The Effect of the 2017 Tax Cuts and Jobs Act on Leasing

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Abstract

This paper examines the effect of the Tax Cuts and Jobs Act (TCJA) of 2017 on firms' choice of leasing in their financing mix and the substitutability between operating leases and debt financing. The results show that firms impacted by the TCJA's limitations on interest deductions increase their operating leases and have a greater tendency to shift from debt financing to lease financing. Our results also show a decrease in operating leases as a percentage of total assets for firms impacted by the bonus depreciation provision of the TCJA. This effect indicates that the affected firms are more inclined to replace operating leases with asset purchases. Furthermore, we find that firms affected by the TCJA's limitations on net operating loss carrybacks and carryforwards increase their use of operating leases relative to asset purchases. Overall, these findings support the view that the TCJA had significant effects on firms' financing decisions in regard to operating leases.

Keywords: TCJA, Lease Financing, Operating Leases, Debt Financing, Taxes.

JEL Classification Codes: G30, G32, H32.

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1. Introduction

This paper examines the effects of two key provisions of the Tax Cuts and Jobs Act of 2017 (TCJA or the Act) on firms' use of operating leases in their financing mix. The TCJA was the largest overhaul of the tax code in U.S. in three decades. The Act created a single corporate tax rate of 21% and eliminated the corporate alternative minimum tax. The two key TCJA provisions that concern our study are the new limits on deduction for business interest expenses and the bonus depreciation provision (temporary 100 percent expensing for certain business assets). In the recently revised new version of their corporate finance textbook, Brealey, Myers, Allen, and Edmans (Principles of Corporate Finance, 14th edition, 2023) added one more "sensible reason for leasing" in their chapter on leasing (Chapter 26) without citing empirical evidence:

> "*Lessees May Sidestep the Limitation on Debt Interest: The 2017 Tax Cuts and Jobs Act limited the tax deductibility of interest payments to 30% of earnings before interest and depreciation (EBITDA). Companies that are up against this limit may find it convenient to lease new equipment rather than to borrow in order to buy it. The rental payments on the lease are fixed obligations like debt interest, but there is no restriction on the company's ability to deduct them when calculating its tax liability.*"

Clearly, certain corporations affected by this TCJA limitation on the tax deductibility of debt interest to a greater extent may desire to lease more frequently as a replacement to debt financing since lease rents are not limited as to deductibility while interest expense is. One of the main objectives of our paper is to test the above proposition and empirically analyze the overall effects of TCJA on lease financing by U.S. corporations for the first time in the literature.

The TCJA is a tax legislation enacted in the United States in December 2017. The TCJA included an interest deductibility limit provision which limits the amount of interest expense that

certain corporations can deduct in a given tax year. Prior to the TCJA, firms were generally allowed to deduct all their interest expenses in the year they were incurred, without any significant limitations. For tax years beginning after December 31, 2017, the TCJA limits the business interest expense to the sum of business interest income and 30% of the taxpayer's "adjusted taxable income" (ATI).[1] Firms with interest expenses greater than this limit must include the excess in their taxable income for that year. Hence, the TCJA substantially reduces the tax advantages of debt financing and by implication might lead to decreases in leverage. Firms may want to lease more frequently as a replacement for debt financing since rent (operating lease) payments are not limited as to deductibility while interest expense is. Do firms substitute debt with operating leases?

Another important provision of the TCJA is its bonus depreciation provision, which seeks to incentivize greater capital investments in real assets by corporations. The key features of the bonus depreciation under the TCJA include: i) increased deduction percentage from 50% to 100% for qualified property acquired and placed in service after September 27, 2017, and before January 1, 2023,[2] ii) the qualified property are tangible property with a recovery period of 20 years or less, computer software, and certain qualified improvement property[3], iii) no cap on the amount of bonus depreciation that can be taken in the first year for qualified property, iv) bonus depreciation deductions cannot create or increase a net operating loss (NOL) carryback or carryforward. The implication of the increased deduction percentage from 50% to 100% is that firms affected by this

[1] ATI is a business's taxable income, excluding interest income, interest expense, any net operating losses (NOLs), and certain other deductions related to depreciation, amortization, or depletion (EBITDA).

[2] Starting from January 1, 2023, the bonus depreciation deduction percentage is scheduled to be phased down gradually over several years. The phase-down schedule is as follows:
80% for qualified property placed in service after December 31, 2022, and before January 1, 2024.
60% for qualified property placed in service after December 31, 2023, and before January 1, 2025.
40% for qualified property placed in service after December 31, 2024, and before January 1, 2026.
20% for qualified property placed in service after December 31, 2025, and before January 1, 2027.

[3] The TCJA also expanded bonus depreciation to include used property, provided the property was not previously used by the taxpayer.

bonus depreciation provision to a greater extent, i.e., firms with greater capital intensity, have an incentive to purchase assets (financed with debt) instead of leasing them.

The TCJA also brought about adjustments in how corporations could utilize NOLs. A tax-loss position is created when a company's allowable deductions, which can encompass items such as depreciation and interest expenses, surpass its taxable income, resulting in a Net Operating Loss (NOL). The TCJA imposed a cap on the capacity to offset taxable income with NOLs at a maximum of 80%. Additionally, it discontinued the longstanding practice of carrying NOLs back to prior tax years, although there was an exception carved out for specific farming businesses. Before the TCJA, businesses typically had the flexibility to carry NOLs backward to preceding tax years, allowing them to receive refunds for taxes paid during those years, or they could choose to carry NOLs forward for a period of up to 20 years to offset future income. However, with the TCJA in effect, NOLs generated in tax years commencing after December 31, 2017, were no longer eligible for carrybacks to prior tax years. Instead, businesses were permitted to carry these NOLs forward indefinitely. Moreover, the TCJA introduced a constraint on the extent of NOL deduction possible within a single tax year. For NOLs arising in tax years that began after December 31, 2017, businesses faced a general limitation, restricting them to deducting no more than 80% of their taxable income for that particular year. This limitation was designed to prevent businesses from fully offsetting their entire income with NOLs.

The above TCJA changes regarding NOLs may result in the delayed utilization of NOLs, as businesses are now generally limited to deducting no more than 80% of their taxable income in a given year and may need to carry forward NOLs for an extended period to fully utilize them. The combination of 100% depreciation and interest expenses can result in the company reporting operating losses for tax purposes, leading to the generation of Net Operating Losses (NOLs). Given

these, some taxpayers may choose to limit the generation of NOLs by opting for leasing rather than owning assets, especially when they anticipate significant bonus depreciation write-offs. Leasing can provide more predictable expenses without the large depreciation deductions that can create or add to a tax-loss position.

Both leases and debt are important financing instruments commonly used by corporations. There are two types of leases used by corporations in their financing mix: capital leases and operating leases. Under the Statement of Financial Accounting Standards (SFAS) No. 13 titled "Accounting for Leases," the criteria for a lease to be categorized as a capital lease are: i) The lease transfers ownership of the asset to the lessee at the end of the lease term, ii) The lease contains a bargain purchase option, iii) The lease term is equal to or greater than 75% of the estimated economic life of the leased asset, iv) The present value of minimum lease payments (excluding executory costs) is equal to or exceeds 90% of the fair value of the leased asset. Any lease that does not meet the above criteria is categorized as an operating lease. In an operating lease, there is no transfer of ownership of the asset to the lessee. A capital lease is treated as debt wherein the leased asset and lease liability are recorded on the lessee's balance sheet. However, under SFAS No. 13, an operating lease is treated as off-balance sheet operating expenses. The leased assets and lease liabilities were not recognized on the lessee's balance sheet.[4]

First, this study explores the impact of the interest deduction restrictions introduced by the TCJA on corporations' financing choices. The focus is on investigating whether these limitations lead companies to transition between different forms of financing. When utilizing capital lease financing, corporations can only deduct the interest portion of their lease payments. Hence, the

[4] After ASC 842, operating leases are required to be recognized on the balance sheet. Lessees are required to recognize a right-of-use (ROU) asset and a corresponding lease liability for all leases with terms longer than 12 months.

overall limit on tax deductions for interest remains applicable even in the case of capital leases. On the other hand, in an operating lease, the lessee has the flexibility to consider the entire rental payment as an expense on their income statement, rather than just the imputed interest portion. The underlying hypothesis is that corporations might increasingly opt for the increased use of operating leases as an alternative to debt financing. This is because, unlike interest expenses, payments made for rent under operating leases are not restricted in terms of deductibility. Hence, our conjecture is that companies subject to the TCJA's interest limitation to a greater extent would incline towards favoring operating leases over debt financing. Specifically, corporations with substantial pre-TCJA leverage should display an elevated preference for operating leases in the post-TCJA period. Furthermore, corporations whose interest expenses surpass 30 percent of their adjusted taxable income (ATI) in addition to interest income prior to the TCJA should demonstrate an increased propensity for operating leases compared to debt financing following the TCJA.

Second, when we consider the impact of the bonus depreciation provision of the TCJA, there is an anticipation of a shift in favor of asset acquisitions funded by debt after the TCJA at the expense of the use of operating leases. When a company obtains an asset through a debt-financed purchase, the entity acquiring the asset gains access to several tax advantages. These include accelerated depreciation, bonus depreciation, and the ability to expense certain costs. However, under the framework of an operating lease, the asset's ownership remains with the lessor, resulting in them bearing the burden of depreciation expenses. This essentially transfers the tax benefits from the lessee to the lessor. Consequently, the introduction of the bonus depreciation provision within the TCJA might have prompted certain businesses to decrease their reliance on operating leases and instead opt for asset purchases financed by debt. Our conjecture is related to firms that stand to gain more from the bonus depreciation provision introduced by the TCJA, i.e., more

capital-intensive firms. We predict that such firms would decrease their reliance on operating leases vis-à-vis the total value of assets they acquire through debt financing. Thus, firms which are more capital-intensive prior to the TCJA should exhibit a decreased dependence on operating leases relative to the total value of assets they acquire through debt financing following the TCJA.

Thirdly, when we analyze the impact of the Net Operating Loss (NOL) provision in the Tax Cuts and Jobs Act (TCJA), we anticipate a shift away from the preference for debt-financed asset acquisitions in favor of operating leases. When a company acquires an asset using debt financing, it gains access to various tax benefits, including accelerated depreciation, bonus depreciation, and the ability to deduct certain expenses. These tax advantages can potentially lead to the creation of an NOL, which, due to TCJA changes, cannot be carried back and may not be fully utilized in the current tax year. Conversely, in the context of an operating lease, the lessor retains ownership of the asset, assuming the responsibility for depreciation expenses. This effectively transfers the tax advantages from the lessee to the lessor. Consequently, operating leases enable businesses to avoid the NOL limitations imposed by the TCJA, as they do not incur a tax loss resulting from bonus depreciation or interest deductions. As a result, the NOL limitations introduced by the TCJA may have prompted certain businesses, particularly those with a significant pre-existing NOL position, to increase their reliance on operating leases instead of debt-financed asset purchases. Our hypothesis specifically pertains to companies that were already prone to NOLs prior to the TCJA. We anticipate that such companies would increase their utilization of operating leases in relation to the total value of assets they acquire through debt financing. Therefore, businesses more susceptible to NOLs before the TCJA should exhibit a increased dependence on operating leases compared to the total value of assets they procure through debt financing following the TCJA.

We use two main measures of operating leases in our empirical analysis. The first measure captures total operating lease commitments while the second measures new operating lease commitments. With a panel dataset of U.S. firms covering a sample period from 2015 to 2021, we utilize a difference-in-differences methodology to test our hypotheses. Firms are categorized into a treatment group and a control group based on potential TCJA effects.

Our findings demonstrate a significant increase in both total and new operating lease commitments for treatment firms categorized by their pre-TCJA leverage levels, signifying a notable increase in operating leases for treatment firms after the TCJA. This pattern indicates that companies with higher leverage prior to the TCJA experienced a considerable upturn in their reliance on operating leases following the enactment of the TCJA. Additionally, we observe a significant rise in total operating lease commitments for treatment firms categorized by their pre-TCJA interest expense levels. This suggests that firms with interest expenses exceeding 30 percent of ATI plus interest income before the TCJA witnessed a substantial increase in their utilization of total operating leases after the TCJA came into effect. These outcomes are consistent with our hypothesis, which proposes that firms particularly influenced by the TCJA's interest deductibility limit would undergo a notable increase in their reliance on operating leases post-TCJA enactment.

Our findings further reveal a significant decline in both total and new operating lease commitments among treatment firms categorized by their pre-TCJA capital expenditure levels, indicating a notable reduction in operating leases for treatment firms after the TCJA. This indicates that companies with higher capital expenditure before the TCJA witnessed a significant decrease in their reliance on operating leases following the enactment of the TCJA. Similarly, we identify a significant decrease in total and new operating lease commitments for treatment firms categorized by their pre-TCJA capital expenditure combined with rental expense levels. This

suggests that firms with higher capital expenditure along with rental expense before the TCJA experienced a substantial downturn in their usage of total operating leases after the TCJA came into effect. These outcomes are in line with our hypothesis, proposing that firms particularly impacted by the bonus depreciation provision of the TCJA would undergo a significant decrease in their reliance on operating leases after the TCJA enactment.

Our findings further reveal a significant increase in both total and new operating lease commitments among treatment firms categorized by their pre-TCJA NOL levels, indicating a notable increase in operating leases for treatment firms after the TCJA. This indicates that companies with higher NOL before the TCJA significantly increased their reliance on operating leases following the enactment of the TCJA. These results are in line with our hypothesis, proposing that firms particularly impacted by the NOL provision of the TCJA would undergo a significant increase in their reliance on operating leases after the TCJA enactment.

Our study makes significant contributions to three main areas of existing literature. Firstly, we add to the body of knowledge concerning the tax advantages associated with debt. Prior research has established that the use of debt financing is linked to tax benefits, particularly interest deductibility. Our paper introduces a novel finding, demonstrating that when these tax advantages are curtailed, firms transition from debt financing to lease financing.

Secondly, our research extends the discourse on the lease versus buy decision. While the extensive literature has predominantly examined whether debt and lease financing are substitutes or complements, our study delves deeper. We provide evidence that the choice between leasing and buying is intricately influenced by the prevailing tax policies and incentives.

Lastly, our work contributes to the realm of research surrounding the Tax Cuts and Jobs Act (TCJA). Existing literature highlights the TCJA's adverse effects on leverage. Our contribution

to this literature is in unveiling that firms, instead of solely reducing leverage, adopt a two-fold strategy: decreasing leverage while concurrently shifting towards operating leases as an alternative response.

The remainder of this paper is organized as follows. In the next section, we review the related literatures on debt financing, lease financing and the TCJA. Section 3 develops our hypotheses. Section 4 explains the sample selection process, the data used, and the design of our empirical tests. Section 5 presents the results, and Section 6 discusses robustness tests. Section 7 concludes.

2. Related Literature

There is a vast literature with no consensus on whether leases and debt are substitutes or complements. Ang and Peterson (1984) in their seminal empirical study show that leases and debt are complements even after controlling for differences in debt capacity. Though theory suggests that debt and leases are substitutes, they find a positive relationship between the ratio of lease to book value of equity and the ratio of debt to book value of equity ratio but argue that theory in contrast. They call this the leasing puzzle. Bowman (1980) finds a positive relationship between debt levels and leases. They find that operating leases increase firm risk. Lewis and Schallheim (1992) show that debt and leases can be complements to each other in an environment where leasing is motivated by tax considerations. Leasing allows the transfer of tax shields, which increases the benefits of debt financing for the lessee. A profitable lessor can take advantage of the tax benefits of interest and depreciation and thus offer lower-cost financing to the lessee unable to fully utilize the tax benefits of ownership.

Other papers find that leases and debt are substitutes. Marston and Harris (1988) study the

changes (instead of levels) in debt and leases using comprehensive measures of leasing (capitalized plus noncapitalized) and debt (short- and long-term) and find that they are substitutes. They find that $1 of leasing displaces approximately $0.60 of non-leasing debt. This substitutability however is to varying degrees; a closer substitutability is found using the comprehensive measures than otherwise. Krishnan and Moyer (1994) study the characteristics of lessee firms for capital leases. They find that firms with lower retained earnings, higher growth rates, lower coverage ratios, higher debt ratios, higher operating risk, and lower Altman Z-scores (i.e., higher bankruptcy potential) are more likely to have capital leases. They also provide evidence suggesting that leases and debt are substitutes. Using UK data, Beattie, Goodacre and Thomson (2000) find that leases and debt are partial substitutes. Specifically, they find that £1 of leasing displaces £0.23 of non-lease debt which is consistent with the fact that lessors bear some risks which are not inherent in debt contracts. Yan (2006) also finds that leases and debt are substitutes after controlling for endogeneity and firm fixed effects. Specifically, the paper considers the fact that there might be a simultaneous causality hence a system of simultaneous equations is used, using lagged dependent variables as instruments. Yan rejects the hypothesis that debt and leases are complements but cannot reject the hypothesis that they are substitutes. The paper further finds that firms with more asymmetric information (non-dividend payers), firms that have higher agency costs from underinvestment (more investment opportunities), and firms to which transferring tax shields is less valuable (higher marginal tax rates) have a greater degree of substitutability. Adedeji and Stapleton (1996) using only finance leases, found that £1 of finance lease displaced about £0.55 of debt, on average, during 1990-1992. Lease and debt ratios are scaled by total assets instead of book value of equity as seen in Ang and Peterson (1984).

Sharpe and Nguyen (1995) argue that firms can reduce the cost of external funds through

leasing, and they find that firms facing high financial contracting costs (lower-rated, non-dividend paying and cash-poor firms) have a greater propensity to lease. This suggests that financially constrained firms use leases to expand their debt capacity. Chu (2020) studies how the ease of repossessing collateral in bankruptcy affects corporate leasing policy. Chu finds that after state anti-recharacterization laws, corporate leasing because these laws make collateral repossession easier for secured lending. This result is more prevalent in financially constrained firms.

The seminal work of Modigliani and Miller (1958), Modigliani and Miller (1963) and Miller (1977) ushered in extensive research on the benefits of tax to a firm. Modigliani and Miller (1963) show that due to the tax deductibility of interest expense, incentive to use debt financing increases with a firm's marginal tax rate. This implies not only a positive relation between the use of debt financing and corporate marginal tax rate but also a positive relation between the tax deductibility of interest and leverage. The consequence of this is, when the marginal benefit of debt falls, as in the case of restrictions on the deductibility of interest, so does the optimal level of debt (Carrizosa, Gaertner, and Lynch, 2023). Graham (2003) also shows a positive association between the tax deductibility of interest and leverage.

Heider and Ljungqvist (2015) investigate whether the presence of tax shields promotes the use of debt financing. Examining state tax rate changes, they find that firms lack incentives to decrease leverage following reductions in the tax benefits of debt due to firms facing asymmetric incentives with respect to changes in the tax benefits of debt. Specifically, they find that firms increase leverage following increases in tax rates but do not decrease leverage following state tax rate decreases. Using a dynamic model, Admati, DeMarzo, Hellwig, and Pfleiderer (2018) show that increasing leverage is always preferred by shareholders to fully exhaust the tax benefit of debt and but the same doesn't apply to reducing leverage, even when it may increase firm value.

Shareholders prefer to avoid leverage reductions because the benefits accrue to debtholders at shareholders' expense.

Myers, Dill, and Bautista (1976) present a model of lease versus buy (borrow) decision. In their model, leasing can be advantageous to lessee and lessor if the tax rates between both parties differ. They show that differences in the tax rates across firms makes leasing beneficial, as leases allow for the transfer of tax shields from firms with low marginal tax rate that cannot fully utilize the associated tax deduction (lessees) to firms with high marginal tax rate that can (lessors).[5] Graham, Lemmon, and Schallheim (1998) also show that low-tax-rate firms lease more. They also find that firms with lower Altman Z-scores, negative book value of common equity, and higher earnings variability lease more.

Carrizosa, Gaertner and Lynch (2023) find that 257 U.S. firms are affected by the interest deductibility limit the TCJA. And these firms, relative to unaffected firms decrease leverage by 7.6 percent of assets, corresponding to $330 million per firm and $84.8 billion for their treatment sample. Yu, Andrea, Xun and Shari (2013) find that long-term debt ratio is significantly negatively related to the implementation of the TCJA.

3. Hypothesis Development

From the interest deductibility limit perspective, this paper seeks to examine whether the interest limitation of the TCJA causes firms to shift from one form of financing to the other. Specifically, this paper investigates the effect of tax incentives on corporations' choice between leases and debt. If corporations use capital lease financing, only the interest portion of the lease payments are deductible as interest. Furthermore, the limit on overall tax deductions for interest

[5] See also Smith and Wakeman (1985), Ross, Westerfield, and Jaffe (1996).

still applies for capital leases. In an operating lease, the lessee can treat the full rental payment as an expense on its income statement (rather than only the imputed interest portion). These observations and considerations motivate us to formulate and put forward the hypothesis that firms which are affected by the interest deduction limitation provision of the TCJA to a greater extent may want to lease more frequently as a replacement for debt financing since rent (operating lease) payments are not limited to deductibility while interest expense is.

H1: Firms subject to the TCJA interest limitation increase operating leases relative to debt.

H1A: Firms with high leverage pre-TCJA increase operating leases relative to debt after the TCJA.

H1B: Firms with interest expense exceeding 30 percent of adjusted taxable income (ATI) plus interest income pre-TCJA increase operating leases relative to debt after the TCJA.

Regarding the bonus depreciation provision of TCJA, we predict an increase in asset purchases financed with debt after TCJA versus operating leases for firms which are affected by this new provision to a greater extent. In an asset purchase financed with debt, the asset user is entitled to various tax benefits such as accelerated depreciation, bonus depreciation expensing. However, in an operating lease, the lessor remains the owner of the asset and thus incurs the depreciation expenses. Therefore, the tax benefits are transferred from the lessee to the lessor. Therefore, the bonus depreciation provision of the TCJA may have incentivized some affected firms to reduce their use of operating leases in favor of asset purchases (financed with debt).

H2: Firms with more potential to benefit from the bonus depreciation provision of the TCJA decrease operating leases relative to total assets financed with debt.

H2A: Firms with higher capital expenditure pre-TCJA decrease operating leases relative to total assets financed with debt after the TCJA.

H2B: Firms with higher capital expenditure plus rental expense pre-TCJA decrease operating leases relative to total assets financed with debt after the TCJA.

Considering the delayed and limited utilization of NOLs to offset taxable income after the Act, we predict an increase in the use of operating leases (instead of asset purchases financed with debt) post-TCJA for firms which are affected by this new provision to a greater extent. In an asset purchase financed with debt, the asset user is entitled to various tax benefits, such as accelerated depreciation, bonus depreciation and expensing which can trigger a tax-loss position which cannot be carried back or fully written-off in the current year. However, in an operating lease, the lessor remains the owner of the asset and thus incurs the depreciation expenses. Therefore, the tax benefits are transferred from the lessee to the lessor. Therefore, the NOL provision of the TCJA may have incentivized some affected firms to increase their use of operating leases as opposed to asset purchases (financed with debt).

H3: Firms with more potential to be negatively affected by the NOL provision of the TCJA increase operating leases relative to total assets financed with debt.

H3A: Firms with higher NOL pre-TCJA increase operating leases relative to total assets financed with debt after the TCJA.

4. Data and Methodology

4.1. Methodology

To investigate the effect of the TCJA on operating leases, we employ a difference-in-differences methodology. Specifically, we estimate the model:

$$\text{OpLease}_{it} = \alpha_0 + \alpha_1 \text{Treatment}_{it} \times Post_{it} + \alpha_2 Post_{it} + \alpha_3 Controls_{it} + \text{Firm FEs} + \varepsilon_{it} \quad (1)$$

OpLease is one of our two measures of a firm's operating lease activity. Firms are classified into a treatment group and a control group based on the potential impact of the TCJA on operating leases. For hypothesis H1A, *Treatment* is set to 1 for firms with average leverage pre-TCJA (2015-2017) greater than the median level of leverage of all firms over the same period.[6] Firms with average leverage below the median are the control group (*Treatment = 0*). More levered firms pre-TCJA have a greater incentive to shift from debt financing to operating leases for tax savings reasons compared to less levered firms pre-TCJA. For hypothesis H1B, *Treatment* is set to 1 for firms with interest expense greater than 30 percent of ATI plus interest income in 2017.[7] Firms with interest expense less than 30 percent of ATI plus interest income are the control group (*Treatment = 0*). The potential impact of the TCJA's interest deductibility limit on a firm's operating lease activity should directly relate to its level of interest expense pre-TCJA.

For hypothesis H2A, *Treatment* is set to 1 for firms with average capital expenditures pre-TCJA (2015-2017) greater than the median level of capital expenditures of all firms over the same period.[8] Firms with average capital expenditures below the median are the control group (*Treatment = 0*). For hypothesis H2B, *Treatment* is set to 1 for firms with average capital expenditures plus rental expense pre-TCJA (2015-2017) greater than the median level of capital expenditures plus rental expense of all firms over the same period.[9] Firms with average capital expenditures below the median are the control group (*Treatment = 0*). The effect of TCJA on operating leases through the bonus depreciation provision channel should be greater for more-capital intensive firms than it is for less capital-intensive firms.

[6] Leverage is defined as total liabilities (Compustat item LT) scaled by total assets (Compustat item AT).

[7] Interest expense is Compustat item XINT. ATI is Compustat item PI+XINT-IDIT+DP. Interest income is Compustat item IDIT.

[8] Capital expenditures is Compustat item CAPX scaled by total assets (Compustat item AT).

[9] Capital expenditures plus rental expense is Compustat item CAPX+XRENT scaled by total assets (Compustat item AT).

For hypothesis H3A, Treatment is set to 1 for firms with NOL in 2017 greater than the median level of NOLs of all firms over the same period.[10] Firms with 2017 NOL below the median are the control group (Treatment = 0). The effect of TCJA on operating leases through the NOL channel should be greater for more tax-loss firms than it is for less tax-loss firms.

Post is an indicator variable for the post-TCJA period.[11] We set *Post = 1* for observations with fiscal year end after June 30, 2018, and *Post = 0* otherwise.[12] The coefficient on *Treatment*×*Post* (α_1) represents the change in operating leases for the treatment firms in the post- versus pre-period relative to the change for control firms. For hypotheses H1A and H1B, we predict that treatment firms, relative to control firms, increase operating leases after the TCJA. That is, we expect a positive coefficient on *Treatment*×*Post* ($\alpha_1 > 0$). For hypotheses H2A and H2B, we predict that treatment firms, relative to control firms, decrease operating leases after the TCJA. That is, we expect a negative coefficient on *Treatment*×*Post* ($\alpha_1 < 0$). For hypotheses H3A, we predict that treatment firms, relative to control firms, increase operating leases after the TCJA. That is, we expect a positive coefficient on Treatment×Post (α_1>0).

Controls is a vector of firm-specific control variables that are known from prior studies to explain variations in leasing behavior (Eisfeldt and Rampini, 2009; Beatty et al., 2010; Ma and Thomas, 2023).[13] The regression specification in equation (1) also includes firm fixed effects, hence we do not include *Treatment* as a main effect in the model. The standard errors are clustered

[10] NOL is Compustat item TLCF scaled by total assets (Compustat item AT).
[11] Year fixed effects are not controlled for because of the inclusion of Post in the model specification.
[12] Kalcheva, Plečnik, Tran and Turkiela (2020).
[13] Eisfeldt and Rampini, 2009; Beatty et al., 2010 show that firms with more financial constraints lease more, hence highly levered, small sized firms, and firms with low performance should lease more.

at the firm level. Appendix A provides details about the construction and data sources of all the variables used in our study.

4.2. Data and Variables

We begin our sample construction with the Compustat database from 2015 to 2021. We include only U.S. firms traded on the Amex, Nasdaq, and NYSE (Compustat variable *exchg* with values equal to 11, 12, or 14). We exclude utilities (Standard Industrial Classification (SIC) codes 4900–4999) and financials (SIC codes 6000–6999). We use historical SIC codes (Compustat variable *sich*) and supplement with the current code (Compustat variable *sic*) when the historical SIC code is missing (Bena and Li, 2014). We further exclude firm-years with sales revenue less than $100 million (Ma and Thomas, 2023). We winsorize all continuous accounting variables at the 1% and 99% levels to reduce the effects of extreme outliers.

4.2.1 Measures of Lease Financing

To capture the operating lease activity of a firm, we utilize two measures, *TotalOpLease* and *NewOpLease. TotalOpLease* is total operating lease commitments at the end of the year scaled by total debt.[14] *NewOpLease* is new operating lease commitments, calculated as total operating lease commitment at the end of the year less operating lease commitment carried over from the prior year scaled by total debt. For hypotheses H2A and H2B, *TotalOpLease* and *NewOpLease* are scaled by adjusted total assets.[15] Adjusted total assets is total assets plus present value of operating lease commitments if the year is prior to 2016 and total assets if the year is 2016 and beyond.[16]

[14] We scale operating leases by total debt because we are considering the substitution between operating leases and total debt when testing hypotheses H1A and H1B.

[15] When testing hypotheses H2A and H2B, we scale operating leases by total assets because we are analyzing the effect of TCJA's bonus depreciation provision on firms' choice between operating leases and asset purchases (capital expenditures) for using capital equipment (the firm's lease versus buy decision).

[16] We adjust total assets because ASU 2016-02 changed the definition of reported assets.

4.2.2. Control Variables

The model in equation (1) includes a list of control variables known to explain the variation in leasing behavior (Ma and Thomas, 2023). The control variables are leverage, size, net income, operating cash flows (OCF), volatility of operating cash flows (stdOCF), cash, current ratio, sales growth, GDP growth, and the change in bank prime loan interest rate in the fiscal year. Appendix A provides detailed definition and construction of all variables.

4.3. Summary Statistics and Correlations

Table 1 reports summary statistics for the sample used in our regression analysis when the treatment variable is leverage. The mean (median) firm has a *TotalOpLease* of 1.032 (0.152) and *NewOpLease* of 0.197 (0.028). The median amount of total operating lease commitments for the firms in our sample is 15.2 percent (scaled by the firm's total debt). The median amount of new operating lease commitments that a firm makes every year accounts for about 2.8 percent of the firm's total debt. Regarding the control variables, the summary statistics are in line with prior studies (Ma and Thomas, 2023).

Table 2 shows the correlation between the variables. All operating lease measures are positively correlated. *Post* is negatively correlated with all measures of operating leases.

5. Empirical Results

In this section, we report and discuss the results of empirical tests analyzing the various potential channels through which the TCJA had an impact on the use of operating leases by corporations.

5.1. The Effect of the TCJA on the Substitutability between Operating Leases and Debt Financing through the Interest Deductibility Limit Channel

We begin our analysis by examining the effect of the TCJA on operating leases versus debt financing through the interest deductibility limit channel by using the regression model in equation (1). Hypotheses H1A and H1B predict that firms which are affected by the interest deduction limitation provision of the TCJA to a greater extent may want to lease more frequently as a replacement for debt financing since rent (operating lease) payments are not limited to deductibility while interest expense is. The first two columns of Table 3 include *TotalOpLease* as the dependent variable while the last two columns include *NewOpLease* as the dependent variable. In columns 1 and 3, we include only *Treatment*×*Post*, Post, and firm fixed effects in the model. In columns 2 and 4, we add control variables.

The coefficients on *Treatment*×*Post* are positive in all columns (1.292, 0.917, 0.275 and 0.203, respectively), all of which are significant at the 1 percent level (two-tailed). This implies that total and new operating lease commitments by treatment firms (firms with greater financial leverage prior to TCJA) have significantly increased after the TCJA as a fraction of the firm's total debt. The coefficients on Post are negative and significant (-1.590, -0.803, -0.324 and -0.187, respectively). This means that the control sample experiences a decrease in *TotalOpLease* and *NewOpLease*. Overall, the results are consistent with hypothesis H1A. Firms with higher leverage prior to the TCJA had a significant increase in operating leases as a proportion of total debt financing after the enactment of the Act. One should note that firms with greater financial leverage prior to TCJA are likely to have greater interest expenses. Therefore, these firms are more likely to be affected by the new limitations of TCJA on the deductibility of interest expenses. This implies

that companies with greater financial leverage are more likely to be up against this new limit and may hence find it convenient to lease new equipment rather than to borrow in order to buy it.

To further examine the interest deductibility limit channel of the effect of the TCJA on the use of operating leases versus debt financing, we estimate the regression model in equation (1) using the new interest deduction limit (interest expense required to be less than 30 percent of ATI) to define our treatment variable. The first two columns of Table 4 include *TotalOpLease* as the dependent variable while the last 2 columns include *NewOpLease* as the dependent variable. In columns 1 and 3, we include only *Treatment*×*Post*, Post, and firm fixed effects in the model. In columns 2 and 4, we add control variables.

The coefficients on *Treatment*×*Post* are positive in all columns but only significant in columns 1 and 2 (0.401 and 0.363, respectively). This implies that total operating lease commitments by treatment firms (scaled by the amount of total debt financing), i.e., affected firms with interest expenses greater than 30 percent of ATI, have significantly increased after the TCJA. The coefficients on *Post* are negative and significant. This means that the control sample experiences a decrease in *TotalOpLease* and *NewOpLease*. Overall, the results are consistent with hypothesis H1B. Firms with interest expense greater than 30 percent of ATI plus interest income prior to the TCJA had a significant increase in total operating leases as a fraction of total debt after the enactment of the Act.

5.2. The Effect of the TCJA on Firms' Buy versus Lease Decisions through the Bonus Depreciation Channel

Next, we examine the effect of the TCJA on firms' use of operating leases through the bonus depreciation channel using the regression model in equation (1). Hypotheses H2A and H2B

predict that the bonus depreciation provision of the TCJA may have incentivized some affected firms (i.e., firms with greater capital intensity) to reduce their use of operating leases in favor of asset purchases (financed with debt). The first two columns of Table 5 include *TotalOpLease* as the dependent variable while the last two columns include *NewOpLease* as the dependent variable. In columns 1 and 3, we include only *Treatment*×*Post*, Post, and firm fixed effects in the model. In columns 2 and 4, we add control variables.

The coefficients on *Treatment*×*Post* are negative in all columns (-0.0139, -0.0137, -0.00616 and -0.00654, respectively), all of which are significant at the 1 percent level (two-tailed). This implies that, total and new operating lease commitments by treatment firms have significantly decreased after the TCJA. The coefficients on *Post* are negative and significant in columns 1 and 3 (-0.00443 and -0.00140, respectively) and positive and significant in columns 2 and 4 (0.00661 and 0.00142, respectively). This means that the control sample experiences a decrease in *TotalOpLease* and *NewOpLease* when firm characteristics are not controlled for and an increase in *TotalOpLease* and *NewOpLease* controlling for firm characteristics. Overall, the results are consistent with Hypothesis 2A. More capital-intensive firms with greater capital expenditures (scaled by total assets) prior to the TCJA had a significant decrease in operating leases as a percentage of total assets after the enactment of the Act. This implies that the bonus depreciation provision of the TCJA made new asset purchases more attractive for capital-intensive corporations relative to leasing new assets. This is because 100 percent immediate expensing of newly purchased equipment creates greater depreciation tax shields for the affected firms post TCJA.

Next, we examine the effect of the TCJA on operating leases through the bonus depreciation channel using the pre-TCJA level of capital expenditures plus rental expense as the treatment variable. The first two columns of Table 6 include *TotalOpLease* as dependent variable

while the last two columns include *NewOpLease* as dependent variable. In columns 1 and 3, we include only *Treatment×Post*, Post, and firm fixed effects in the model. In columns 2 and 4, we add control variables.

The coefficients on *Treatment×Post* are negative in all columns (-0.0220, -0.0222, -0.00812 and -0.00845, respectively), all of which are significant at the 1 percent level (two-tailed). This implies that, total and new operating lease commitments by treatment firms have significantly decreased after the TCJA. The coefficients on Post positive and significant in columns 2 and 4 (0.0109 and 0.00232, respectively). This means that the control sample experiences an increase in *TotalOpLease* and *NewOpLease* controlling for firm characteristics. Overall, the results are consistent with Hypothesis 2B. Firms with greater capital expenditures plus rental expense prior to the TCJA had a significant decrease in operating leases as a percentage of total assets after the enactment of the Act.

5.3. The Effect of the TCJA on Firms' Buy versus Lease Decisions through the NOL Channel

Next, we examine the effect of the TCJA on firms' use of operating leases through the NOL channel using the regression model in equation (1). Hypotheses H3A predicts that the NOL provision of the TCJA may have incentivized some affected firms (i.e., firms with greater NOL) to increase their use of operating leases in favor of asset purchases (financed with debt). The first two columns of Table 6 include TotalOpLease as the dependent variable while the last two columns include NewOpLease as the dependent variable. In columns 1 and 3, we include only Treatment×Post, Post, and firm fixed effects in the model. In columns 2 and 4, we add control variables.

The coefficients on Treatment×Post are postive in all columns (0.0113, 0.0127, 0.00406 and 0.00461, respectively), all of which are significant at the 5 percent level (two-tailed). This implies that, total and new operating lease commitments by treatment firms have significantly increased after the TCJA. The coefficients on Post are negative and significant in all columns (-0.0164, -0.00696, -0.00630 and -0.00398, respectively). This means that the control sample experiences a decrease in TotalOpLease and NewOpLease whether firm characteristics are controlled for or not. Overall, the results are consistent with Hypothesis 3A. More tax-loss firms with greater NOLs prior to the TCJA had a significant increase in operating leases as a percentage of total assets after the enactment of the Act. This indicates that the TCJA's NOL provision rendered leasing new assets a more appealing option for corporations with tax losses when compared to acquiring new assets. The restrictions on NOL carryback and complete write-off under the TCJA have amplified the attractiveness of leasing for these affected firms in the post-TCJA period.

6. Robustness Tests

6.1. Alternative Measures for Operating Leases

We use four alternative measures of operating leases which require discounting the operating lease commitments. *Alt OpLease1* and *Alt OpLease2* are computed as the present value of current and future lease commitments scaled by total debt.[17] The former uses Baa bond yield as discount rate and the latter uses 10% as discount rate. To compute the present value of future lease commitments, we follow Li et al. (2016) and Chu (2020), and discount lease commitments due in years one to five (MRC1-MRC5) at the Baa bond yield for *Alt OpLease1*. To compute the present

[17] To test hypotheses H2A and H2B, these measures are scaled by adjusted total assets.

value of future lease commitments, we follow Yan (2006) and Beattie, Goodacre, and Thomson (2000), and discount lease commitments due in years one to five (MRC1-MRC5) at 10% for *Alt OpLease2*. The present value is the sum of the current lease commitment (XRENT) and the discounted future lease commitments. *Alt OpLease3 byd5* and *Alt OpLease4 byd5* are defined similarly as *Alt OpLease1* and *Alt OpLease1* but include the present value of lease commitments beyond year five.

As shown in tables 8 to 12, the robustness of our results is confirmed using these alternative measures of lease financing, which are described in detail in Appendix A. Consistent with hypothesis H1, the findings consistently demonstrate a noteworthy increase in all measures of the present value of operating leases (relative to the value of total debt) post-TCJA for treatment firms, stratified based on their pre-TCJA leverage levels. Similarly, there's a significant increase in the present value of operating leases (relative to the value of total debt) post-TCJA for firms whose interest expenses exceeded 30 percent of ATI plus interest income prior to the TCJA. This underscores that firms heavily affected by the TCJA's interest deductibility limit show a substantial rise in reliance on operating leases relative to total debt post-TCJA enactment, even when considering operating leases as defined by the present value of future commitments. Furthermore, our results reveal a significant reduction in all measures of the present value of operating leases post-TCJA for firms identified to be more capital-intensive pre-TCJA. These findings align with our hypothesis H2, suggesting that firms significantly affected by the bonus depreciation provision of the TCJA experienced a marked decrease in their reliance on operating leases for capital equipment financing following the TCJA enactment. Moreover, our findings indicate a substantial rise in all measures of the present value of operating leases after the TCJA for companies that were previously identified as having higher tax losses before the TCJA. These results are consistent with

our hypothesis H3, which suggests that firms that were notably impacted by the NOL provision in the TCJA witnessed a notable surge in their utilization of operating leases as a means of financing capital equipment following the TCJA's implementation.

7. Conclusion

For the first time in the literature, this paper examined the effect of the 2017 Tax Cuts and Jobs Act (TCJA) on firms' choice of lease financing in their financing mix and the substitutability between operating leases and debt financing. The results of our difference-in-differences analysis showed that the TCJA had a positive effect on operating leases for firms affected by the limit on interest deductibility provision of TCJA, where the affected firms are more likely to substitute debt financing with lease financing.

Furthermore, we also reported a negative effect of the TCJA on operating leases as a percentage of total assets for firms affected by the bonus depreciation provision, where the affected firms are more likely to substitute operating leases with asset purchases financed with debt financing.

Additionally, we also reported a positive effect of the TCJA on operating leases as a percentage of total assets for firms affected by the NOL provision, where the affected firms are more likely to substitute asset purchases financed with debt financing with operating leases.

Overall, these findings support the view that the TCJA had heterogeneous effects on firms' choice between debt financing and lease financing depending on firms' financing policies and real asset characteristics prevailing prior to the TCJA.

References

Adedeji, A., & Stapleton, R. C. (1996). Leases. Debt and Taxable Capacity, 37-41.

Admati, Anat R., Peter M. DeMarzo, Martin F. Hellwig, and Paul Pfleiderer. "The leverage ratchet effect." The Journal of Finance 73, no. 1 (2018): 145-198.

Ang, J., & Peterson, P. P. (1984). The leasing puzzle. The Journal of Finance, 39(4), 1055-1065.

Bowman, R. G. (1980). The debt equivalence of leases: An empirical investigation. Accounting Review, 237-253.

Beattie, V., Goodacre, A., & Thomson, S. (2000). Operating leases and the assessment of lease–debt substitutability. Journal of Banking & Finance, 24(3), 427-470.

Beatty, A., Liao, S., & Weber, J. (2010). Financial reporting quality, private information, monitoring, and the lease-versus-buy decision. The Accounting Review, 85(4), 1215-1238.

Bena, J., & Li, K. (2014). Corporate innovations and mergers and acquisitions. Journal of Finance, 69(5), 1923-1960.

Brealey, R. A., Myers, S. C., Allen, F., & Edmans, A. (2023). Principles of corporate finance (14th ed). McGraw-Hill.

Carrizosa, R. D., Gaertner, F. B., & Lynch, D. P. (2023). Debt and Taxes? The Effect of Tax Cuts & Jobs Act of 2017 Interest Limitations on Capital Structure. The Journal of the American Taxation Association, 45(2), 1-22.

Chu, Y. (2020). Collateral, ease of repossession, and leases: Evidence from anti-recharacterization laws. Management Science, 66(7), 2951-2974.

Eisfeldt, A. L., & Rampini, A. A. (2009). Leasing, ability to repossess, and debt capacity. The Review of Financial Studies, 22(4), 1621-1657.

Graam, J. R. (2003). Taxes and corporate finance: A review. The Review of Financial Studies, 16(4), 1075-1129.

Graham, J. R., Lemmon, M. L., & Schallheim, J. S. (1998). Debt, leases, taxes, and the endogeneity of corporate tax status. The journal of finance, 53(1), 131-162.

Heider, F., & Ljungqvist, A. (2015). As certain as debt and taxes: Estimating the tax sensitivity of leverage from state tax changes. Journal of financial economics, 118(3), 684-712.

Kalcheva, I., Plečnik, J. M., Tran, H., & Turkiela, J. (2020). (Un) intended consequences? The impact of the 2017 tax cuts and jobs act on shareholder wealth. Journal of Banking & Finance, 118, 105860.

Krishnan, V. S., & Moyer, R. C. (1994). Bankruptcy costs and the financial leasing decision. Financial Management, 31-42.

Lewis, C. M., & Schallheim, J. S. (1992). Are debt and leases substitutes? Journal of Financial and Quantitative Analysis, 27(4), 497-511.

Marston, F., & Harris, R. S. (1988). Substitutability of leases and debt in corporate capital structures. Journal of Accounting, Auditing & Finance, 3(2), 147-164.

Miller, M. H. (1977). Debt and taxes. the Journal of Finance, 32(2), 261-275.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. The American economic review, 48(3), 261-297.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. The American economic review, 433-443.

Myers, S. C., Dill, D. A., & Bautista, A. J. (1976). Valuation of financial lease contracts. The Journal of Finance, 31(3), 799-819.

Ross, S. A., Westerfield, R. W., & Jaffe, J. (1996). Corporate Finance, Irwin, Chicago. Search in.

Sharpe, S. A., & Nguyen, H. H. (1995). Capital market imperfections and the incentive to lease. Journal of Financial Economics, 39(2-3), 271-294.

Smith Jr, C. W., & Wakeman, L. M. (1985). Determinants of corporate leasing policy. The Journal of Finance, 40(3), 895-908.

Yan, A. (2006). Leasing and debt financing: substitutes or complements? Journal of Financial and Quantitative Analysis, 41(3), 709-731.

Yu, Z., Andrea, C., Xun, L., & Shari, L. (2023). The effect of tax cuts and jobs act on corporate debt ratios. Journal of Accounting and Taxation, 15(1), 1-12.

Appendix A

Sample Construction and Variable Definitions

Variable	Definition	Source
Dependent Variables[18]:		
TotalOpLease	Total operating lease commitment at the end of the year. *mrct+mrcta*	Compustat
NewOpLease	New operating lease commitment: total operating lease commitment at the end of the year less operating lease commitment carried over from the prior year. *(mrct+mrcta)-lag(mrct+mrcta-mrc1)*	Compustat
Alt OpLease1	Current rental expense plus the present value of future lease commitments up to year 5 (discounted at the Baa bond yield) *xrent+PV(mrc1, mrc2, mrc3, mrc4, mrc5)*	Compustat & FRED
Alt OpLease2	Current rental expense plus the present value of future lease commitments up to year 5 (discounted by 10%) *xrent+PV(mrc1, mrc2, mrc3, mrc4, mrc5)*	Compustat
Alt OpLease3 byd5	Current rental expense plus the present value of future lease commitments up to year 5 and after year 5 (discounted by the Baa bond yield) *xrent+PV(mrc1, mrc2, mrc3, mrc4, mrc5, mrcta[19])*	Compustat & FRED
Alt OpLease4 byd5	Current rental expense plus the present value of future lease commitments up to year 5 and after year 5 (discounted by 10%) *xrent+PV(mrc1, mrc2, mrc3, mrc4, mrc5, mrcta[20])*	Compustat
Control Variables:		
Leverage	Total liabilities scaled by total assets lt/*at*	Compustat
Size	Natural logarithm of market value of equity ln(csho*prcc_f)	Compustat

[18] Scaled by total debt for H1A and H1B. Scaled by adjusted total assets for H2A and H2B.
[19] Assuming mcta are evenly distributed from year six to ten.
[20] Assuming mcta are evenly distributed from year six to ten.

Net income	Net income before extraordinary items scaled by lagged total sales. *ib/lag(sale)*	Compustat
OCF	Operating cash flows, calculated as cash flows from operations scaled by lagged total sales. *oancf/lag(sale)*	Compustat
stdOCF	Three-year standard deviation of OCF	Compustat
Cash	Cash holding: cash scaled by lagged total sales *ch/lag(sale)*	Compustat
Current ratio	Current ratio at the beginning of the year: current assets by current liabilities from the prior year. *act/lag(lct)*	Compustat
Sales growth	Sales growth rate: annual growth rate of sales. ((sale-lag(sale))/lag(sale))	Compustat
GDP growth	Average quarterly GDP growth percentage over the last four quarters prior to the end of the fiscal year.	Bureau of Economic Analysis
Change in Interest	Change in Bank Prime Loan Interest Rate during the fiscal year.	FRED
Sample Partitioning Variables		
Treatment_Lev	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's average leverage pre-TCJA (2015 -2017) is greater than the median level of leverage of all firms over the same period.	Compustat
Treatment_IntLimit	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's firms interest expense is greater than 30 percent of ATI plus interest income in 2017. xint>(0.30*(pi+xint-idit+dp)+idit)	Compustat
Treatment_ATR	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's average average tax rate pre-TCJA (2015 -2017) is greater than the median level of average tax rate of all firms over the same period. Average tax rate=txt/(txt+ib)	Compustat
Treatment_Capex	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's average capital expenditure scaled by total assets pre-TCJA (2015 -2017) is greater than the median level of capital expenditure scaled by total assets of all firms over the same period.	Compustat
Treatment_CapexRent	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's average capital expenditure plus rental expense scaled by total assets pre-TCJA (2015 -2017) is greater than the median level of capital	Compustat

	expenditure plus rental expense scaled by total assets of all firms over the same period.	
Treatment_NOL	Indicator for treatment firms, which is set to 1 for all the observations of a firm if the firm's NOL in 2017 is greater than the median level of NOL of all firms over the same period.	Compustat
Post	Indicator for the post TCJA period, which is set to 1 for observations with fiscal year end after June 30, 2018, and 0 otherwise	Compustat

Table 1. Summary Statistics

The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. This table presents the summary statistics for our sample. The sample is restricted to observations with nonmissing variables of interest, yielding a panel of 7,072 observations. All continuous accounting variables are winsorized at 1% and 99%. Variable definitions are provided in the Appendix.

Variable	Obs.	Mean	Std. Dev.	P25	Median	P75	Min	Max
TotalOpLease	7,072	1.032	4.372	0.067	0.152	0.433	0.006	37.44
NewOpLease	7,072	0.197	0.821	0.008	0.028	0.086	-0.158	7.032
Alt OpLease1	7,003	0.923	4.13	0.065	0.141	0.364	0.008	36.684
Alt OpLease2	7,003	0.847	3.8	0.06	0.129	0.332	0.008	33.803
Alt OpLease3 byd5	7,003	1.156	5.073	0.08	0.177	0.472	0.01	45.02
Alt OpLease4 byd5	7,003	1.004	4.44	0.07	0.152	0.403	0.009	39.465
Leverage	7,072	0.625	0.228	0.474	0.601	0.741	0.179	1.486
Size	7,072	7.93	1.855	6.691	7.884	9.177	3.548	12.361
Net income	7,072	0.046	0.142	0.005	0.046	0.098	-0.634	0.482
OCF	7,072	0.143	0.136	0.058	0.111	0.193	-0.105	0.721
stdOCF	7,072	0.042	0.058	0.013	0.024	0.046	0.002	0.38
Cash	7,072	0.143	0.18	0.03	0.08	0.182	0	1.019
Current ratio	7,072	2.179	1.408	1.268	1.829	2.64	0.382	8.64
Sales growth	7,072	0.059	0.209	-0.034	0.042	0.128	-0.487	0.954
GDP growth	7,072	2.403	2.005	1.65	2.275	3.15	-7.275	13.125
Change in Interest	7,072	0.004	0.813	-0.6	0.120	0.75	-2.25	1

Table 2. Correlations

The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. This table presents the correlation matrix for our sample. The sample is restricted to observations with nonmissing variables of interest, yielding a panel of 7,072 observations. All continuous accounting variables are winsorized at 1% and 99%. Variable definitions are provided in the Appendix.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.NewOpLease	1																	
2.TotalOpLease	0.882	1																
3.Alt OpLease1	0.863	0.982	1															
4.Alt OpLease2	0.862	0.98	1	1														
5.Alt OpLease3 byd5	0.877	0.994	0.995	0.995	1													
6.Alt OpLease4 byd5	0.874	0.992	0.997	0.997	1	1												
7.InterestLimit	-0.16	-0.15	-0.15	-0.15	-0.15	-0.15	1											
8.Post	-0.11	-0.11	-0.1	-0.1	-0.1	-0.1	0.007	1										
9.Leverage	-0.19	-0.17	-0.17	-0.17	-0.17	-0.17	0.645	0.049	1									
10.Size	-0.1	-0.1	-0.11	-0.11	-0.1	-0.11	0.087	0.037	0.023	1								
11.Net income	-0	-0.01	-0.01	-0.01	-0.01	-0.01	-0.03	0.044	-0.14	0.383	1							
12.OCF	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.05	0.042	-0.09	0.431	0.415	1						
13.stdOCF	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	0.047	-0.04	0.021	-0.1	0.396	1					
14.Cash	0.001	0.005	0.009	0.009	0.008	0.008	-0.09	0.029	-0.1	0.194	0.045	0.315	0.29	1				
15.Current ratio	0.067	0.047	0.053	0.053	0.05	0.051	-0.31	-0.04	-0.39	-0.02	0.11	0.078	0.088	0.436	1			
16.Sales growth	0.016	-0.02	-0.03	-0.03	-0.02	-0.02	-0.03	0.042	-0.06	0.15	0.267	0.348	0.146	0.17	0.193	1		
17.GDP growth	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.007	0.142	-0.01	0.04	0.108	0.049	0.032	0.011	0.008	0.228	1	
18.Change in Interest	0.101	0.105	0.099	0.099	0.101	0.101	0.001	-0.42	-0.06	-0.01	0.091	0.018	-0	-0.05	0.023	0.22	0.391	1

Table 3. The Effect of the TCJA on Operating Leases: Leverage as Treatment Variable

The dependent variable in columns 1 and 2 (3 and 4) is a firm's total operating lease commitments at year t scaled by total debt (is a firm's new operating lease commitments at year t scaled by total debt). Post is an indicator for the post TCJA period. Treatment_Lev is an indicator for firms with above-median leverage in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	TotalOpLease	TotalOpLease	NewOpLease	NewOpLease
Treatment_Lev×Post	1.292***	0.917***	0.275***	0.203***
	(5.072)	(4.261)	(5.875)	(4.901)
Post	-1.590***	-0.803***	-0.324***	-0.187***
	(-6.571)	(-4.394)	(-7.131)	(-4.958)
Leverage		-5.909***		-1.158***
		(-5.694)		(-6.599)
Size		-0.445***		-0.0719***
		(-2.906)		(-2.668)
Net income		-0.538		-0.132*
		(-1.246)		(-1.847)
OCF		0.705		0.0775
		(0.988)		(0.563)
stdOCF		-0.726		-0.00200
		(-0.823)		(-0.0118)
Cash		-0.734		-0.228***
		(-1.465)		(-2.773)
Current ratio		0.0556		0.0181
		(0.850)		(1.415)
Sales growth		-0.280		0.0661
		(-1.316)		(1.645)
GDP growth		-0.0663***		-0.0133***
		(-5.079)		(-4.953)
Change in Interest		0.490***		0.0744***
		(6.271)		(5.281)
Constant	1.534***	8.529***	0.295***	1.548***
	(23.33)	(5.359)	(24.61)	(5.726)
Observations	7,155	7,072	7,151	7,072
R-squared	0.551	0.569	0.487	0.503
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 4. The Effect of the TCJA on Operating Leases: Interest Limit as Treatment Variable

The dependent variable in columns 1 and 2 (3 and 4) is a firm's total operating lease commitments at year t scaled by total debt (is a firm's new operating lease commitments at year t scaled by total debt). Post is an indicator for the post TCJA period. Treatment_IntLimit is an indicator for firms with interest expense greater than 30 percent of ATI plus interest income in 2017. The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	TotalOpLease	TotalOpLease	NewOpLease	NewOpLease
Treatment_IntLimit×Post	0.401**	0.363**	0.0714	0.0690
	(2.096)	(1.986)	(1.310)	(1.315)
Post	-0.787***	-0.266***	-0.159***	-0.0745***
	(-6.644)	(-2.917)	(-7.164)	(-3.792)
Leverage		-5.951***		-1.196***
		(-5.476)		(-6.571)
Size		-0.424***		-0.0720***
		(-2.731)		(-2.598)
Net income		-0.780**		-0.142**
		(-2.108)		(-2.056)
OCF		0.345		0.0117
		(0.504)		(0.0856)
stdOCF		-0.589		-0.0158
		(-0.706)		(-0.103)
Cash		-0.467		-0.189**
		(-1.027)		(-2.459)
Current ratio		0.0358		0.0160
		(0.574)		(1.291)
Sales growth		-0.146		0.0834**
		(-0.730)		(2.105)
GDP growth		-0.0569***		-0.0108***
		(-4.612)		(-4.241)
Change in Interest		0.430***		0.0602***
		(5.726)		(4.500)
Constant	1.358***	8.302***	0.265***	1.557***
	(22.66)	(5.037)	(23.14)	(5.498)
Observations	7,013	6,932	7,009	6,932
R-squared	0.534	0.553	0.469	0.487
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 5. The Effect of the TCJA on Operating Leases: Capital Expenditure as Treatment Variable

The dependent variable in columns 1 and 2 (3 and 4) is a firm's total operating lease commitments at year t scaled by adjusted total assets (is a firm's new operating lease commitments at year t scaled by adjusted total assets). Post is an indicator for the post TCJA period. Treatment_Capex is an indicator for firms with above-median capital expenditure scaled by total assets in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	TotalOpLease	TotalOpLease	NewOpLease	NewOpLease
Treatment_Capex×Post	-0.0139***	-0.0137***	-0.00616***	-0.00654***
	(-3.726)	(-3.773)	(-4.225)	(-4.690)
Post	-0.00443**	0.00661***	-0.00140*	0.00142*
	(-2.341)	(3.379)	(-1.930)	(1.719)
Leverage		-0.0369**		-0.0125**
		(-2.450)		(-2.538)
Size		-0.00482**		-0.000537
		(-2.061)		(-0.600)
Net income		-0.0256***		-0.00311
		(-3.188)		(-1.052)
OCF		-0.0153		-0.0136***
		(-1.279)		(-2.709)
stdOCF		0.0153		-0.000727
		(0.723)		(-0.0909)
Cash		-0.0260***		-0.0206***
		(-2.844)		(-5.589)
Current ratio		-0.00172*		0.00181***
		(-1.914)		(4.210)
Sales growth		0.0103**		0.0174***
		(2.539)		(7.761)
GDP growth		-0.00212***		-0.000700***
		(-8.238)		(-4.699)
Change in Interest		0.0122***		0.00205***
		(9.335)		(4.690)
Constant	0.111***	0.180***	0.0229***	0.0347***
	(106.3)	(8.665)	(56.08)	(4.430)
Observations	7,957	7,854	7,947	7,854
R-squared	0.907	0.912	0.559	0.572
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 6. The Effect of the TCJA on Operating Leases: Capital Expenditure plus Rental Expense as Treatment Variable

The dependent variable in columns 1 and 2 (3 and 4) is a firm's total operating lease commitments at year t scaled by adjusted total assets (is a firm's new operating lease commitments at year t scaled by adjusted total assets). Post is an indicator for the post TCJA period. Treatment_CapexRent is an indicator for firms with above-median capital expenditure plus rental expense scaled by total assets in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	TotalOpLease	TotalOpLease	NewOpLease	NewOpLease
Treatment_CapexRent×Post	-0.0220***	-0.0222***	-0.00812***	-0.00845***
	(-5.882)	(-6.149)	(-5.523)	(-6.041)
Post	-0.000480	0.0109***	-0.000500	0.00232***
	(-0.322)	(6.473)	(-0.916)	(3.518)
Leverage		-0.0338**		-0.0122**
		(-2.282)		(-2.485)
Size		-0.00536**		-0.000693
		(-2.304)		(-0.776)
Net income		-0.0242***		-0.00312
		(-3.013)		(-1.039)
OCF		-0.0150		-0.0133***
		(-1.246)		(-2.609)
stdOCF		0.0178		-0.000812
		(0.847)		(-0.100)
Cash		-0.0258***		-0.0205***
		(-2.842)		(-5.583)
Current ratio		-0.00157*		0.00186***
		(-1.757)		(4.349)
Sales growth		0.0103**		0.0177***
		(2.531)		(7.814)
GDP growth		-0.00220***		-0.000719***
		(-8.388)		(-4.790)
Change in Interest		0.0125***		0.00205***
		(9.411)		(4.628)
Constant	0.112***	0.183***	0.0231***	0.0358***
	(107.7)	(8.883)	(56.64)	(4.562)
Observations	7,898	7,795	7,888	7,795
R-squared	0.908	0.913	0.563	0.576
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 7. The Effect of the TCJA on Operating Leases: NOL as Treatment Variable

The dependent variable in columns 1 and 2 (3 and 4) is a firm's total operating lease commitments at year t scaled by adjusted total assets (is a firm's new operating lease commitments at year t scaled by adjusted total assets). Post is an indicator for the post TCJA period. Treatment_NOL is an indicator for firms with above-median NOL in 2017. The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	TotalOpLease	TotalOpLease	NewOpLease	NewOpLease
Treatment_NOL×Post	0.00406**	0.00461***	0.0113***	0.0127***
	(2.505)	(2.844)	(2.676)	(2.888)
Post	-0.00630***	-0.00398***	-0.0164***	-0.00696**
	(-5.027)	(-3.061)	(-4.688)	(-2.122)
leverage		-0.0118**		-0.0258
		(-2.279)		(-1.642)
Size		-0.000192		-0.00248
		(-0.192)		(-0.948)
Net income		-0.00513		-0.0276***
		(-1.606)		(-3.197)
OCF		-0.0152***		-0.0165
		(-2.768)		(-1.241)
stdOCF		-0.00189		0.0229
		(-0.215)		(0.990)
Cash		-0.0186***		-0.0215**
		(-4.606)		(-2.198)
Current ratio		0.00166***		-0.00180*
		(3.661)		(-1.878)
Sales growth		0.0169***		0.00883**
		(6.807)		(2.012)
GDP growth		-0.000677***		-0.00210***
		(-4.044)		(-6.957)
Change in Interest		0.00198***		0.0116***
		(4.049)		(7.898)
Constant	0.0224***	0.0314***	0.107***	0.150***
	(50.00)	(3.620)	(91.29)	(6.769)
Observations	6,619	6,536	6,629	6,536
R-squared	0.542	0.554	0.897	0.903
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 8. The Effect of the TCJA on Alternative Measures of Operating Leases: Leverage as Treatment Variable

The dependent variables in columns 1 and 2 are Alt OpLease1, Alt OpLease2, which are the present value of operating lease commitments up to year 5 discounted at the Baa yield, 10% scaled by total debt. The dependent variables on columns 3 and 4 are Alt OpLease3 byd5, Alt OpLease4 byd5, which are the present value of operating lease commitments up to and after year 5 discounted at the Baa yield, 10% scaled by total debt. Post is an indicator for the post TCJA period. Treatment_Lev is an indicator for firms with above-median leverage in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	Alt OpLease1	Alt OpLease2	Alt OpLease3 byd5	Alt OpLease4 byd5
Treatment_Lev×Post	0.851***	0.780***	1.056***	0.922***
	(4.083)	(4.066)	(4.163)	(4.139)
Post	-0.699***	-0.641***	-0.886***	-0.771***
	(-3.851)	(-3.837)	(-4.051)	(-4.011)
Leverage	-5.313***	-4.889***	-6.622***	-5.779***
	(-5.333)	(-5.329)	(-5.430)	(-5.407)
Size	-0.457***	-0.424***	-0.538***	-0.480***
	(-3.007)	(-3.021)	(-2.955)	(-2.987)
Net income	-0.403	-0.365	-0.545	-0.460
	(-0.932)	(-0.916)	(-1.037)	(-0.997)
OCF	0.683	0.625	0.859	0.746
	(0.974)	(0.967)	(0.999)	(0.988)
stdOCF	-0.891	-0.821	-0.941	-0.859
	(-1.056)	(-1.056)	(-0.909)	(-0.947)
Cash	-0.525	-0.474	-0.698	-0.601
	(-1.108)	(-1.088)	(-1.178)	(-1.162)
Current ratio	0.0469	0.0421	0.0596	0.0517
	(0.798)	(0.780)	(0.797)	(0.795)
Sales growth	-0.328	-0.303	-0.376	-0.335
	(-1.606)	(-1.610)	(-1.493)	(-1.520)
GDP growth	-0.0629***	-0.0578***	-0.0775***	-0.0680***
	(-5.223)	(-5.216)	(-5.242)	(-5.258)
Change in Interest	0.458***	0.421***	0.566***	0.495***
	(6.109)	(6.099)	(6.132)	(6.138)
Constant	8.090***	7.476***	9.848***	8.676***
	(5.188)	(5.193)	(5.214)	(5.220)
Observations	7,002	7,002	7,002	7,002
R-squared	0.560	0.559	0.563	0.562
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 9. The Effect of the TCJA on Alternative Measures of Operating Leases: Interest Limit as Treatment Variable

The dependent variables in columns 1 and 2 are Alt OpLease1, Alt OpLease2, which are the present value of operating lease commitments up to year 5 discounted at the Baa yield, 10% scaled by total debt. The dependent variables on columns 3 and 4 are Alt OpLease3 byd5, Alt OpLease4 byd5, which are the present value of operating lease commitments up to and after year 5 discounted at the Baa yield, 10% scaled by total debt. Post is an indicator for the post TCJA period. Treatment_IntLimit is an indicator for firms with interest expense greater than 30 percent of ATI plus interest income in 2017. The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	Alt OpLease1	Alt OpLease2	Alt OpLease3 byd5	Alt OpLease4 byd5
Treatment_IntLimit×Post	0.355**	0.325**	0.433**	0.379**
	(2.214)	(2.206)	(2.184)	(2.194)
Post	-0.193**	-0.177**	-0.262**	-0.225**
	(-2.155)	(-2.142)	(-2.436)	(-2.383)
Leverage	-5.278***	-4.853***	-6.613***	-5.761***
	(-5.081)	(-5.074)	(-5.193)	(-5.166)
Size	-0.435***	-0.404***	-0.513***	-0.458***
	(-2.822)	(-2.834)	(-2.774)	(-2.804)
Net income	-0.630*	-0.574*	-0.824*	-0.704*
	(-1.697)	(-1.674)	(-1.841)	(-1.786)
OCF	0.340	0.309	0.407	0.355
	(0.507)	(0.500)	(0.495)	(0.492)
stdOCF	-0.756	-0.696	-0.782	-0.718
	(-0.956)	(-0.956)	(-0.806)	(-0.846)
Cash	-0.257	-0.229	-0.388	-0.327
	(-0.602)	(-0.583)	(-0.721)	(-0.696)
Current ratio	0.0271	0.0239	0.0359	0.0310
	(0.492)	(0.474)	(0.507)	(0.504)
Sales growth	-0.204	-0.189	-0.217	-0.197
	(-1.068)	(-1.075)	(-0.921)	(-0.958)
GDP growth	-0.0539***	-0.0495***	-0.0665***	-0.0584***
	(-4.769)	(-4.760)	(-4.794)	(-4.808)
Change in Interest	0.400***	0.368***	0.494***	0.433***
	(5.559)	(5.549)	(5.585)	(5.590)
Constant	7.799***	7.203***	9.531***	8.386***
	(4.831)	(4.833)	(4.874)	(4.875)
Observations	6,862	6,862	6,862	6,862
R-squared	0.540	0.539	0.545	0.543
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 10. The Effect of the TCJA on Alternative Measures of Operating Leases: Capital Expenditure as Treatment Variable

The dependent variables in columns 1 and 2 are Alt OpLease1, Alt OpLease2, which are the present value of operating lease commitments up to year 5 discounted at the Baa yield, 10% scaled by total debt. The dependent variables on columns 3 and 4 are Alt OpLease3 byd5, Alt OpLease4 byd5, which are the present value of operating lease commitments up to and after year 5 discounted at the Baa yield, 10% scaled by total debt. Post is an indicator for the post TCJA period. Treatment_Capex is an indicator for firms with above-median capital expenditure scaled by total assets in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	Alt OpLease1	Alt OpLease2	Alt OpLease3 byd5	Alt OpLease4 byd5
Treatment_Capex×Post	-0.00666***	-0.00664***	-0.00705**	-0.00787***
	(-3.229)	(-3.491)	(-2.378)	(-3.177)
Post	0.00510***	0.00439***	0.00791***	0.00635***
	(4.598)	(4.352)	(4.776)	(4.628)
Leverage	-0.0121	-0.0140	-0.0146	-0.0195*
	(-1.245)	(-1.565)	(-1.093)	(-1.710)
Size	-0.00707***	-0.00684***	-0.00647***	-0.00662***
	(-4.731)	(-4.997)	(-3.156)	(-3.808)
Net income	-0.0112**	-0.0102**	-0.0201***	-0.0165***
	(-2.236)	(-2.218)	(-2.791)	(-2.753)
OCF	-0.00309	-0.00263	-0.0125	-0.00831
	(-0.430)	(-0.403)	(-1.192)	(-0.954)
stdOCF	-0.0102	-0.00969	0.00965	0.00199
	(-0.868)	(-0.911)	(0.533)	(0.135)
Cash	-0.0186***	-0.0183***	-0.0187**	-0.0205***
	(-3.926)	(-4.252)	(-2.340)	(-3.291)
Current ratio	-0.00142***	-0.00120***	-0.00230***	-0.00174***
	(-2.917)	(-2.720)	(-3.076)	(-2.847)
Sales growth	0.00143	0.00146	0.00522	0.00418
	(0.585)	(0.656)	(1.524)	(1.456)
GDP growth	-0.00141***	-0.00132***	-0.00193***	-0.00177***
	(-7.998)	(-8.229)	(-7.953)	(-8.516)
Change in Interest	0.00823***	0.00759***	0.0113***	0.0101***
	(9.730)	(9.972)	(9.123)	(9.820)
Constant	0.156***	0.147***	0.181***	0.168***
	(11.08)	(11.40)	(9.951)	(10.71)
Observations	7,785	7,785	7,785	7,785
R-squared	0.931	0.933	0.916	0.922
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 11. The Effect of the TCJA on Alternative Measures of Operating Leases: Capital Expenditure plus Rental Expense as Treatment Variable

The dependent variables in columns 1 and 2 are Alt OpLease1, Alt OpLease2, which are the present value of operating lease commitments up to year 5 discounted at the Baa yield, 10% scaled by total debt. The dependent variables on columns 3 and 4 are Alt OpLease3 byd5, Alt OpLease4 byd5, which are the present value of operating lease commitments up to and after year 5 discounted at the Baa yield, 10% scaled by total debt. Post is an indicator for the post TCJA period. Treatment_CapexRent is an indicator for firms with above-median capital expenditure plus rental expense scaled by total assets in the pre-TCJA period (2015 -2017). The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	Alt OpLease1	Alt OpLease2	Alt OpLease3 byd5	Alt OpLease4 byd5
Treatment_CapexRent×Post	-0.0122***	-0.0120***	-0.0139***	-0.0142***
	(-5.957)	(-6.354)	(-4.730)	(-5.810)
Post	0.00792***	0.00708***	0.0115***	0.00965***
	(8.091)	(7.980)	(7.764)	(7.910)
Leverage	-0.0104	-0.0125	-0.0129	-0.0181
	(-1.095)	(-1.426)	(-0.985)	(-1.618)
Size	-0.00741***	-0.00715***	-0.00693***	-0.00703***
	(-4.970)	(-5.244)	(-3.392)	(-4.055)
Net income	-0.0104**	-0.00947**	-0.0190***	-0.0155***
	(-2.092)	(-2.076)	(-2.634)	(-2.600)
OCF	-0.00268	-0.00217	-0.0121	-0.00774
	(-0.374)	(-0.334)	(-1.150)	(-0.890)
stdOCF	-0.00870	-0.00831	0.0114	0.00353
	(-0.747)	(-0.786)	(0.633)	(0.241)
Cash	-0.0186***	-0.0183***	-0.0187**	-0.0205***
	(-3.975)	(-4.308)	(-2.355)	(-3.324)
Current ratio	-0.00132***	-0.00112**	-0.00215***	-0.00163***
	(-2.732)	(-2.546)	(-2.892)	(-2.667)
Sales growth	0.00151	0.00157	0.00538	0.00432
	(0.621)	(0.709)	(1.567)	(1.505)
GDP growth	-0.00143***	-0.00133***	-0.00197***	-0.00180***
	(-8.027)	(-8.255)	(-7.963)	(-8.519)
Change in Interest	0.00832***	0.00767***	0.0114***	0.0103***
	(9.770)	(10.01)	(9.181)	(9.863)
Constant	0.158***	0.149***	0.184***	0.171***
	(11.31)	(11.65)	(10.17)	(10.97)
Observations	7,759	7,759	7,759	7,759
R-squared	0.932	0.934	0.917	0.923
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm

Table 12. The Effect of the TCJA on Alternative Measures of Operating Leases: NOL as Treatment Variable

The dependent variables in columns 1 and 2 are Alt OpLease1, Alt OpLease2, which are the present value of operating lease commitments up to year 5 discounted at the Baa yield, 10% scaled by total debt. The dependent variables on columns 3 and 4 are Alt OpLease3 byd5, Alt OpLease4 byd5, which are the present value of operating lease commitments up to and after year 5 discounted at the Baa yield, 10% scaled by total debt. Post is an indicator for the post TCJA period. Treatment_NOL is an indicator for firms with above-median NOL in 2017. The sample includes all Compustat firm-year observations from 2015 to 2021 with sales revenue greater than $100million for U.S. firms traded on the Amex, Nasdaq, and NYSE (exchg 11, 12 & 14). Financial firms (SIC code 6000-6999) and utilities (SIC codes 4900-4999) are excluded from the sample. All columns control for firm fixed effects. Appendix A describes all variables. All continuous accounting variables are winsorized at the 1% and 99% levels. Below the regression coefficient estimates, their t-statistics are given in parentheses; they are heteroskedasticity-robust and clustered by firm. ***, **, or * indicate that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	1	2	3	4
Independent Variables	Alt OpLease1	Alt OpLease2	Alt OpLease3 byd5	Alt OpLease4 byd5
Treatment_NOL×Post	0.00677***	0.00660***	0.00919***	0.00856***
	(2.919)	(3.097)	(2.633)	(2.982)
Post	-0.00219	-0.00271*	-0.000854	-0.00232
	(-1.306)	(-1.767)	(-0.339)	(-1.123)
leverage	-0.00672	-0.00898	-0.00724	-0.0130
	(-0.702)	(-1.025)	(-0.526)	(-1.124)
Size	-0.00548***	-0.00536***	-0.00476**	-0.00500***
	(-3.744)	(-4.025)	(-2.176)	(-2.760)
Net income	-0.0106**	-0.00982**	-0.0202***	-0.0167***
	(-2.151)	(-2.179)	(-2.674)	(-2.715)
OCF	-0.00237	-0.00186	-0.0136	-0.00859
	(-0.302)	(-0.261)	(-1.163)	(-0.889)
stdOCF	-0.00301	-0.00343	0.0200	0.00987
	(-0.248)	(-0.312)	(1.021)	(0.630)
Cash	-0.0153***	-0.0150***	-0.0148*	-0.0165**
	(-3.179)	(-3.460)	(-1.747)	(-2.545)
Current ratio	-0.00155***	-0.00136***	-0.00228***	-0.00178***
	(-3.086)	(-2.961)	(-2.872)	(-2.777)
Sales growth	0.000749	0.000757	0.00528	0.00370
	(0.289)	(0.321)	(1.414)	(1.197)
GDP growth	-0.00133***	-0.00124***	-0.00184***	-0.00169***
	(-6.775)	(-6.995)	(-6.596)	(-7.155)
Change in Interest	0.00760***	0.00702***	0.0103***	0.00935***
	(8.170)	(8.400)	(7.536)	(8.203)
Constant	0.137***	0.129***	0.158***	0.147***
	(10.35)	(10.77)	(8.513)	(9.473)
Observations	6,471	6,471	6,471	6,471
R-squared	0.928	0.929	0.911	0.918
Fixed Effects	Firm	Firm	Firm	Firm
Clustered Standard Errors	Firm	Firm	Firm	Firm