42.938	-12.017	333
Op_margin	4342	0.18	0.147	0.136	-0.092	0.645
ROA	4348	0.138	0.128	0.081	-0.07	0.495
Maturity	4327	52.524	60	21.354	1	244
Senior	4368	0.998	1	0.045	0	1
Loan Size	4368	19.984	20.030	1.352	16.524	23.157
Low_reliability	4230	0.342	0.315	0.183	0	0.964

Table 1A T-Test between Groups

Table 1A presents descriptive statistics for *High OLR* and *Low OLR* subgroup of firms respectively. *olr* is operating leases ratio. *allindrawn* is loan spread from DealScan, which measures the sum of annual spread over LIBOR for each dollar drawn from the facility. *size* is log of total assets. *leverage* is ratio of debt to total assets. *q* is market to book ratio. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is the indicator equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *low_reliability* is the portion of undiscounted thereafter operating lease payment divided by the total undiscounted operating leases payment.

Variable	High OLR	Low OLR	Diff	
OLR	0.481	0.084	0.397	***
Allindrawn	243.551	212.927	30.624	***
Size	7.208	8.320	-1.112	***
Leverage	0.257	0.295	-0.038	***
Q	1.773	1.614	0.159	***
Int_coverage	20.004	11.163	8.840	***
Op_margin	0.139	0.213	-0.075	***
ROA	0.137	0.139	-0.001	
Maturity	54.158	51.232	2.926	***
Senior	0.997	0.998	-0.001	
Loan Size	19.628	20.264	-0.636	***
Low_reliability	0.355	0.332	0.022	***

*** p<0.01, ** p<0.05, * p<0.1

Table 1B Sample Industry Distribution

Industry	Obs	%
Consumer NonDurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys	426	9.94
Consumer Durables -- Cars, TV's, Furniture, Household Appliances	146	3.41
Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	618	14.43
Oil, Gas, and Coal Extraction and Products	290	6.77
Chemicals and Allied Products	173	4.04
Business Equipment -- Computers, Software, and Electronic Equipment	460	10.74
Telephone and Television Transmission	288	6.72
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	720	16.81
Healthcare, Medical Equipment, and Drugs	322	7.52
Other -- Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment	841	19.63
Total	4,284	100

Table 2 Correlation Matrix

Table 2 reports the pairwise correlation coefficients for loan spread test sample. *olr* is operating leases ratio. *allindrawn* is loan spread from DealScan, which is the annual spread over LIBOR for each dollar drawn from the facility. *size* is log of total assets. *leverage* is ratio of debt to total assets. *q* is market to book ratio. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *low_reliability* is the portion of undiscounted thereafter operating lease payment divided by the total undiscounted operating leases payment.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OLR	(1)	1.00											
Allindrawn	(2)	0.11	1.00										
		(0.00)											
Size	(3)	-0.37	-0.23	1.00									
		(0.00)	(0.00)										
Leverage	(4)	-0.10	0.18	0.01	1.00								
		(0.00)	(0.00)	(0.64)									
Q	(5)	0.09	-0.23	-0.09	-0.10	1.00							
		(0.00)	(0.00)	(0.00)	(0.00)								
Int_coverage	(6)	0.12	-0.10	-0.10	-0.26	0.32	1.00						
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)							
Op_margin	(7)	-0.33	-0.14	0.22	0.19	0.21	0.05	1.00					
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)						
ROA	(8)	-0.01	-0.20	-0.04	0.05	0.51	0.28	0.42	1.00				
		(0.72)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)					
Maturity	(9)	0.03	-0.03	-0.07	0.14	0.01	0.02	0.09	0.04	1.00			
		(0.02)	(0.11)	(0.00)	(0.00)	(0.39)	(0.33)	(0.00)	(0.02)				
Senior	(10)	-0.02	-0.05	0.02	-0.02	0.00	0.01	-0.02	0.01	0.02	1.00		
		(0.12)	(0.00)	(0.24)	(0.22)	(0.95)	(0.39)	(0.32)	(0.53)	(0.20)			
Loan Size	(11)	-0.27	-0.14	0.70	0.09	0.01	-0.06	0.24	0.08	0.11	0.04	1.00	
		(0.00)	(0.00)	(0.00)	(0.00)	(0.49)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Low_reliability	(12)	0.04	0.03	0.11	0.14	-0.00	-0.03	0.03	-0.11	0.05	0.03	0.07	1.00
		(0.01)	(0.05)	(0.63)	(0.00)	(0.00)	(0.84)	(0.07)	(0.09)	(0.00)	(0.00)	(0.08)	(0.00)

Table 3 Loan Spread Test

Table 3 reports the estimates for coefficients and test statistics for the loan spread difference in difference regression. The dependent variable is *loan spread* (*allindrawn*). *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post* is an indicator that equals 1 after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months.

VARIABLES	(1) Loan Spread	(2) Loan Spread
Treat	22.12***	-1.026
	(5.994)	(6.491)
Post	27.42***	19.92***
	(7.110)	(6.675)
Treat_post	23.29**	32.75***
	(10.49)	(9.882)
Size		-31.25***
		(2.169)
Q		-30.51***
		(3.251)
Leverage		149.6***
		(11.58)
Int_coverage		0.0723
		(0.0599)
Op_margin		-78.68***
		(24.41)
ROA		-262.6***
		(40.30)
Maturity		-0.729***
		(0.118)
Senior		-168.3***
		(57.50)
Loan Size		10.21***
		(2.600)
Constant	204.3***	561.5***
	(3.985)	(71.05)
Observations	4,090	3,678
R-squared	0.023	0.210
Industry		YES

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 Loan Spread Test Partitioning on Reliability

Table 4 reports the estimates for coefficients and test statistics for the loan spread difference in differences regression for subsamples partitioned on disclosure reliability. *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post* is an indicator that equals 1 after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. Firms are characterized as *high reliability firms* if the proportion of the thereafter amount in operating leases disclosure is below median and firms are *low reliability firms* if the proportion is above median.

	(1) High Reliability Firms	(2) Low Reliability Firms
VARIABLES	Loan Spread	Loan Spread
Treat	-21.92*	4.359
	(13.05)	(7.531)
Post	17.44	23.60***
	(11.65)	(8.049)
Treat_post	22.06	33.78***
	(19.94)	(11.45)
Size	-27.37***	-32.70***
	(4.430)	(2.517)
Q	-32.36***	-28.41***
	(6.787)	(3.709)
Leverage	151.4***	152.2***
	(22.92)	(13.53)
Int_coverage	-0.0587	0.130*
	(0.112)	(0.0702)
Op_margin	-60.65	-79.71***
	(45.42)	(28.75)
ROA	-68.18	-380.2***
	(74.69)	(49.06)
Maturity	0.0266	-0.927***
	(0.243)	(0.136)
Senior	109.4	-223.9***
	(132.3)	(63.97)
Loan Size	8.967*	9.316***
	(5.097)	(3.044)
Constant	204.2	668.0***
	(161.2)	(79.81)
Observations	898	2,780
R-squared	0.175	0.234
Industry	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Loan Spread Post Trend Test

Table 5 reports the estimates for coefficients and test statistics for the loan spread difference in differences regression with the specification of the *post* event indicator further broken down to one year after the event and two years after the event. The dependent variable is *loan spread* (*allindrawn*). *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post_year1* is an indicator that equals 1 for the period of one year after the ED and 0 otherwise. *post_year2* is an indicator that equals 1 for the second year after the ED and 0 otherwise. The control variables are defined as in previous tests.

VARIABLES	Loan Spread
Treat	-0.784
	(6.492)
Post_year1	27.37***
	(8.573)
Post_year2	12.24
	(8.666)
Treat_post_year1	31.93***
	(12.39)
Treat_post_year2	31.29**
	(13.17)
Size	-31.13***
	(2.169)
Q	-30.39***
	(3.253)
Leverage	149.2***
	(11.58)
Int_coverage	0.0757
	(0.0599)
Op_margin	-77.20***
	(24.41)
ROA	-263.0***
	(40.29)
Maturity	-0.730***
	(0.118)
Senior	-167.4***
	(57.49)
Loan Size	10.38***
	(2.601)
Constant	556.4***
	(71.09)
Observations	3,678
R-squared	0.211
Industry	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 Loan Spread Pre Trend Test

Table 6 reports the estimates for coefficients and test statistics for the loan spread difference in difference regression with the specification of the *pre* event indicator further broken down onto each of the years prior to the event. The dependent variable is *loan spread* (*allindrawn*). *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *pre_yearn* is an indicator that equals 1 for the nth year before the ED and 0 otherwise. The control variables are defined as in previous tests.

VARIABLES	(1) Loan Spread	(2) Loan Spread
Treat	19.67	3.883
	(12.88)	(12.18)
Pre_year2	-11.14	3.861
	(13.06)	(12.54)
Pre_year3	-177.1***	-149.1***
	(11.63)	(11.13)
Pre_year4	-201.2***	-176.3***
	(10.81)	(10.33)
Pre_year5	-191.6***	-181.1***
	(11.97)	(11.52)
Post	-105.7***	-89.61***
	(10.05)	(9.451)
Treat_pre_year2	-36.11*	-44.55**
	(20.05)	(19.04)
Treat_pre_year3	3.602	9.756
	(17.59)	(16.74)
Treat_pre_year4	19.47	6.247
	(16.20)	(15.48)
Treat_pre_year5	17.58	13.29
	(18.00)	(17.29)
Treat_post	25.75*	33.34**
	(15.05)	(14.13)
Size		-25.96***
		(1.411)
Q		-26.19***
		(2.470)
Leverage		136.7***
		(9.617)
Constant	337.4***	534.3***
	(8.525)	(14.85)
Observations	4,090	3,884
R-squared	0.201	0.317

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 CDS Test

Table 7 reports the estimates for coefficients and test statistics for the CDS difference in differences regression. *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post* is an indicator that equals 1 after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *tangibility* is ratio of inventory and net property, plant and equipment to total assets. i*nvestment_grade* is an indicator that equals 1 if the credit rating is above BBB- and 0 otherwise. *Non Crisis Period* is the period before Nov 15, 2007, and after July 21, 2010. Financial crisis period is between Nov 15, 2007, and July 21, 2010, defined as in Jankowitsch et al. (2017). Sample period for column (1) and (2) is 2006-2012, and for (3) is 2006- Nov 15, 2007, and July 21, 2010-2012.

VARIABLES	(1) CDS	(2) CDS	(3) CDS non crisis period
Treat	89.18***	43.01***	6.110
	(13.31)	(11.51)	(11.71)
Post	-53.86***	-41.25***	56.40***
	(12.94)	(10.74)	(9.163)
Treat_post	-14.77	4.339	36.61***
	(20.35)	(16.24)	(13.90)
Size		6.487*	-1.538
		(3.382)	(2.750)
Leverage		306.0***	198.7***
		(19.25)	(16.01)
Q		-11.55***	-7.462***
		(1.477)	(1.009)
Tangibility		166.6***	127.6***
		(18.83)	(15.19)
ROA		-894.3***	-670.1***
		(66.99)	(56.26)
Investment_grade		-290.7***	-220.4***
		(10.03)	(8.255)
Int_coverage		-0.00663	-0.00424
		(0.0119)	(0.00824)
Op_margin		-117.8***	-97.23***
		(35.16)	(28.71)
Constant	251.4***	375.1***	313.9***
	(8.376)	(33.78)	(27.49)
Observations	24,084	19,462	12,878
R-squared	0.004	0.135	0.167

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 Loan Spread Financial Crisis Period Test

Table 8 reports the estimates for coefficients and test statistics for the loan spread difference in differences regression. The dependent variable is *loan spread* (*allindrawn*). *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post* is an indicator equals 1 after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is the ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *Before Crisis* is the period before Nov 15, 2007, and *During Crisis* is the period between Nov 15, 2007, and July 21, 2010. Sample period for column (1) is 2006 to Nov 15, 2007, and for column (2) is Nov 15, 2007, to July 21, 2010. The financial crisis period is defined following Jankowitsch et al. (2017).

VARIABLES	(1) Before Crisis	(2) During Crisis
Treat	-5.131	-0.370
	(7.076)	(9.379)
Post	83.00***	-54.21***
	(6.221)	(8.123)
Treat_post	27.56***	33.35***
	(9.183)	(11.99)
Size	-36.01***	-31.71***
	(2.165)	(2.819)
Q	-6.522*	-37.25***
	(3.326)	(4.716)
Leverage	148.3***	161.7***
	(11.60)	(15.24)
Int_coverage	0.0469	0.118*
	(0.0571)	(0.0718)
Op_margin	-68.73***	-61.86*
	(23.27)	(31.71)
ROA	-410.4***	-297.2***
	(41.00)	(53.22)
Maturity	0.0307	-0.200
	(0.121)	(0.164)
Senior	-233.0***	-260.3***
	(66.78)	(72.39)
Loan Size	13.41***	15.55***
	(2.640)	(3.401)
Constant	417.2***	541.2***
	(79.72)	(88.23)
Observations	2,589	2,384
R-squared	0.349	0.207
Industry	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9 Loan Spread Test Using the PSM Sample

Table 9 reports the estimates for coefficients and test statistics for the loan spread difference in differences regression for the performance-score-matched sample. The dependent variable is *loan spread* (*allindrawn*). *treat* is an indicator equals 1 if the firm is high operating leases firm and 0 if the firm is low operating leases firm. *post* is an indicator equals 1 if time is after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. The sample is matched on size, q, leverage, int_coverage, op_margin, roa, maturity, and loan size.

VARIABLES	(1) Loan Spread	(2) Loan Spread
Treat	-15.51	-12.11
	(14.02)	(13.24)
Post	17.72	16.16
	(16.17)	(14.28)
Treat_post	41.65*	53.11***
	(22.95)	(20.12)
Size		-38.90***
		(4.949)
Q		-42.73***
		(7.115)
Leverage		140.8***
		(24.50)
Int_coverage		-0.121
		(0.164)
Op_margin		-30.57
		(62.62)
ROA		-268.0***
		(86.46)
Maturity		-0.373
		(0.246)
Senior		-292.9**
		(131.6)
Loan Size		12.51**
		(5.571)
Constant	219.2***	644.9***
	(9.966)	(153.8)
Observations	742	742
R-squared	0.019	0.288
Industry		YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10 CDS Test Using the PSM Sample During the Non-Financial Crisis Period

Table 10 reports the estimates for coefficients and test statistics for the CDS difference in differences regression over the non-financial-crisis period for the performance-score-matched sample. *Treat* an indicator equals 1 if the firm is high operating leases firm and 0 if the firm is low operating leases firm. *Post* is an indicator equals 1 if time is after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is the indicator equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *tangibility* is ratio of inventory and net property, plant and equipment to total assets. *investment_grade* is an indicator equals 1 if credit rating is above BBB- and 0 otherwise. The sample is matched on size and credit rating. Sample period is 2006- Nov 15, 2007, and July 21, 2010-2012.

VARIABLES	(1) CDS non crisis period
Treat	-9.335
	(14.79)
Post	47.52***
	(12.78)
Treat_post	34.87*
	(17.86)
Size	24.49***
	(4.994)
Leverage	94.00***
	(28.64)
Q	23.00***
	(8.402)
Tangibility	12.26
	(21.10)
ROA	-190.2**
	(93.50)
Investment_grade	38.71**
	(15.57)
Int_coverage	0.205***
	(0.0626)
Op_margin	-75.82*
	(38.68)
Rating	66.02***
	(2.874)
Constant	-764.8***
	(68.44)
Observations	5,206
R-squared	0.286

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11 PSM Sample Balance

Table 11 reports covariate balance after the propensity score matching for the loan spread test (Panel A) and CDS test (Panel B). *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. *rating* is credit rating converted into numbers. *High (Low) OLR* represents the subgroup of high (low) operating leases firms.

Panel A: Loan Spread

Variable	High OLR	Low OLR	Diff	t
Size	7.731	7.651	0.080	0.816
Q	1.651	1.668	-0.017	-0.291
Leverage	0.272	0.288	-0.016	-1.011
Int_coverage	12.685	12.798	-0.113	-0.047
Op_margin	0.150	0.161	-0.012	-1.523
ROA	0.139	0.131	0.008	1.461
Maturity	53.137	55.491	-2.353	-1.549
Senior	0.997	1.000	-0.003	-1.000
Loan Size	19.879	19.896	-0.017	-0.188

Panel B: CDS

Variable	High OLR	Low OLR	Diff	t
Size	9.125	9.126	0.000	0.020
Rating	9.822	9.834	0.012	0.191

Table 12 Loan Spread Test Partitioning on Maturity

Table 12 reports the estimates for coefficients and test statistics for the loan spread difference in differences regression for subsamples partitioned on loan maturity. Loans are characterized as long maturity if the loan term is greater than one year and short maturity otherwise. *treat* is an indicator that equals 1 if the firm is a high operating leases firm and 0 if the firm is a low operating leases firm. *post* is an indicator that equals 1 for the period after the ED date (Aug 17, 2010) and 0 otherwise. *size* is log of total assets. *q* is market to book ratio. *leverage* is ratio of debt to total assets. *int_coverage* is interest coverage. *op_margin* is operating margin. *roa* is ratio of operating profit to total assets. *senior* is an indicator that equals 1 if the loan is senior and 0 otherwise. *loan size* is the log of loan amount. *maturity* is loan maturity in months. The sample in column (1) includes loans with *short maturity* (loan maturity is less than or equal to one year), and the sample in column (2) includes *long maturity* loans (loan maturity is longer than one year).

VARIABLES	(1) Short Maturity	(2) Long Maturity
Treat	-11.88	-0.495
	(31.13)	(6.524)
Post	16.53	20.33***
	(31.98)	(6.699)
Treat_post	112.2	28.45***
	(69.35)	(9.804)
Size	-60.16***	-28.02***
	(9.913)	(2.191)
Q	-30.54**	-29.80***
	(11.99)	(3.384)
Leverage	30.67	155.3***
	(63.35)	(11.51)
Int_coverage	-0.313	0.0967
	(0.386)	(0.0589)
Op_margin	120.4	-94.35***
	(114.9)	(24.57)
ROA	-606.3***	-227.4***
	(184.5)	(40.80)
Maturity	-0.482	-0.700***
	(4.065)	(0.144)
Senior	98.83	-298.3***
	(134.3)	(67.80)
Loan Size	26.70**	9.395***
	(10.50)	(2.692)
Constant	446.2*	671.5***
	(230.9)	(79.10)
Observations	293	3,385
R-squared	0.341	0.208
Industry	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1