Hedging, Access to Credit, and Investment

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Abstract

We study how regulation impacts hedging incentives, affecting borrowing and investment in a setting where firms are not subject to corporate taxes. Tax-exempt real estate leasing companies must derive most of their gross revenue from rentals. Prior to 2004, derivatives income from closing out interest rate hedges constituted non-qualifying revenue, therefore increasing the risk that these entities could lose their tax-exempt status. When the Jobs Act of 2004 excluded these hedging income from the list of non-qualifying revenue, we find that interest rate hedging by tax-exempt real estate leasing companies with lower pre-reform rental revenue (those ex-ante more likely to lose their tax-exempt status) increased sizably relative to their counterparts with higher pre-reform rental revenue. In line with financial constraints, comprehensive geocoded transaction-level data shows that mortgage borrowing also increased for these firms, leading to more property acquisitions and improvements. We find no evidence that these firms rely on more highly leveraged capital structures post reform, consistent with no tax advantages of debt.

Keywords: Regulation, Jobs Act, tax-exempt real estate leasing companies, interest rate hedging, access to credit, investment.

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1 Introduction

Survey evidence indicates that a remarkable 71% of firms from around the world face material interest rate risk (Bodnar et al., 2018).[1] Given the importance of interest rate risk, it is perhaps unsurprising that the notional amount of interest rate derivatives is multifold bigger than the size of any other derivatives instrument. In 2007, for example, the notional amount of interest rate derivatives by U.S. commercial banks was $129.6 trillion, followed by $16.6 trillion for foreign exchange risk derivatives (Office of the Comptroller of the Currency, OCC). The objective of this paper is to study how regulatory frictions can affect a firm's incentives to hedge material risks, altering access to credit and investment.

We perform our analysis by focusing on tax-exempt real estate leasing companies (RELCs) structured as real estate investment trusts, which have a combined $2.5 trillion of assets under management in 2021. This industry provides an ideal setting to study corporate hedging because RELCs rely heavily on variable rate debt to finance their real estate investments, are, therefore, naturally subject to material interest rate risk, and disclose detailed hedging information in their corporate filings. Similar hedging information is not available for other industries.[2] Further, we have access to comprehensive geocoded transaction-level data on property acquisitions, improvements, and numerous other property characteristics. Mortgage credit information at the property level is also available. In our identification strategy, we take advantage of a regulatory change specific to RELCs that excluded derivatives income from closing out interest rate hedges from the list of non-qualifying revenue, limiting the risk that these entities could lose their tax-exempt status. These regulatory innovations were passed as part of the American Jobs Creation Act of 2004 (AJCA, Jobs Act) (Pub.L. 108–357, 118 Stat. 1418, enacted on October 22, 2004) (Brody et al., 2009).

Tax-exempt real estate leasing companies were introduced in the U.S. in 1960 with the objective of providing a vehicle for retail investors to get exposed to commercial real estate. Over time, these companies have adopted a fully-internally managed structure consisting of directly renting and managing the real estate properties that they own. To maintain their tax-exempt status, RELCs

[1] Interest rate risk might be in combination with other sources of risk, such as foreign exchange rate risk, which is material for 63% of the firms, commodity, and credit risk, which are material for 57% and 56% of firms, respectively, and geopolitical risk, which is material for 33% of the companies.

[2] Airlines are one exception (e.g., Carter, Rogers and Simkins, 2006a,b; Rampini, Sufi and Viswanathan, 2014), but there are only about 20-30 passenger airlines in the U.S. depending on the sample period, while our sample includes 150 companies.

must have at least 75% of their total assets consisting of commercial real estate properties, such as office, retail, and industrial properties, and cash holdings, generate at least 95% of their gross revenue from real estate revenue, distribute at least 90% of their income as dividends, and fulfill several other requirements (e.g., Geltner et al., 2014).[3] The Jobs Act of 2004 excluded derivatives income derived from derivatives transactions implemented to close out existing hedges from the 95% income test, effectively making it easier for RELCs to meet this income requirement. As a result, we expect that hedging by firms that could potentially fail the 95% income test (e.g., firms with a relatively low percentage of real estate revenue) should increase following the Jobs Act.

We start our empirical analysis by showing that RELCs that use a higher percentage of variable rate debt pay on average lower interest rates. This basic fact highlights that variable rate debt can be a desirable source of financing for these entities. It could, however, increase interest risk if firms cannot properly use interest rate derivatives to hedge. We also show that exit propensity is significantly higher for companies with lower real estate revenue, those more likely to fail the 95% income test. These findings suggest that failing the 95% income test might be costly for RELCs. Therefore, they might have preferred to limit hedging prior to the Jobs Act to mitigate the potential adverse effects of derivatives income on the gross income test. However, given that following the Jobs Act derivatives income is no longer affecting the 95% income test, we should expect a comparatively larger increase in hedging for firms that are ex-ante more likely to fail the test. Our main prediction is that hedging will increase for pre-event low real estate revenue firms (treated firms) relative to pre-event high real estate revenue firms (control firms) after the Jobs Act of 2004.

Using a difference-in-difference design, we find that hedged variable rate debt as a proportion of total debt and total variable rate debt increased by 7.2 percentage points (p.p) and 10.8 p.p., respectively, for treated firms relative to control firms post Jobs Act. In line with our prediction, these findings suggest that following the reform, interest rate hedging by firms facing potentially ex-ante higher regulatory costs of hedging (pre-event low real estate revenue firms) increased sizably relative to firms facing potentially ex-ante lower regulatory costs of hedging (pre-event high real estate revenue firms).

[3]Some of these other requirements include maintaining at least 100 shareholders, holding real estate assets for at least two years, and limiting ownership of the outstanding value of the securities of any one issuer to no more than 10%.

Next, we study financing and real activities of treated firms relative to control firms following the Jobs Act. In the financial distress models of risk management (Smith and Stulz, 1985; Mello and Parson, 2000; Purnanandam, 2008), for any given level of debt, hedging leads to a higher debt capacity by lowering the risk of financial distress. In our setting, interest rate hedging further increases a firm debt capacity by allowing access to variable rate debt, which is in larger supply given that these loans allow lenders to match the interest-rate exposure of their own short-term liabilities.[4] In principle, affected RELCs could utilize their higher debt capacity to adopt a more highly leveraged capital structure. However, because there are no tax advantages of debt for RELCs, the treated firms might have limited incentives to change their capital structure post reform. To the extent that these firms are financially constrained (or hedging lowers the overall cost of capital), we can expect borrowing and investment to increase post reform, leading to lower exiting risk. We also expect higher access to credit for affected firms to occur through higher variable rate debt and long-term debt, which are both more exposed to interest rate risk that can be hedged more effectively post reform. We further expect the volatility of interest rate accounting for the effect of hedging to decrease.

Comprehensive geocoded property-level data show support for all these predictions. We find that property-level mortgage financing increased for treated firms relative to control firms post Act. We also find that treated firms invest significantly more in property acquisitions, initial improvements, and follow-up improvements. These properties are more likely to be class A (premium buildings in central business districts) and display significantly higher occupancy rates. Corporate level data show that increased access to credit occurs through higher variable rate debt and long-term debt. We do not find any change in firm leverage. In line with theory, our finding suggest that by lowering the regulatory cost of hedging, the Jobs Act allowed treated firms to access potentially cheaper variable rate debt with a longer maturity, leading to higher real estate investments and a lower exit propensity. In our empirical design, closing out hedges is easier after the reform. Therefore, we should expect refinancing, which typically require closing out hedges, to increase post Act. We find support for this prediction.

Our analysis further reveals that treated firms are significantly less likely to make diversifying

[4]However, hedging could lead to lower debt capacity if firms face collateral constraints and diverting collateral away from borrowing to hedging overrides the benefit on debt capacity coming from lower risk of financial distress and increased access to variable rate debt (Rampini and Viswanathan, 2010, 2013).

property acquisitions post Jobs Act. Specifically, the propensity to purchase a property in the firm's top 3 property categories or top 3 MSAs decreased by 16.1% and 7.7%, respectively, for treated firms relative to control firms post reform. Because diversifying acquisitions can potentially contribute to reduce cash flow volatility, our combined findings suggest that following the increase in financial hedging with the Act, treated firms reduced operational hedging through diversification focusing more on their core properties and geographies.

A key assumption of any difference-in-difference estimation is that the outcome variable for treated, and control firms follows a parallel trend prior to the treatment. In our setting, the parallel trend assumption requires that, prior to the Jobs Act, hedging for treated and control firms follows a parallel trend. A violation of this assumption could be problematic because it would suggest that a trend specific to treated firms, rather than the reform, is the reason that hedging increased for treated firms. We find no indication of a violation of parallel trends in our formal tests. Relatedly, we re-estimate our base hedging models over several time windows prior to the Jobs Act. We find no evidence of change in the hedging policies of the treated firms relative to the control firms in these "placebo" pre-reform windows (Roberts and Whited, 2013). Overall, this analysis mitigates the concern that a pre-reform trend in the hedging policies of treated firms relative to control firms could explain our main results.

Our findings pass a battery of robustness and validity tests. We find that our results hold when we consider alternative sample periods, when we control for interest rates and commercial real estate credit and fundamentals, when we use alternative proxies of real estate exposure (e.g., real estate & cash holdings), when we match treated and control firms using the Abadie and Imbens' (2006) matching estimator, and when we saturate our models with potentially important pre-event control variables. Notably, we do not find any change in the proportion of fixed rate debt swapped to variable rate debt. In all our regressions, in addition to firm-fixed effects, we control for property-quarter year fixed effects. This helps mitigate the concern that variation in economic incentives for hedging correlated with our real estate revenue variable could be the reason why hedging increases for treated firms after the reform. To further address this concern, we re-estimate our hedging regressions for a sample of non-tax-exempt real estate companies, which are not subject to the 95% income test and are, therefore, unaffected by the Jobs Act but are otherwise very similar to the RELCs used in our main tests. Relatedly, we estimate our hedging regressions for a sample of

foreign RELCs. We similarly estimate hedging propensity regressions for a broader sample of non-affected non-financial firms. Importantly, we do not find any change in hedging in these placebo tests, making it unlikely that our hedging results could be driven by a channel other than the Jobs Act.

Our article is related to the literature on the effects of hedging frictions on corporate risk management. Cornaggia (2013) finds that the introduction of new crop insurance policies led to an increase in the productivity of the U.S. agricultural sector. Focusing on energy firms, Pérez-González and Yun (2013) show that the introduction of weather derivatives tied directly to the energy sector (by reducing basis risk) made it easier for weather-sensitive firms to access credit and invest. Similarly, Gilje and Taillard (2017) show that, following an exogenous increase in basis risk, oil and gas firms reduced hedging, which, in turn, led to lower investment, valuation, and financing for the affected firms. Giambona and Wang (2020) find that following a regulatory reform that reduced bankruptcy costs for the non-defaulting derivatives counterparties, hedging and performance increased for financially constrained firms. Giambona et al. (2023) further document that hedging allows financially constrained firms to improve their competitive position. Our paper is also broadly related to the literature on the effect of hedging on growth in banking (Schrand and Unal, 1998), merger activities (Garfinkel and Hankins, 2011), operational hedging (Hankins, 2011; Almeida et al., 2017), and payout policies (Bonaimé, Hankins and Harford, 2014). Almeida et al. (2020) show that firms prefer purchase obligations to derivatives hedging when they approach financial distress. Unlike previous studies, we focus on how regulatory compliance affect corporate hedging, access to credit, and investments.

Our paper contributes also to the accounting literature on hedge accounting regulation, FAS 133. Through hedge accounting, firms can offset the profit and loss volatility arising from marking-to-market the derivatives with the reciprocal profits and losses in the hedges. Hedge accounting, therefore, could encourage corporate hedging by reducing accounting-driven earnings volatility. The accounting literature, however, is split on whether hedge accounting is beneficial for risk management, with some studies indicating that hedge accounting might actually lead to less effective risk management (Sapra, 2002; Choi, Mao and Upadhyay, 2015), and others suggesting that it leads to no significant changes (Singh, 2004; Park, 2004) or more effective risk management (Zhang, 2009). Although the Jobs Act is not directly related to hedge accounting, it regulates the treatment of

derivatives income for the purpose of the 95% income test. Therefore, our findings can help shed light on the hedging accounting debate by showing, in a natural experimental setting, that effective derivatives accounting can lead to higher hedging.

The paper closer to ours is Sen's (2022), showing that the inability of the insurance regulators to recognize certain types of risk hinders hedging for life insurance companies. In our setting, we exploit regulatory failures in the form of uncoordinated efforts between regulators – derivatives regulators promoting derivatives usage by end-users, and household finance regulators promoting commercial real estate exposure for retail investors – as the regulatory friction hindering derivatives hedging by tax-exempt real estate leasing companies prior to the Jobs Act. As the Jobs Act mitigates these regulatory failures, the ability of tax-exempt real estate leasing companies to increase interest rate hedging allows them to reduce their structural exposure to material interest rate risk. Notably, comprehensive transaction-level data further shows that higher hedging allows affected firms to obtain significantly more mortgage credit that they use to fund property acquisitions and improvements. Overall, our results highlight that lack of coordination between regulators can ultimately be detrimental to retail investors seeking to gain exposure to commercial real estate.

Despite the significant shift in market stability regulation following the financial crisis, there is limited evidence on how the regulatory framework impacts corporate hedging. In response to the global financial crisis, the Dodd-Frank Act of 2010 required the introduction of market clearing and several compliance requirements affecting both financial institutions and corporate end-users. The regulations impacted swaps especially, which for about 70% include instruments used to manage interest rate risk,[5] the single most important source of risk for firms worldwide. While this might improve the stability of financial markets, our findings highlight that it is important to evaluate the extent to which this might hinder corporate hedging. Ultimately, our article can help inform the policy debate by highlighting the importance for government agencies to coordinate regulatory efforts to balance the need for higher market stability with the consequences for corporate risk management and firm value that limiting hedging by imposing more stringent regulations might have.

The rest of the paper is organized as follows. The effect of the Jobs Act on the treatment of

[5]Based on data from the OCC Quarterly Report on Bank Trading and Derivatives Activities and the Commodities Future Trading Commission Weekly Swaps Report.

derivatives income for RELCs is discussed in Section 2. Section 3 discusses data and empirical design. Section 4 presents our main hedging results, validity tests, and robustness tests. Results on financing and real activities are also presented in Section 4. Section 5 concludes.

2 The Jobs Act of 2004 and Derivatives Income for Real Estate Leasing Companies

In this section, we discuss the legislative history of the American Jobs Creation Act of 2004 (Pub.L. 108–357, 118 Stat. 1418, enacted on October 22, 2004). We also analyze how the Jobs Act changed the treatment of derivatives income for tax-exempt RELCs, which is the centerpiece of our identification strategy. This reform came 7 years after the changes in the treatment of derivatives introduced by the REIT Simplification Act of 1997.

The Jobs Act of 2004 was part of the economic policy agenda of President George W. Bush aiming at reducing taxes for individuals and business entities. This agenda faced significant opposition. The Economic Growth and Tax Relief Reconciliation Act of 2001, the first tax reducing legislation focusing on personal income tax cuts, was passed using the reconciliation process to bypass the Senate filibuster. The Jobs and Growth Tax Relief Reconciliation Act of 2003, which also focuses on personal income tax cuts, was fiercely opposed by many, including President Bush's own Economic Advisement Council, Treasury Secretary Paul H. O'Neill (fired in December 2002), Congressional Budget Office, Congressional Joint Committee on Taxation, 450 economists (including 10 Nobel Price winners), and Democrats. The Jobs Act of 2004 was the last important piece of legislation part of this economic agenda, focusing on business tax cuts, which the Congressional Budget Office estimated would add $1.8 trillion to the U.S. national debt. Despite the strong opposition, President Bush mastered to implement it successfully because public consensus was relatively easy to build in the aftermath of the dot-com bubble crisis of 2001. Most importantly, for the first time since the presidency of Eisenhower in 1953-1954, a Republican president could count on a majority in both the House and Senate for a relatively long-period of time, 2003-2006. These circumstances made it easier for President Bush to pass tax cut measures that faced a strong opposition.

For our purposes, the most important change introduced by the Jobs Act of 2004 is the amendment of § 856 of the Internal Revenue Code, which concerns real estate investment trusts. In

particular, the Act amended subsection 856(c)(5)(G) of the Code, which after the reform reads as follows: "(G) Treatment Of Certain Hedging Instruments. Except to the extent provided by regulations, any income of a real estate investment trust from a hedging transaction (as defined in clause (ii) or (iii) of section 1221(b)(2)(A)) which is clearly identified pursuant to section 1221(a)(7), including gain from the sale or disposition of such a transaction, shall not constitute gross income under paragraph (2) to the extent that the transaction hedges any indebtedness incurred or to be incurred by the trust to acquire or carry real estate assets."[6]

Notably, the accompanying legislative history of the Jobs Act of 2004 contained in H.R. Rep. No. 108-755 (p. 333) makes it clear that the tax treatment of derivatives transactions used by real estate investment trust firms to reduce interest risk are prospectively to be conformed to § 1221 of the Internal Revenue Code. This is important because Section 1.1221-2(d)(3) interprets counteracting hedges broadly by stating: "if a transaction is entered into primarily to offset all or any part of the risk management effected by one or more hedging transactions, the transaction is a hedging transaction."

The pre-existing 1997 regulation only allowed RELCs to counteract an existing hedging position by terminating or selling it. Both effectively limited the ability of a RELC to exit an existing position. Early terminations require the consent of the counterparty, unless they are pre-negotiated in the derivatives agreement. Selling an existing position is even more difficult because in addition to counterparty consent, it is not easy to find suitable buyers for tailor-made OTC interest rate swaps, which are the most commonly used hedging instruments by RELCs. Closing out an existing hedging position by entering into a new derivatives transaction to offset the original hedge was not allowed by the 1997 regulation. Offsetting hedge income would have constituted non-qualifying income for the purpose of the 95% income test. That is, these income would have been added to total gross revenue (the denominator of the 95% income test) but not real estate revenue, making it more difficult for RELCs to pass the 95% test.

[6]The REIT Investment Diversification and Empowerment Act of September 29, 2006, which was eventually passed as part of the Housing and Economic Recovery Act on July 30, 2008, excluded derivatives income from the list of non-qualifying income for the purpose of the 75% income test, therefore further reducing constraints to derivatives hedging for low real estate revenue firms. Contrary to the 95% income test, which accounts as qualifying income some passive income not strictly related to property rental, such as dividends and gains from the sale of stock securities, only rental revenues are part of the numerator of the 75% income test. Prior to 2008, any other gross revenue, such as gross income from derivatives transactions (even those used for hedging), would have been added to the denominator of the 75% income test, making it more difficult for firms to pass this test. The 2008 reform excluded these income from the numerator of the 75% test, making it easier for firms to pass the test.

Instead, the Jobs Act of 2004, through Section 1.1221-2(d)(3), treats any transactions put in place to offset all or any part of a pre-existing hedge as a hedging transaction. Therefore, after 2004, offsetting hedging income were excluded altogether from the 95% income test, effectively eliminating any concerns for RELCs that closing out an existing hedging position could have impacted their ability to meet the 95% income test. This interpretation is further confirmed in several of the IRS responses to requests from REITs to exclude income from different types of offsetting hedging transactions from their 95% income test. For example, in the Private Letter Ruling (PLR)-135684-14, the IRS, citing Section 1.1221-2(d)(3), explicitly allowed for an offsetting swap income to be excluded from the 95% income test even if "the cash flows of a counteracting hedge may not offset on a dollar-for-dollar basis the cash flows of a related original hedge."[7]

In addition, the Jobs Act amended subsections 856(d)(8)(A) and (B) of the Code to make it easier for RELCs to consider as part of their rental income those rents received from their own taxable REIT subsidiaries (TRS). In particular, prior to the reform, the law required that, for a REIT to be able to use rents received from their own TRS as part of their rental income, the following two conditions have to be met at all times: (1) at least 90% of leased space of the property is rented to entities other than the TRS and (2) the rent the TRS pays to the REIT is comparable to rents paid for comparable space by other unrelated tenants of that specific property (R&H, 2004; Edwards and Bernstein, 2005). The Act eliminated the requirements that these conditions have to be met at all times, therefore making it easier for RELCs to add rents from their own TRS to the numerator of the 75% income tests. This change creates incentives for RELCs to hedge more because TRS rents are added to the numerator of the 75% income test, mitigating the potential negative effect on the test from derivatives income, which are added to the denominator of such test.

The amendments introduced by the Jobs Act are important because RELCs use significant amount of debt to finance their property acquisitions. As Figure 1 shows, pre-Jobs Act, about 32% of all interest rate swaps and caps newly originated by the firms in our sample had a maturity of more than 3 years, out of which 18% had a maturity of more than 5 years. This suggests that if RELCs decide to refinance their existing debt because market interest rates are favorable,[8] they will

[7]Similar language is used in related PLR rulings (e.g., IRS, PLR-103634-13; IRS, PLR-135685-14; IRS, PLR-110336-11; IRS, PLR-121929-12).

[8]Typically, there are penalties associated with early termination of commercial real estate loans. This, however,

also need to close out the related (potentially, relatively long maturity) hedges. Although RELCs typically hold properties for a relatively long period of time, as Figure 2 shows, early debt payoff (debt repayment in excess of maturing debt) is not uncommon, increasing from 11.7% pre event to 12.4% post event. RELCs will need to close out open hedges if they pay off their debt earlier, unless the existing hedges are assumable in connection with the new loan.

[Figure 1]

[Figure 2]

In our identification strategy, because the Jobs Act allowed RELCs to exclude offsetting hedging income from the 95% income test, effectively eliminating any concern that such income could make RELCs fail the test, hedging by lower rental revenue entities (those ex-ante more likely to fail the test) should increase post reform relative to high rental revenue firms.[9] In line with theory, we also expect higher hedging to facilitate access to credit for the affected firms post Act, leading to an increase in property investment.

3 Data and Empirical Design

We obtain our data from the following sources. Quarterly firm-level financial data for the tax-exempt real estate leasing companies (RELCs) structured as real estate investment trusts (SIC 6798) as well as non-tax-exempt real estate companies (SIC 6512, 6794, and 7011) and homebuilders (SIC 1531) used in this paper is from S&P Global Market Intelligence SNL Real Estate. Figure A1 in the Appendix presents key figures of the tax-exempt real estate leasing industry in 2021. Importantly, for our purposes, this database contains detailed firm-level information on the amount of variable interest rate debt converted into fixed rate debt using swaps and caps,[10] as well as the amount

does not preclude that prevailing market rates make refinancing a suitable option.

[9] Failure to meet the 95% or 75% income test does not necessarily make a REIT lose its tax exempt status if such failure can be attributed to reasonable cause and not to willful neglect. However, even in such case, failing these tests is very costly. The greater of non-qualifying income based on the 95% or 75% income test is converted into net income by multiplying it by the ratio of the REIT's net to gross income and is subject to a 100-percent tax (Internal Revenue Code § 857(b)(5)). The costs associated with losing their REIT status or paying stiff corporate taxes highlight that low rental revenue RELCs faced significant constraints in terms of derivatives access prior to the Jobs Act.

[10] All the hedging companies in our sample, except for Essex Property Trust, Inc., use only interest rate swaps to manage interest rate risk. Essex Property Trust, Inc. uses caps.

of fixed rate debt that has been swapped to variable rate debt. Transaction-level property data is from the SNL Property Transactions database. Data on derivatives maturity is hand-collected from Item 7(A), 10-K/10-Q SEC filings, section entitled "Quantitative and Qualitative Disclosure about Market Risk". Data on the number of federal regulatory restrictions is from the website of the Mercatus Center at George Mason University (*https://www.reghub.ai/*). Information on the implications of the Jobs Act for our sample of real estate companies was obtained from LexisNexis, news agencies, and extensive discussions with industry experts.

Figure 3 reports the distribution of the tax-exempt real estate leasing companies in our sample by property type. Our sample firms specialize in eight different property type, including diversified real estate investment (9.2%), health care properties (8.4%), hotel (8.6%), industrial (8.7%), multifamily (13.3%), office (20.8%), retail (25.3%), and specialty (5.8%)[11]. Figure 4 reveals that our sample firms rely significantly on long-term debt. In the quarter prior to the passage of the Jobs Act (2004q2), these firms had 4.6% of debt maturing in the current year, 9.5%, 11.3%, 12.4%, and 11.0% in one to 4 years from 2004q2, and a remarkable 50.9% maturing in year 5 and the following years. The significant amount of long-term debt suggests that, even in a low interest rate environment, interest risk is potentially a material source of risk for the firms in our sample. Our hand-collected maturity data reveals that interest rate swap maturity ranges from 2 years to 9 years.

[Figure 3]

[Figure 4]

Tax-exempt real estate leasing companies provide an ideal setting for studying corporate risk management, for the following reasons. First, debt is one of the main sources of financing for these entities. During 2001–2007, about 50% of all the assets under management by tax-exempt real estate leasing companies was financed with debt. Moreover, more than a quarter of all debt outstanding was variable rate debt, which is naturally subject to significant interest rate risk. Not surprisingly, during 2004–2007, interest rate expenses at 24.3% of total expenses were higher than

[11]Diversified companies follow a diversified investment strategy consisting of investing in different property types. The hotel category includes hotels and casinos. Retail includes shopping centers, regional malls, and other retail types. The specialty group includes manufactured home, self-storage, and cineplex theaters.

depreciation expenses, which accounted for 23.8% of total expenses, and only lower than rental expenses, which were about 34.4% of total expenses (Figure 5). Second, because of the potential size of interest rate risk, tax-exempt real estate companies report detailed information on hedged variable rate debt, the type of derivatives used, notional amount, and maturity in their 10-Ks (Item 7(A)—"Quantitative and Qualitative Disclosures about Market Risk"). Similar hedging information is not available for other industries. Third, we also have access to similar hedging data for non-tax-exempt real estate companies, which are otherwise operating like the firms in our sample, that can serve as a natural counterfactual sample to perform placebo tests. Fourth, the importance of debt financing for real estate entities makes them an ideal setting to study interest rate risk, which is the first material source of risk for 71% of firms worldwide (Bodnar et al., 2018). Unsurprisingly, the notional amount of interest rate derivatives is multifold bigger than the size of any other hedgeable risk derivatives instrument. For example, in 2007 the notional amount of interest rate derivatives by U.S. commercial banks was $129.6 trillion, followed by $16.6 trillion for foreign exchange risk derivatives (Figure 6). Therefore, although we are focusing on real estate entities, our analysis can help shed light on the role of regulation for one of the most important sources of hedgeable risk. Fifth, focusing on one industry makes it less likely that differences in economic fundamentals across industries explain changes in risk management policies.[12]

[Figure 5]

[Figure 6]

To test whether tax-exempt real estate companies with low real estate revenue hedge variable rate debt more intensively following the Jobs Act, we estimate the following difference-in-difference model (e.g., Bertrand, Duflo and Mullainathan, 2004; Athey and Imbens, 2006; de Chaisemartin and D'HaultfŒuille, 2018):

$$\begin{aligned} Hedged\ Debt_{i,q} = \beta \cdot (Pre\text{-}event\ Low\ Real\ Estate\ Revenue_{i,Pre\text{-}event} \times Post\ Jobs\ Act_q) \\ + \gamma \cdot Log\ Assets_{i,q-1} + y_i\ + p_i \times z_q + \ \epsilon_{i,q} \end{aligned} \tag{1}$$

[12]Theoretically, Adam, Dasgupta and Titman (2007) are one of the first papers to analyze the relationship between industry characteristics and hedging incentives.

where $Hedged\ Debt_{i,q}$ is hedging by tax-exempt real estate leasing company i in quarter q. We measure hedging with $Hedged\ Variable\ Rate\ Debt/Total\ Debt$, the ratio of hedged variable rate debt to total debt, and $Hedged\ Variable\ Rate\ Debt/Total\ Variable\ Rate\ Debt$, the ratio of hedged variable rate debt to total variable rate debt. *Pre-event Low Real Estate Revenue* is an indicator for companies with real estate revenue below the sample bottom quartile of 0.906 in the year before the passage of the American Jobs Creation Act (2003q3-2004q2), where real estate revenue is the ratio of the sum of rental revenue plus operating real estate revenue, including, for example, revenue from hotel properties, to total gross revenue. In addition to real estate related revenue, total gross revenue includes also non-qualifying revenue, which tax-exempt real estate leasing companies derive from non-rental activities, such as tenant-specific trash collection, cleaning services, drycleaning pick up, etc.

The logic of our pre-event low real estate revenue indicator is that, prior to the Jobs Act, firms with a low percentage of real estate revenue are more likely to be concerned with potential income from hedging transactions that could make them lose their tax-exempt status by lowering the percentage of total gross income derived from real estate activities. It is important to stress that the 95% income test is based on total gross revenue, therefore potential derivatives losses played no role in the test prior the the reform or after. Following the Act, hedging income is no longer added to total gross revenue for the purpose of the 95% income test. As a result, pre-event low real estate revenue firms will engage in more hedging activities because they are less concerned of losing their tax-exempt status. Detailed variable definitions for all the variables used in the paper are presented in Tables A1 of the Appendix.

In robustness tests, we also consider two alternative proxies for real estate exposure. The first alternative proxy is *Pre-event Low Total Operating Revenue*, an indicator for companies with total operating revenue below the sample bottom quartile of 0.927 in the year before the passage of the American Jobs Creation Act (2003q3-2004q2), where total operating revenue is the ratio of the sum of rental revenue, operating real estate revenue, mortgage income, and gains on sales of real estate to total gross revenue. The second alternative proxy is *Pre-event Low Real Estate & Cash Holdings*, an indicator for companies with total real estate & cash holdings below the sample bottom quartile of 0.779 in the year before the passage of the American Jobs Creation Act (2003q3-2004q2), where real estate & cash holdings is the ratio of real estate asset plus cash and cash equivalent to total

assets.

Post Jobs Act is an indicator equal to 1 for the year-quarters after 2004q2, *Log Assets* is the natural logarithm of total assets lagged one quarter, and y_i and $p_i \times z_t$ are respectively firm fixed effects and property type indicators, p_i, interacted with year-quarter interacted fixed-effects, z_t. Standard errors are clustered at the firm level. Our main analysis focuses on the sample period 2001q3–2007q2: a twenty-four-quarter time window centered on 2004q3, which we consider the quarter of the passage of the reform. The American Jobs Creation Act of 2004 (AJCA) (Pub.L. 108–357, 118 Stat. 1418) was introduced in the House on June 4, 2004 (2004q2), passed the House on June 17, 2004 (2004q2), passed the Senate on July 15, 2004 (2004q3), and was signed into law by President George W. Bush on October 22, 2004 (2004q4). In our empirical design, we consider 2004q3 as the quarter of the passage of the reform because laws are very likely to be enacted after having passed both the House and the Senate unless the President vetoes them, which is unlikely to occur.[13] In our robustness tests, we also perform our analysis for the sample periods 2002q3–2006q2, 2000q3–2008q2, and 1994q4–2009q1. The focus of our analysis is on *Pre-event Low Real Estate Revenue* $\times$ *Post Jobs Act* (our difference-in-difference estimator), which we expect to enter the estimation with a significantly positive coefficient.

Table 1 reports basic descriptive statistics during the pre-reform period (2001q3-2004q2) of hedged debt and other selected variables for the combined sample, pre-event low real estate revenue companies (treated firms), and pre-event high real estate revenue companies (control firms). The table shows that before the Jobs Act treated firms hedged a significantly lower percentage of variable rate debt than control firms both relative to total debt (3.4% vs. 7.6%) and total variable rate debt (9.9% vs. 21.8%). That is the case although variable rate debt as a percentage of total debt is higher for treated firms compared to control firm, (32.2% vs. 27.6%). Overall, these patterns are in line with the logic of our argument that, although access to potentially cheaper variable rate debt is valuable to low real estate revenue firms, these firms rely less intensively on interest rate derivatives because pre-reform derivatives income could make them fail their 95% income test and lose their tax-exempt status. Average book assets are \$1.628 billion for treated firms compared with \$2.283 billion for control firms. Treated firms also have significantly lower leverage than control firms (42.6% vs. 52.9%). By construction, real estate rental revenue is significantly lower for treated

[13]It is also worth noting that Republicans had a majority in both the House and the Senate in 2004.

firms. Table A2 in the Appendix reports detailed descriptive statistics for all the variables used in the paper for treated firms, control firms, and the combined sample over our sample period 2001q3–2007q2.

[Table 1]

Figure 7 displays geographical heat maps of headquarters (Panel A) and incorporation (Panel B) states of the RELCs in our sample in 2003. As it can be noted, RELC headquarters are located across the country, with the top five states being California and New York (16 firms), Maryland (10 firms), and Florida and Illinois (8 firms). The top five states in terms of number of incorporation are Maryland (88 firms), Delaware (13 firms), and California, North Carolina, and Ohio with 3 firms each. Notably, because of protective anti-takeover regulation and other favorable legislation, Maryland is RELCs' preferred state of incorporation. This is different from other non-financial firms that more typically incorporate in Delaware.

[Figure 7]

Figure 8 displays the geographical location across U.S. Core-Based Statistical Areas (CBSAs) of property owned by treated and control firms in 2004q2. Although control firms own more properties than treated firms, Figure 8 visually shows that the two groups are very similar in terms of the CBSAs where they own properties.

[Figure 8]

Figure 9 displays lease maturity (Panel A) and financing patterns (Panel B) for the tax-exempt real estate leasing companies in our sample in 2004q2. There is significant variation in lease maturity across property types. For diversified, health care, industrial, office, and retail companies 90+% of the leases expire between 2 to 5 years from the current year and 6+ years from the current year. Notably, for the health care segment, 78% of the leases expires in year 6+ from current year. Unsurprisingly, all leases expire within 1 year for multifamily and speciality, which includes mainly manufactured homes. Typical lease maturity is one day for hotels. Panel B, shows also significant variation in financing patterns across property types. Firms could demand different levels of exposure to leverage and variable rate debt to match the characteristics of their cash

flows and assets or for other reasons. Ultimately, this heterogeneity highlights the importance of controlling for property type in our regressions.

[Figure 9]

To mitigate the concern that differences between treated and control firms could bias our results, we: (1) control for lagged firm size in all regressions; (2) perform within-firm estimations by including firm-fixed effects in our regressions; (3) control for fundamentals and regulatory differences across property types with property-quarter-year fixed effects; (4) assess the robustness of our findings to the parallel trend assumption; (5) use the Abadie and Imbens (2006) nearest-neighborhood matching estimator to match treated and control firms; (6) saturate our hedging regressions with pre-reform firm characteristics. Importantly, the inclusion of property-quarter-year fixed effects in all our main regressions further implies that we are comparing the hedging policies of treated firms and control firms operating in the same commercial real estate segment and hence potentially affected by the same industry-wide economic and regulatory shocks with the only difference being that treated firms are subject to the Jobs Act, while the control firms are not. Overall, our main findings and numerous validity and robustness tests suggest that results are unlikely to be influenced by differences in firm characteristics across treated and control firms. Instead, our results indicate that the increase in hedging for the affected firms relative to the control firms is a direct consequence of the Jobs Act of 2004.

Table A3 in the Appendix reports selected correlations. Notably, real estate revenue has a correlation coefficient of 0.565, statistically significant at the 1% level, with operating profitability, the ratio of net operating income to total assets, but it is uncorrelated with total profitability, the ratio of net income to total assets. Real estate revenue is also positively correlated with leverage, but uncorrelated with total assets. Overall, these correlation patterns mitigate the concerns that our pre-event low real estate revenue indicator could be capturing higher risk of financial distress, as it would have been the case if real estate revenue was positively correlated with total profitability, and negatively correlated with leverage. Instead, in line with the logic of our empirical design, the variable is measuring the extent to which tax-exempt real estate leasing companies are generating revenue from typical rental activities as opposed to potentially non-qualifying activities.

We start our empirical analysis by showing that RELCs that use a higher percentage of variable

rate debt pay on average lower interest rates. One could argue that tax-exempt real estate leasing companies concerned about losing their tax-exempt status because of potentially non-qualifying income originating from their hedging activities could use fixed-rate debt instead of variable rate debt. This is possibly one of the reasons why variable rate debt is just around 28.7% of total debt for our sample during the pre-reform period, Table 1. There are advantages, however, with variable rate debt, which is in larger supply and typically less expensive than fixed rate debt because these loans help lenders match the interest-rate exposure of their own short-term liabilities. Typically, investment and commercial with strong credit ratings are the counterparties in these swap transactions. The bank usually offsets the swap through an inter-dealer broker and just keeps a fee for setting up the original swap transaction. Therefore, variable rate debt is a potentially desirable source of financing for these RELCs. However, it is also a source of funding that increases interest risk if firms cannot properly use interest rate derivatives to hedge. To study the relationship between variable rate debt and interest rate in our sample, we estimate the following regression:

$$\begin{aligned} Weighted\ Average\ Interest\ Rate_{i,q} = \beta \cdot (Variable\ Rate\ Debt/Total\ Debt)_{i,q-1} + \gamma \cdot Leverage_{i,q-1} \\ + \delta \cdot Log\ Assets_{i,q-1} + y_i\ + p_i \times z_q + \ \epsilon_{i,q} \end{aligned} \tag{2}$$

where $Weighted\ Average\ Interest\ Rate$ is the weighted average interest rate on all variable and fixed rate debt for firm i in quarter q, $Variable\ Rate\ Debt/Total\ Debt$ is the lagged ratio of the variable rate debt to total debt, $Leverage$ and $Log\ Assets$ are the ratio of total debt to asset and the natural logarithm of total assets, respectively, also lagged one period, and y_i and $p_i \times z_t$ are respectively firm fixed effects and property type indicators, p_i, interacted with year-quarter interacted fixed-effects, z_t. Standard errors are clustered at the firm level. Table 2 reports results from this estimation. Focusing on column [4], specification controlling for both lagged leverage and log assets, the significantly negative coefficient on the lagged $Variable\ Rate\ Debt/Total\ Debt$ suggests that weighted average interest rate is lower for firms using more variable rate debt. The effect is also economically sizable. A one-standard deviation increase in lagged $Variable\ Rate\ Debt/Total\ Debt$, which is 0.834 for the combined sample (Table A2, Panel C), is associated with a 78.9 basis points

lower weighted interest rate, obtained by multiplying the coefficient of -0.946 (from Table 2, column [4]) by 0.834. This effect corresponds to a 12.7% decrease relative to the combined sample average weighted interest rate of 6.213% in Table

[Table 2]

The logic of our empirical design is that low real estate revenue RELCs hedge less because they are concerned that potential non-qualifying derivatives income could make them lose their tax-exempt status. While in practice these entities rarely lose their tax-exempt status, this might occur because they take corrective actions, such as combining their operations with other entities, pay stiff tax penalties, or might be forced out of business before they formally lose their tax-exempt status. To shed light on this mechanism, we identify the firms exiting our sample during the pre-reform period and test if the propensity to exit is related to real estate revenue. In total, there are 25 companies exiting our sample during 2001q3-2004q2. Using data from corporate reports, company websites, and news agencies, we find that 15 entities exited because they were acquired by another tax-exempt real estate entity and the remaining 10 because they were acquired by another type of real estate company. To test whether real estate revenue affects exit propensity, we estimate the following regression during the pre-reform period, 2001q3–2004q2:

$$\begin{aligned} Exit\ Propensity_{i,q} = \beta \cdot Real\ Estate\ Revenue_{i,q-1} + \gamma \cdot Leverage_{i,q-1} + \delta \cdot Total\ Profitability_{i,q-1} \\ + \eta \cdot Log\ Assets_{i,q-1} + y_i\ + p_i \times z_q + \ \epsilon_{i,q} \end{aligned} \tag{3}$$

where *Exit Propensity* is an indicator for firm i existing the sample in quarter q, *Real Estate Revenue* is the lagged ratio of the sum of rental revenue plus operating real estate revenue to total revenue, *Leverage*, *Total Profitability*, and *Log Assets* are the ratio of total debt to asset, the ratio of net income to assets, and the natural logarithm of total assets, respectively, also lagged one period, and y_i and $p_i \times z_t$ are respectively firm fixed effects and property type indicators, p_i, interacted with year-quarter interacted fixed-effects, z_t. Standard errors are clustered at the firm level.

Table 3 reports results from these estimations. Focusing on column [5], the significantly negative

coefficient on lagged real estate revenue indicates that a one-standard deviation increase in real estate revenue, which is equal to 0.145 during the pre-reform period, is associated with a 2.2% decrease in a firm exit propensity, which is more than double the average exit propensity of 1% during the pre-reform period. Overall, the evidence in Table 3 indicates that tax-exempt real estate leasing companies are significantly less likely to exit if real estate revenue is a significant percentage of total revenue, controlling for leverage, a proxy for financial distress, profitability, a proxy for performance, and log assets, a proxy for size. These findings contribute to validate our empirical design by highlighting that non-qualifying income, such derivatives income before the Jobs Act, can cause affected firms to exit the sample and potentially lose their tax-exempt status by lowering their real estate revenue.

[Table 3]

In addition to hedging, we test several other predictions motivated by the financial distress models of risk management (Smith and Stulz, 1985; Mello and Parson, 2000; Purnanandam, 2008). In our setting, hedging leads to a higher debt capacity by lowering the risk of financial distress. Interest rate hedging further increases a firm debt capacity by allowing access to variable rate debt, which is in larger supplier because it is subject to lower funding risk. To the extent that affected firms are financially constrained (or hedging lowers the overall cost of capital), we can expect borrowing and investment to increase post reform. Because higher hedging in our setting allows affected firms to manage interest rate risk, we also expect higher access to credit for affected firms to occur through higher variable rate debt and long-term debt, which are both more exposed to interest rate risk. We further expect the volatility of interest rate accounting for the effect of hedging to decrease.

4 Results

4.1 Hedging for Low Real Estate Revenue Companies after the Jobs Act

In this section, we examine the effect of the Jobs Act of 2004 on corporate hedging for pre-event low real estate revenue firms (treated firms) relative to pre-event high real estate revenue firms (control

firms) by estimating Eq. 1 – difference-in-difference model.[14] We discuss validity and robustness tests in section 3.2. In section 3.3, we examine how the increase in hedging affected access to credit and real activities of low real estate revenue companies relative to control firms following the reform (Smith and Stulz, 1985; Mello and Parson, 2000).

Table 4 presents results from the estimation of our difference-in-difference hedging regression– Eq. 1. Across all four estimations in Table 4, the coefficient on the interaction term of interest, *Pre-event Low Real Estate Revenue* × *Post Jobs Act*, is positive and statistically significant at the 5% level or higher. The effect is also economically large. Focusing on columns [2] and [4] (estimations with lagged log assets as control), the coefficients of 0.072 and 0.108 suggests that, following the 2004 reform, low real estate revenue firms increased the fraction of total debt hedged and variable rate debt hedged by 7.2 and 10.8 percentage points (p.p.), respectively, relative to control firms. In line with our prediction, these findings indicate that the exclusion of derivatives income from the 95% income test with the passage of the Jobs Act of 2004 led to an increase in interest rate hedging for tax-exempt real estate leasing firms with an ex ante higher risk of failing the test.

[Table 4]

4.2 Validity and Robustness Tests

In this section, we discuss tests performed to assess the validity and robustness of the main results in Table 4.

A key assumption of any difference-in-difference estimation is that the outcome variable for treated, and control firms follows a parallel trend prior to the treatment. In our setting, the parallel trend assumption requires that, prior to the Jobs Act, hedging for treated and control follows a parallel trend. A violation of this assumption could be problematic because it would suggest that a trend specific to low real estate revenue companies, rather than the reform, is the reason that hedging increased for treated firms. To assess this assumption formally, we estimate Eq. 1 by adding interaction terms of the pre-event low real estate revenue indicator with dummy variables

[14] Figure A2 in the Appendix shows that federal regulatory restrictions have increased steadily in the real estate industry and all the other industry during 1970–2021. These trends highlight the importance of properly assessing the impact of regulation on corporate policies.

for quarter -7, 2002q4, to 4+, 2005q3 and following quarters, where quarter 0 is the quarter of the passage of the Jobs Act, 2004q3 (e.g., Autor, 2003; Gormley and Matsa, 2011). The quarters from 2001q3 to 2002q3 serve as the base case. Figure 10, Panel A, plots the coefficients on these interaction terms together with 90% confidence intervals for the hedged variable rate debt/total debt dependent variable. There is no indication of a change in hedging of treated firms relative to control firms prior to quarter -2. We find evidence that hedging started to increase in quarters -1, 2004q2, and 0, 2004q3, and more sizably in quarter +1, 2004q4, and the following quarters for treated firm relative to control firms. The evidence that hedging started to increase in quarters -1 (2004q2) is explainable by the increased anticipation that the reform would become law, given that the Act passed the House on June 17, 2004. In Figure 10, Panel B, we find similar patterns when using hedged variable rate debt/total variable rate debt as dependent variable, although estimations are generally more noisy. We also perform parallel-trend tests using annualized data from 2000q3 to 2007q2, with 2000q3 - 2001q2 as the omitted year. To obtain annualized, data we calculate averages across four quarters of hedging variables and assets. For example, for year 0, we calculate averages across 2004q3 to 2005q2. Overall, estimations are more precise with annualized data. Figure A3 in the Appendix reports these estimations. Overall, the evidence in Figures 10 and A3 mitigates the concern that a trend in the hedging policies of treated firms relative to control firms could be the reason for the findings in Table 4.

[Figure 10]

As an additional check, we re-estimate our base hedging models over the following twenty-four quarter windows: 1994q3-2000q2, 1995q3-2001q2, 1996q3-2002q2, 1997q3-2003q2, and 1998q3-2004q2. If there were a trend in hedging specific to low real estate revenue firms prior to Jobs Act, we should find this effect to be economically sizable in these "placebo" pre-reform windows (Roberts and Whited, 2013). We find that the coefficients on the interaction terms of interest are always insignificant in these placebo estimations for both the hedged variable rate debt/total debt regression (Table 5, column [1]) and the hedged variable rate debt/total variable rate debt regression (Table 5, column [4]). Overall, this analysis allows us to rule out any positive trend in hedging for low real estate revenue firms prior to the Jobs Act.

[Table 5]

Figure 11 shows that interest rates, as proxied by the fed funds rate, were relatively volatile during our sample period (standard deviation of the previous 12 months fed funds rate). On average, fed funds rate volatility was 0.49% pre-reform, 2001q3–2004q2, compared to 0.42% post-reform, 2004q3-2007q2.[15] In Figure 12, we further plot the fixed rate on a 3-year maturity interest rate swap, which is the rate paid by the swap buyer in exchange for receiving the 3-month LIBOR, the 3-month LIBOR, and the 3-year maturity treasury yield. Notably, Figure 12 shows that the 3-year maturity interest rate swap was always higher than the 3-month LIBOR during our pre-reform period, 2001q3-2004q2. The 3-year maturity interest swap rate was also higher than the 3-month LIBOR for most of the post-reform period, with the exception of 2006q3-2007q1. The spread between the 3-year maturity interest rate swap and the 3-month LIBOR was however lower during 2004q3-2007q2.

[Figure 11]

[Figure 12]

To mitigate the concern that prevailing market interest rates could be the reason why treated firms hedge more in the post event period, in Table 6 we re-estimate our regressions in Table 4 controlling for the interactions of the *Pre-event Low Real Estate Revenue* indicator with the the lagged spread between the 3-year maturity interest rate swap fixed rate and the 3-month LIBOR, the lagged fixed rate on a 3-year maturity interest rate swap, and the lagged 3-month LIBOR, respectively. We find that our hedging results are robust in these estimations.

[Table 6]

Could it be that our results are influenced by macro trends in commercial real estate prices and mortgages in the years leading to the subprime crisis? Figure 13 plots the natural logarithm of a commercial real estate index, the natural logarithm of the total value of commercial real estate

[15]Figure A4 in the Appendix shows that leverage for tax-exempt real estate leasing companies increased overall in the period from 1994q1 till 2007q3, decreasing by about 5 percentage points in the two years following the beginning of the financial crisis, to eventually stabilize before starting to increase again modestly from 2018q1 onward. By comparison, hedged variable rate debt as a percentage of total debt was relatively stable until around 2005q4, increasing steadily after that till 2020q4. Variable rate debt as a percentage shows a decreasing pattern until 2006q4, typically increasing after that. Overall, these macro patterns show an increased use of variable rate debt and hedged variable rate debt in the period following the adoption of the Jobs Act.

mortgages, and the natural logarithm of the S&P 500 index level. While commercial real estate prices and commercial real estate mortgages increases in the three years leading to crisis (our pre-event period), these trends started in the 1990's and any potential effect on hedging should have been picked up in our placebo tests. As discussed, Table 5 shows no effect on hedging for our firms in any of the placebo tests starting in the mid 1990's. Notably, Figure 13 also shows that commercial real estate prices behaved similarly to stock prices before, during, and after the subprime crisis. Most importantly, there is no clear reason why treated firms should potentially be affected differently from control firms by these trends in commercial real estate prices and mortgages. As Table 7 shows, our hedging results are robust if we add the interactions of the *Pre-event Low Real Estate Revenue* indicator with a dummy equal to 1 if the lagged percentage change in commercial real estate prices is in the sample top quartile and a dummy equal to 1 if the lagged percentage change in commercial real estate mortgages is in the sample top quartile. Table A4 in the Appendix further shows that our results are robust if we interact the *Pre-event Low Real Estate Revenue* indicator with the actual lagged percentage change in commercial real estate prices and the lagged percentage change in commercial real estate mortgages instead of the dummies. Notably, the coefficient on the *Pre-event Low Real Estate Revenue* interacted wit the lagged percentage change in commercial real estate mortgages is significantly positive in these estimations, indicating that treated firms hedge more when the volume of CRE mortgages is increasing.

[Figure 13]

[Table 7]

Figure 14 shows that loan charge-off rates for non-multifamily and multifamily commercial real estate loans in the quarters following the beginning of the subprime crisis were significantly lower than any other type of loans, including 1-4 family residential loans, home equity loans, real estate construction loans, and commercial and industrial loans. These findings further support our claim that commercial real estate prices and loans did not necessarily experience unusual trends in the period leading to the subprime crisis.

[Figure 14]

Relatedly, Figure 15, Panel A, further shows no evidence of any increase in the number of bankruptcies for the tax-exempt RELCs that we use in our study during the subprime crisis, with only one bankruptcy in 2009. In part, this is explainable by the fact RELCs invest in stabilized commercial real estate properties with relatively predictable cash flow streams. By contrast, the number of bankruptcies for residential mortgage Real Estate Investment Trust (REIT) firms, non-financial firms, and financial firms all increased in the years of the subprime crisis. Panel B also shows that, while the number of RELCs exiting the sample because of being acquired was sizable up until 2007q1-q2 with 11 exits, there was only 1 exit in 2007q3-q4, and very few or none in the following years. The limited number of exits during the subprime crisis suggests that the RELC industry did not experience an upsurge of restructuring activities during the crisis. Instead, the evidence is more consistent with a reduction in the supply of capital during the crisis as being responsible for a reduction of consolidation activities.

[Figure 15]

In our base estimations, we restrict the sample period to 2001q3-2007q2 to avoid the potential consequences of the subprime crisis on hedging activities of the real estate firms in our sample. In our first robustness test, we considered three alternative sample periods, a shorter-sample period, 2002q3-2006q3, and two longer sample periods, 2000q3-2008q2 and 1999q4-2009q1. The latter sample period includes several subprime crisis quarters and several quarters following the introduction in the 109^{th} Congress of the REIT Investment Diversification and Empowerment Act on September 29, 2006, which was eventually passed as part of the Housing and Economic Recovery Act of 2008, signed into law by President George W. Bush, on July 30, 2008. One of the key provisions of the 2008 Act for our purposes is that it excluded derivatives income also from the 75% income test, which, unlike the 95% test, does not include in the list of qualifying income dividends and gains from the sale of stock securities and other income, therefore further reducing constraints to derivatives hedging for low real estate revenue firms. Table 8 report hedging results for these alternative sample periods. Across all six estimations we find a significant and economically large increase in both hedged variable rate debt/total debt and hedged variable rate debt/total variable rate debt.[16]

[16]Table A5 in the Appendix shows that our results hold if we constraint the sample to firms with at least 4 and 12 quarterly observations, respectively, during both the pre- and post-reform period. The 12-quarter restriction implies that the sample only includes firms with observations throughout our entire sample period.

[Table 8]

In our main test, we identify treated firms based on whether their rental and operating revenue as a percentage of total gross revenue are below the sample bottom quartile in the four quarter prior to the Jobs Act, 2003q3-2004q2. In our next robustness test, we consider two alternative proxies of real estate exposure. Our first measure is based on the ratio of the sum of rental revenue, operating revenue, mortgage income, and gains on sales of real estate to total gross revenue, *Total Operating Revenue*. The main difference between this measure and our base case measure is that we add extraordinary rental income, such as gains on sales of real estate, to real estate revenue. Our second measure is based on the ratio of real estate assets & cash holdings to total assets, *Real Estate & Cash Holdings*. As for real estate revenue, treated firms are those with total operating revenue and real estate & cash holdings below the sample bottom quartile in the four quarter prior to the Jobs Act, 2003q3-2004q2: *Pre-event Low Total Operating Revenue* and *Pre-event Low Real Estate & Cash Holdings*. Finally, we examine the effect of the Jobs Act of 2004 on corporate hedging using these two alternative treatment variables by estimating Eq. 1–difference-in-difference model. Table 9 shows a statistically significant and economically sizable increase in both hedged variable rate debt/total debt and hedged variable rate debt/total variable rate debt with either of these two alternative treatment proxies.

[Table 9]

In our main regressions, the control firms are the "universe" of firms with pre-event high real estate revenue. The advantage of including all firms is that one overcomes possible concerns about the generality of the findings. However, by considering the universe of firms, inevitably, treated and control firms will be potentially different in some important characteristics (which could be problematic if there are reasons to believe that these characteristics might influence corporate policies in the post-treatment period). To mitigate this concern, in all our regressions we control for lagged log assets, firm fixed effects, and property-quarter-year fixed effects. To further deal with this potential concern, in 2004q2 (the last pre Jobs Act quarter) we match each treated firm (Pre-event Low Real Estate Revenue: Yes) to its closest control firm (Pre-event Low Real Estate Revenue: No) identified based log assets. We perform our matching using the Abadie and Imbens' (2006) bias-corrected matching estimator.

Table 10 presents the mean difference t-test and the Wilcoxon rank-sum distributional test for treated and control firms in the matched sample. Clearly, the p-values (for the mean difference t-tests and the Wilcoxon rank-sum distributional tests) are all largely above the 10% threshold for both log assets and the ratio of hedged variable rate debt to total debt. This suggests that treated and control firms are similar in terms of characteristics and distributional assumptions in the matched samples with respect to assets under management and hedging practice prior to the reform.

[Table 10]

Table 11 presents results from the estimation of our difference-in-difference hedging regressions for the matched sample. Focusing on columns [2] and [4], specifications with lagged log assets as control, our findings show a significant and large increase in both the ratio of variable hedged debt to total debt and the ratio of hedged variable rate debt to total variable rate debt. The effects are economically larger compared to those in our base estimation in Table 4. In the matched sample, Hedged Variable Rate Debt/Total Debt increased by 9.7 p.p. for treated firms relative to control firms post reform (Table 11, column [2]), compared to 7.2 p.p. in the base sample (Table 4, column [2]). Similarly, Table 11, column [4] shows that Hedged Variable Rate Debt/Total Variable Rate Debt increased by 18.1 p.p. for treated firms following the Act in the matched sample, compared to 10.8 p.p. in the base estimation (Table 4, column [4]). Overall, these findings mitigate the concern that our hedging results could be biased by differences between treated and control firms.

[Table 11]

In all our regressions, we include firm fixed effects and quarter-year-property fixed. However, we use a parsimonious approach with respect to time varying control variables to mitigate the potential bias introduced by endogenous control variables (e.g., Lechner, 2008). In our next robustness test, we add as control variables the pre-reform values of log assets, total profitability, leverage, variable rate debt as a percentage of total debt, and earnings volatility interacted with quarter-year fixed effects. To control for the potential effects of the reform through taxable REIT subsidiaries (TRS), we also add to our regressions the interaction of an indicator for RELCs with TRS in 2003 (72 firms in our sample), which we hand-collect from annual reports, with quarter-year fixed effects. Finally,

we control for potential effects through changes in the CMBS market during our sample period by adding to our regressions the interaction of an indicator for RELCs with CMBS in 2003 (19 firms in our sample), which as for TRS is hand-collected from annual reports, with quarter-year fixed effects. Table 12 shows that our main hedged variable debt results hold in this robustness test.

[Table 12]

Our argument is that the Jobs Act encourages variable rate hedging for low real estate revenue firms by excluding derivatives income from the 95% income test, therefore making these firms less concerned about losing their tax-exempt status. In our setting, interest rate hedging increases a firm debt capacity by allowing access to variable rate debt, which is in larger supplier because funding risk is lower for lenders with variable rate loans. Although the Act could also lead to an increase in the proportion of fixed rate debt swapped into variable rate debt, this is not likely to be an effective risk management strategy for low real estate revenue companies trying to boost their rental revenue by borrowing and increasing real estate investments using hedgeable variable rate debt. Table 13 supports this expectation. We do not find any significant change in the ratio of fixed rate debt swapped to variable rate debt to total debt (Table 13, columns [1]-[2]) or the ratio of fixed rate debt swapped to variable rate debt to total fixed rate debt (Table 13, columns [3]-[4]).

[Table 13]

In our empirical strategy, the Jobs Act encourages low real estate revenue tax-exempt real estate leasing companies to hedge more by excluding derivatives income from the 95% income test. If this mechanism is correct, we should not find any increase in hedging for non-affect real estate property companies, real estate leasing companies non-structured as tax exempt entities, and homebuilders, neither of which are subject to the 95% income test. In these tests, we identify treated firms based on whether the ratio of operating revenue to total revenue is in the respective sample bottom quartile in the year prior to the Act, 2003q3-2004q2. Similarly, we obtain annual data for a sample of foreign RELCs, which are not subject to the Jobs Act. In these tests, we identify treated firms based on whether the ratio of operating revenue to total revenue is in the respective country sample bottom quartile in 2003. In these placebo tests, we do not find any increase in the ratio of hedged variable rate debt/total debt or the ratio of hedged variable rate debt/total variable rate debt for

the two sample of non-affected real estate companies and foreign RELCs. Table 14 reports these results.

[Table 14]

In a related placebo test, we estimate whether interest rate hedging propensity changed during our sample period and in three additional sample periods for a general sample of non-financial firms. We use as dependent variables hedging indicators based on keyword information parsed from annual reports, items 7A and 8. Further, for our main sample period, we manually collected from annual reports, item 7A and notes to financial statements using *http://www.bamsec.com*, interest rate derivatives notional for S&P 1500 firms. We scale interest rate derivatives notional by total debt and use this ratio as an additional dependent variable. Table 15 shows no evidence of an increase in interest rate hedging propensity or intensity for low operating revenue firms in these placebo tests.[17] Table A6 in the Appendix further shows no change in commodity and currency hedging propensity for low operating revenue firms in these placebo tests.

[Table 15]

4.3 Financing and Real Activities for Low Real Estate Revenue Companies after the Jobs Act

In this section, we study financing and real activities for low real estate revenue companies relative to high real estate revenue companies after the passage of the Jobs Act. In the financial distress models of risk management (Smith and Stulz, 1985; Mello and Parson, 2000; Purnanandam, 2008), for any given level of debt, hedging leads to a higher debt capacity by lowering the risk of financial distress. In our setting, interest rate hedging further increases a firm debt capacity by allowing access to variable rate debt, which is in larger supply and typically less expensive than fixed rate debt because these loans help lenders match the interest-rate exposure of their own short-term liabilities.[18] In principle, affected firms could utilize their higher debt capacity to increase leverage.

[17] We also scale interest rate derivatives notional by total variable rate debt and we again find no increase in hedging intensity post reform. We do not report these results because we cannot tell whether notional is related to variable rate debt swapped to fixed rate debt or vice versa, making this variable a noisy proxy for hedging. Results are available upon request from the authors.

[18] Data from the Fed's Survey of Consumer Finance shows that in 2004 (2019) households had $3.34 ($5.89) trillion dollars in deposits, of which $1.02 ($2.00) trillion in checking accounts, $1.54 ($2.88) trillion in savings accounts, and $0.78 ($1.01) trillion in certificate of deposits.

However, because there are no tax advantages of debt for RELCs, treated firms might not have strong incentives to change their capital structure post Act. To the extent that these firms are financially constrained (or hedging lowers the overall cost of capital), borrowing and investment should increase post reform, leading to lower exiting risk. We also expect higher access to credit for affected firms to occur through higher variable rate debt and long-term debt, which are both more exposed to interest rate risk that can be hedged more effectively post reform. We further expect the volatility of interest rate accounting for the effect of hedging to decrease.

In our identification strategy, being able to close out existing hedging positions related to refinancing creates higher incentives to hedge after the Act. Because closing out hedges is easier after the reform, we can also expect early debt payoff (which might require closing out hedges) to increase post Act. In line with this expectation, Table 16 shows that early debt payoff increased by 3.6 p.p. for treated firms relative to control firms post reform.

[Table 16]

Results in Table 17, column [1], using comprehensive transaction level data,[19] show that property-level access to mortgage credit increased for treated firms post reform by 1.2 p.p. relative to control firms. This effect is very sizable compared to the sample of 0.016 in Table A2, Panel C. Notably, column [2] shows that the maturity of this additional mortgage financing increased by about 16.2%. Although the parallel trend assumption holds for the two variables in Table 17, the yearly coefficient estimates lack statistical significance (Figure A5).

[Table 17]

Table 18 presents property-level investment results. Columns [1] and [2] show that the increased access to mortgage financing documented in Table 17 was accompanied by a 0.5 p.p. and a 0.4 p.p. increase in property acquisitions and initial improvements, respectively. In line with this evidence, Figure 16 visually shows that treated firms acquired significantly more properties post

[19] We exclude from this analysis foreign property transactions because only 15 firms out of the 114 in our transaction-level data invested in foreign properties during our sample period. They acquired a total of 113 foreign properties compared to 8,836 U.S. properties for the overall sample of firms. 13 of the 15 firms with foreign property acquisitions hold these properties in just one country. The remaining two firms have foreign properties in 4 and 6 countries, respectively. Our transaction-level results are qualitatively very similar if we retain the foreign acquisitions in the sample.

reform (Panel b) compared to pre reform (Panel a), 2,995 v. 983. Instead, the number of properties acquired by control firms post reform (Panel d) relative to pre reform (Panel C) increased by less, 5,399 v. 3,642.[20] Estimating our main difference-in-difference model with the natural logarithm of the firm-level number of property acquisitions, Table A7 shows that treated firms acquired about 34% more properties than controls firms post Act. Throughout the life of these new properties, treated firms invested also an additional 0.1 p.p. in follow-up improvements, column [3]. The new properties for the treated firms are 9.1% more likely to be class A and display a 3.5 p.p. higher occupancy rate post post reform, columns [4] and [5] respectively. Figure A6 shows that the parallel trend assumption, with the exception of the building class estimations, holds for the variables considered in Table 18.

[Table 18]

[Figure 16]

Moving to corporate-level financing, results in Table 19, columns [1] and [2], show that variable rate debt and long-term debt as a proportion of total debt increased sizably by 8.3 p.p. and 4.2 p.p., respectively, for treated firms relative to control firm post reform. In line with our predictions, these findings suggest that access to cheaper variable rate debt and long-term debt, which are both more exposed to interest rate risk but easier to hedge after the Act, increased for treated firms post reform. Relatedly, the volatility of interest rate accounting for hedging decreased by 14.2 basis points for treated firms post reform (Table 19, column [3]), which is very sizable compared to the average interest rate volatility of 18.4 basis points (Table A2, Panel C). Overall, these changes led to a net debt change of 1.6 p.p. (Table 19, column [4]) for the treated firms. Increased access to credit was accompanied by a 2.5 p.p. increase in real estate investments for treated firms relative to control firms post Act (Table 19, column [5]). We do not find any increase in leverage for treated firms post reform (Table 19, column [6]), which is consistent with no tax advantages of debt in our setting.

[Table 19]

[20]The number of observations in Figure 16 is higher than Table 18, column [1] because in the former we only consider whether a firm acquired a property but not the value of the acquisition, which might be missing.

The combined financing and investment changes came with a 2% reduction in exit propensity for treated firms post reform (Table 19, column [7]). We further find a decrease in TRS taxes for the treated group post Jobs Act (Table 19, column [8]). If RELCs generate significant revenue from impermissible services offered to tenants (e.g., trash collection), they typically transfer this revenue to a TRS and pay corporate taxes on it. The advantage of a TRS is that the impermissible revenue is not longer counted as non-qualifying income for the purpose of the income tests. Because post reform derivatives income is excluded from non-qualifying income, it is possible that treated firms keep some of this revenue within the firm rather than transferring it to a TRS and pay taxes. This would lead to a reduction in corporate taxes as we find.

We next estimate firms' propensity to make diversifying property acquisitions based on their three main property types and three main MSAs. We identify the three three main property types and three main MSAs based on number of properties. As Table 20 shows, treated firms are significantly less like to make diversifying property acquisitions in terms of both property types and MSAs following the Act. This findings are in line with previous literature showing that firms substitute between financial hedging and operational hedging (e.g., Gilje and Taillard, 2017, Almeida et al., 2017, and Hoberg and Moon, 2017).

[Table 20]

5 Conclusion

Despite the significant shift in market stability regulation following the financial crisis, little is known on how the regulatory framework impacts corporate hedging. The Dodd-Frank Act introduced market clearing and several compliance requirements affecting both financial institutions and corporate end-users. The regulation impacted especially swaps, which are mainly used to hedge interest rate risk, the single most important source of risk for firms worldwide. Policymakers around the world have introduced similar regulations. While this might improve the stability of financial markets, little is known on how regulation might impact corporate hedging. In this paper, we focus on the hedging incentives of tax-exempt real estate leasing companies (RELCs), which invest in real estate assets to provide exposure to commercial real estate to retail investors. These entities rely heavily on variable rate debt to finance their investment and are therefore naturally subject to

material interest rate risk.

We find that after the introduction of the Jobs Act of 2004, RELCs with lower pre-reform rental revenue (those ex-ante more likely to lose their tax-exempt status) increased their interest rate hedging sizably compared to their counterparts with higher pre-reform rental revenue. Prior to 2004, derivatives income from interest rate hedges constituted non-qualifying revenue for RELCs, therefore increasing the risk that these entities could lose their tax-exempt status. The 2004 Act excluded derivatives income from non-qualifying revenue, facilitating corporate hedging. We also find that, by lowering the regulatory cost of hedging, the Jobs Act allowed treated firms to access potentially cheaper variable rate debt with a longer maturity, leading to lower interest rate volatility, higher real estate investments, and a lower exit propensity.

Our findings highlight that regulation plays an important role in facilitating or limiting corporate hedging. Our study identifies the lack of coordination between regulators — derivatives regulators promoting derivatives usage by end-users, and household finance regulators promoting commercial real estate exposure for retail investors — as a mechanism that might adversely affect corporate risk management. Notably, these coordination failures can ultimately be detrimental to retail investors seeking to gain exposure to commercial real estate.

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Table 1: **Descriptive Statistics.** This table reports the mean for selected variables of the real estate leasing companies in our sample, for the combined sample, the treated firms (Pre-event Low Real Estate Revenue: Yes), and the control firms (Pre-event Low Real Estate Revenue: No). The difference in means between treated and control firms is also reported. Refer to Table A1 for detailed variable definitions. The sample period is 2001q3 - 2004q2, the pre-Jobs Act period. Data is from S&P Global Market Intelligence SNL Real Estate. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Mean	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Assets ($B)	Real Estate Revenue	Leverage	Variable Rate Debt/ Total Debt	Obs.
Combined Sample	0.067	0.193	2.116	0.909	0.502	0.287	1,644
Treated:	0.034	0.099	1.628	0.744	0.426	0.322	419
Control:	0.076	0.218	2.283	0.966	0.529	0.276	1,225
Treated - Control	-0.042*** (0.007)	-0.119*** (0.018)	-0.655*** (0.177)	-0.222*** (0.006)	-0.103*** (0.010)	0.046*** (0.014)	

Table 2: **Weighted Average Interest Rate and Variable Rate Debt.** This table presents estimations from weighted average interest rate regressions. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Weighted Average Interest Rate			
	[1]	[2]	[3]	[4]
Lagged Variable Rate Debt/Total Debt	-0.954***		-0.934***	-0.946***
	(0.248)		(0.235)	(0.235)
Lagged Leverage		-0.646	-0.329	-0.233
		(0.465)	(0.445)	(0.430)
Lagged Log Assets				-0.090
				(0.081)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,110	2,132	2,110	2,110
Number of Firms	148	148	148	148
Adjusted - R^2	0.769	0.751	0.769	0.770

Table 3: **Exit Propensity and Real Estate Revenue.** This table presents estimations from exit propensity regressions. Exit propensity is a dummy variable equal to one in the quarter in which the firm exits the sample, and zero otherwise. Real Estate Revenue is the ratio of the sum of rental revenue plus operating real estate revenue to total revenue. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the pre-reform period 2001q3-2004q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Exit Propensity				
	[1]	[2]	[3]	[4]	[5]
Lagged Real Estate Revenue	-0.172***		-0.168***	-0.167***	-0.153***
	(0.060)		(0.059)	(0.058)	(0.058)
Lagged Leverage		0.058**	0.038*	0.049	0.067*
		(0.027)	(0.022)	(0.035)	(0.036)
Lagged Total Profitability				0.299	0.207
				(0.812)	(0.835)
Lagged Log Assets					-0.020*
					(0.012)
Property Type x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,630	1,619	1,609	1,602	1,602
Number of Firms	152	146	146	144	144
Adjusted - R^2	0.066	0.054	0.069	0.069	0.072

Table 4: **Hedging for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from hedging regressions. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]-[2]) and the ratio of hedged variable rate debt to total variable rate debt (columns [3]-[4]). Pre-event Low Real Estate Revenue is an indicator for companies with real estate revenue below the sample 25^{th} percentile in the year (2003q3-2004q2) before the passage of the Jobs Act. Post Jobs Act is an indicator equals to one in the quarter of the passage of the American Jobs Creation Act (2004q3) and the following quarters, and zero otherwise. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt		Hedged Variable Rate Debt/ Total Variable Rate Debt	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.070***	0.072***	0.108**	0.108**
	(0.026)	(0.027)	(0.051)	(0.052)
Lagged Log Assets		0.001		0.023
		(0.011)		(0.031)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,910	2,893	2,615	2,601
Number of Firms	149	149	148	148
Adjusted - R^2	0.616	0.617	0.595	0.596

Table 5: **Hedging for Low Rental Revenue Firms after Placebo Acts.** This table presents estimations from hedging regressions during placebo periods. The dependent variables are the ratio of hedged variable rate debt to total debt (column [1]) and the ratio of hedged variable rate debt to total variable rate debt (columns [4]). All regressions included the natural logarithm of lagged assets as control variable. Base case results are from Table 4. In the first placebo estimation, Post-2001q2 is an indicator equal to one in the quarter of the passage of the placebo act (2001q3) and the following quarters, and zero otherwise. We follow a similar logic for the other placebo estimations. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Obs.	Sample Period	Hedged Variable Rate Debt/ Total Variable Rate Debt	Obs.	Sample Period
	[1]	[2]	[3]	[4]	[5]	[6]
Base case (Results from Table 4):						
Pre-event Low Real Estate Revenue × Post Jobs Act	0.072***	2,893	2001q3-2007q2	0.108**	2,601	2001q3-2007q2
	(0.027)			(0.052)		
Placebo Estimations:						
Pre-event Low Real Estate Revenue × Post-2001q2	-0.002	2,904	1998q3-2004q2	-0.032	2,596	1998q3-2004q2
	(0.019)			(0.043)		
Pre-event Low Real Estate Revenue × Post-2000q2	-0.010	2,815	1997q3-2003q2	-0.056	2,489	1997q3-2003q2
	(0.015)			(0.040)		
Pre-event Low Real Estate Revenue × Post-1999q2	0.013	2,685	1996q3-2002q2	-0.028	2,322	1996q3-2002q2
	(0.015)			(0.043)		
Pre-event Low Real Estate Revenue × Post-1998q2	0.027	2,530	1995q3-2001q2	0.036	2,145	1995q3-2001q2
	(0.021)			(0.049)		
Pre-event Low Real Estate Revenue × Post-1997q2	0.024	2,331	1994q3-2000q2	0.063	1,943	1994q3-2000q2
	(0.026)			(0.078)		
Property Type × Year-Quarter Fixed Effects	Yes			Yes		
Company Fixed Effects	Yes			Yes		
Pre-event Low Real Estate Revenue	Absorbed			Absorbed		
Post Placebo Act	Absorbed			Absorbed		

Table 6: **Hedging for Low Rental Revenue Firms after the Jobs Act: Interest Rate Controls.** This table presents estimations from hedging regressions. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]-[3]) and the ratio of hedged variable rate debt to total variable rate debt (columns [4]-[6]). Pre-event Low Real Estate Revenue is an indicator for companies with real estate revenue below the sample 25^{th} percentile in the year (2003q3-2004q2) before the passage of the Jobs Act. Post Jobs Act is an indicator equals to one in the quarter of the passage of the American Jobs Creation Act (2004q3) and the following quarters, and zero otherwise. Lagged Swap Spread is the difference between the lagged fixed rate of a 3-year maturity interest rate swap (3-year Fixed Rate Swap) and the lagged 3-month LIBOR. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data for real estate leasing companies is from S&P Global Market Intelligence SNL Real Estate. Data on the fixed rate of a 3-year maturity interest rate swap and the 3-month LIBOR is from Bloomberg. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt			Hedged Variable Rate Debt/ Total Variable Rate Debt		
	[1]	[2]	[3]	[4]	[5]	[6]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.072***	0.074***	0.074***	0.106**	0.107**	0.105**
	(0.026)	(0.027)	(0.027)	(0.051)	(0.054)	(0.053)
Pre-event Low Real Estate Revenue × Lagged Swap Spread	-0.018			-0.735		
	(0.646)			(1.712)		
Pre-event Low Real Estate Revenue × Lagged 3-year Fixed Rate Swap		-0.548			0.357	
		(0.510)			(1.277)	
Pre-event Low Real Estate Revenue × Lagged 3-month LIBOR			-0.266			0.374
			(0.381)			(0.988)
Lagged Log Assets	0.001	0.001	0.001	0.023	0.023	0.023
	(0.011)	(0.011)	(0.011)	(0.031)	(0.031)	(0.031)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,893	2,893	2,893	2,601	2,601	2,601
Number of Firms	149	149	149	148	148	148
Adjusted - R^2	0.616	0.617	0.617	0.596	0.596	0.596

Table 7: **Hedging for Low Rental Revenue Firms after the Jobs Act: Commercial Real Estate Price and Mortgage Controls.** This table presents estimations from hedging regressions. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]-[2]) and the ratio of hedged variable rate debt to total variable rate debt (columns [3]-[4]). Pre-event Low Real Estate Revenue is an indicator for companies with real estate revenue below the sample 25^{th} percentile in the year (2003q3-2004q2) before the passage of the Jobs Act. Post Jobs Act is an indicator equals to one in the quarter of the passage of the American Jobs Creation Act (2004q3) and the following quarters, and zero otherwise. Lagged CRE Price (Mortgage) Dummy is a dummy variable equal to 1 if the lagged percentage change in the Commercial Real Estate (CRE) Price Index (Mortgage Value) is in the sample top quartile for the period 2001q3-2007q2. The percentage change in the Commercial Real Estate (CRE) Price Index (Mortgage Value) is calculated as the difference between the CRE Price Index (Mortgage Value) at time t and $t-1$ divided by the time $t-1$ CRE Price Index (Mortgage Value). Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Data on CRE Price Index and CRE Mortgage Value (total value of all commercial mortgages) is from the Federal Reserve Economic Data (FRED) database. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt		Hedged Variable Rate Debt/ Total Variable Rate Debt	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.070***	0.073***	0.107**	0.104*
	(0.027)	(0.027)	(0.052)	(0.054)
Pre-event Low Real Estate Revenue × Lagged CRE Price Dummy	0.012		0.003	
	(0.009)		(0.019)	
Pre-event Low Real Estate Revenue × Lagged CRE Mortgage Dummy		-0.002		0.012
		(0.006)		(0.013)
Lagged Log Assets	0.001	0.001	0.024	0.023
	(0.011)	(0.011)	(0.031)	(0.031)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,893	2,893	2,601	2,601
Number of Firms	149	149	148	148
Adjusted - R2	0.617	0.617	0.596	0.596

Table 8: **Hedging for Low Rental Revenue Firms after the Jobs Act: Alternative Sample Periods.** This table presents estimations from hedging regressions over alternative sample periods. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1], [3], and [5]) and the ratio of hedged variable rate debt to total variable rate debt (columns [2], [4], and [6]). All regressions included the natural logarithm of lagged assets as control variable. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt
Sample Period:	2002q3-2006q2		2000q3-2008q2		1999q4-2009q1	
	[1]	[2]	[3]	[4]	[5]	[6]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.068***	0.083**	0.072**	0.111**	0.066**	0.100*
	(0.024)	(0.041)	(0.029)	(0.055)	(0.030)	(0.057)
Lagged Log Assets	0.002	-0.001	-0.005	0.016	-0.008	0.007
	(0.011)	(0.034)	(0.010)	(0.029)	(0.010)	(0.027)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Observations	1,999	1,802	3,724	3,346	4,357	3,928
Number of Firms	149	146	151	151	151	151
Adjusted - R^2	0.700	0.683	0.560	0.536	0.521	0.504

Table 9: **Hedging after the Jobs Act: Alternative Proxies of Real Estate Exposure.** This table presents estimations from hedging regressions using alternative proxies of real estate exposure. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1] and [3]) and the ratio of hedged variable rate debt to total variable rate debt (columns [2] and [4]). Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt
	[1]	[2]	[3]	[4]
Pre-event Low Total Operating Revenue × Post Jobs Act	0.055**	0.098**		
	(0.024)	(0.045)		
Pre-even Low Real Estate & Cash Holdings × Post Jobs Act			0.069**	0.097*
			(0.028)	(0.053)
Lagged Log Assets	0.001	0.021	0.004	0.028
	(0.011)	(0.032)	(0.010)	(0.030)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,893	2,601	2,905	2,608
Number of Firms	149	148	150	149
Adjusted - R^2	0.612	0.596	0.614	0.594

Table 10: **Pre-Jobs Act Mean Difference and Distributional Tests for Treated and Control Companies: Matched Sample.** This table reports the mean difference t-test p-value and the Wilcoxon rank-sum distributional test p-value of Log Assets and Hedged Variable Rate Debt/Total Debt. We match each Pre-event Low Real Estate Revenue Company: Yes (treated) to its closest Pre-event Low Real Estate Revenue Company: No (control) based on pre-event log assets using the Abadie and Imbens' (2006) matching estimator. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies. Data is from S&P Global Market Intelligence SNL Real Estate.

Characteristics of Treated and Control real estate leasing companies: Matched Sample		Mean	Treated-Control	Mean Difference t-Test p-value	Wilcoxon-Mann-Whitney rank-sum Test p-value	No. of Matched Companies
Log Assets	Treated	13.200	-0.339	0.592	0.230	25
	Control	13.539				24
Hedged Variable Rate Debt/ Total Debt	Treated	0.216	0.005	0.953	0.268	23
	Control	0.211				20

Table 11: **Hedging for Low Rental Revenue Firms after the Jobs Act: Matched Sample.** This table presents estimations from hedging regressions using the matched sample. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]-[2]) and the ratio of hedged variable rate debt to total variable rate debt (columns [3]-[4]). We match each Pre-event Low Real Estate Revenue Company: Yes (treated) to its closest Pre-event Low Real Estate Revenue Company: No (control) based on pre-event log assets using the Abadie and Imbens' (2006) matching estimator. Refer to Table A1 for detailed variable definitions. The sample includes matched real estate leasing companies over the period 2001q3 - 2007q. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt		Hedged Variable Rate Debt/ Total Variable Rate Debt	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.096**	0.097**	0.175**	0.181**
	(0.041)	(0.042)	(0.072)	(0.074)
Lagged Log Assets		0.002		0.063*
		(0.009)		(0.035)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	960	956	775	773
Number of Firms	50	50	49	49
Adjusted - R^2	0.586	0.586	0.553	0.557

Table 12: **Hedging for Low Rental Revenue Firms after the Jobs Act: Controlling for Interaction Effects.** This table presents estimations from hedging regressions with various interaction effects. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]) and the ratio of hedged variable rate debt to total variable rate debt (columns [2]). Pre-event Low Real Estate Revenue is an indicator for companies with real estate revenue below the sample 25^{th} percentile in the year (2003q3-2004q2) before the passage of the Jobs Act. Post Jobs Act is an indicator equals to one in the quarter of the passage of the American Jobs Creation Act (2004q3) and the following quarters, and zero otherwise. Pre-event Log Assets, Total Profitability, Leverage, Variable Rate Debt/Total Debt, and Earnings Volatility are the values of those variables in 2004q4. Pre-event TRS and CMBS are indicators for firms with a taxable REIT subsidiary and CMBS financing at the end of 2003, respectively. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Data on TRS and CMBS is collected manually from 10'Qs. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt
	[1]	[2]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.069***	0.114**
	(0.024)	(0.052)
Pre-event Log Assets × Year-Quarter Fixed Effects	Yes	Yes
Pre-event Total Profitability × Year-Quarter Fixed Effects	Yes	Yes
Pre-event Leverage × Year-Quarter Fixed Effects	Yes	Yes
Pre-event Variable Rate Debt/Total Debt × Year-Quarter Fixed Effects	Yes	Yes
Pre-event Earnings Volatility × Year-Quarter Fixed Effects	Yes	Yes
Pre-event TRS × Year-Quarter Fixed Effects	Yes	Yes
Pre-event CMBS × Year-Quarter Fixed Effects	Yes	Yes
Property Type × Year-Quarter Fixed Effects	Yes	Yes
Company Fixed Effects	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed
Observations	2,762	2,486
Number of Firms	135	134
Adjusted - R^2	0.646	0.685

Table 13: **Swapped Fixed to Variable Rate Debt for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from swapped fixed to variable rate debt regressions. The dependent variables are the ratio of swapped fixed to variable rate debt to total debt (columns [1]-[2]) and the ratio of swapped fixed to variable rate debt to total fixed rate debt (columns [3]-[4]). Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Swapped Fixed Rate Debt/ Total Debt		Swapped Fixed Rate Debt/ Total Fixed Rate Debt	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.0005	0.0004	0.0005	0.0003
	(0.0011)	(0.0011)	(0.0019)	(0.0019)
Lagged Log Assets		0.0004		0.0010
		(0.0005)		(0.0008)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,949	2,932	2,786	2,771
Number of Firms	151	151	147	147
Adjusted - R^2	0.675	0.671	0.657	0.655

Table 14: **Hedging for Non-Affected and Foreign Real Estate Companies after the Jobs Act: Placebo Test.** This table presents estimations from hedging regressions for non-affected real estate companies and foreign real estate leasing companies (RELCs). The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1] and [3]) and the ratio of hedged variable rate debt to total variable rate debt (columns [2] and [4]). The sample in columns [1]-[2] includes real estate leasing companies non-structured as RELCs and homebuilders over the period 2001q3 - 2007q2. The sample in columns [3]-[4] contains annual data for foreign RELCs over the period 2002 - 2007. Refer to Table A1 for detailed variable definitions. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt
	Panel A: Non-Affected Sample		Panel B: Foreign RELCs Sample	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.018	-0.002	-0.037	0.039
	(0.019)	(0.059)	(0.079)	(0.088)
Lagged Log Assets	0.018	0.044	0.011	0.001
	(0.027)	(0.062)	(0.045)	(0.062)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	No	No
Property Type × Year Fixed Effects	No	No	Yes	Yes
Country × Year Fixed Effects	No	No	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	447	353	213	192
Number of Firms	25	24	45	44
Adjusted - R^2	0.356	0.424	0.682	0.811

Table 15: **Hedging for Non-Affected Non-Financial Firms: Additional Placebo Tests.** This table presents estimations from hedging regressions for a sample of non-financial firms. The dependent variables are an indicator for interest rate hedging (columns [1] and [3]-[5]) and the ratio of interest rate derivatives notional to total debt ratio (column [2]). Hedging data using keywords is parsed from annual reports, items 7A and 8. Interest rate derivatives notional for S&P 1500 firms is manually collected from annual reports, item 7A and notes to financial statements using *http://www.bamsec.com*. Pre-event Low Operating Revenue is an indicator for companies with the ratio of sales minus extraordinary revenue (COMPUSTAT items sale - xido) to sales below the sample 25^{th} percentile in fiscal year 2003 (column [1], [5] and [6]), fiscal year 1999 (column [2]), fiscal year 2009 (column [3]), and fiscal year 2012 (column [4]). The 25^{th} percentile is equal to 1 in the fiscal years 1999, 2003, 2009, and 2012, hence our treated firms are those with the ratio of sales minus extraordinary revenue to sales less than 1. Post-2003 is an indicator equal to one in the fiscal year of the passage of the American Jobs Creation Act (2004) and the following years, and zero otherwise. Post-1998 is an indicator equal to one in the fiscal year of the passage of the placebo act (1999) and the following years, and zero otherwise. We follow a similar logic for Post-2009 and Post-2012. Refer to Table A1 for detailed variable definitions. The sample includes all U.S. firms in COMPUSTAT except financial firms (SIC 6000-6999) over the period 1996 - 2015. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Interest Rate Hedging	Interest Rate Derivatives Notional/ Total Debt	Interest Rate Hedging		
Sample Period:	2001-2006		1996-2001	2007-2012	2010-2015
	Non-Financial Firms	S&P 1500 Firms	Non-Financial Firms		
	[1]	[2]	[3]	[4]	[5]
Pre-event Low Operating Revenue × Post-2003	0.013	-0.002			
	(0.011)	(0.007)			
Pre-event Low Operating Revenue × Post-1998			-0.011		
			(0.013)		
Pre-event Low Operating Revenue × Post-2009				0.021	
				(0.016)	
Pre-event Low Operating Revenue × Post-2012					-0.017
					(0.014)
Lagged Log Assets	0.026***	-0.006*	0.030***	0.030***	0.040***
	(0.004)	(0.003)	(0.003)	(0.006)	(0.005)
SIC-4 Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	32,216	8,102	38,489	24,689	23,822
Number of Firms	6,088	1,788	7,761	4,742	4,717
Adjusted - R2	0.427	0.798	0.361	0.420	0.560

Table 16: **Early Debt Payoff of Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from early debt payoff regressions. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Early debt payoff data is from Compustat. Other firm-level data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Early Debt Payoff/Lagged Asset	
	[1]	[2]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.031*	0.036**
	(0.017)	(0.018)
Lagged Log Assets		-0.054**
		(0.023)
Property-Level Type × Year Fixed Effects	Yes	Yes
Company Fixed Effects	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed
Observations	643	633
Number of Firms	132	131
Adjusted - R^2	0.449	0.470

Table 17: **Property-Level Financing for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from property-level mortgage regressions. Refer to Table A1 for detailed variable definitions. The sample includes annual property-level data for real estate leasing companies over the period 2002 - 2007. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Mortgages/ Lagged Assets	Log of Years to Maturity
	[1]	[2]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.012**	0.162*
	(0.005)	(0.096)
Lagged Log Assets	-0.018***	0.008
	(0.001)	(0.041)
Property-Level Type × Year-Quarter Fixed Effects	Yes	Yes
Company Fixed Effects	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed
Observations	3,207	1,527
Number of Firms	99	72
Adjusted - R^2	0.565	0.189

Table 18: **Property-Level Real Activities for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from property-level real activity regressions. Refer to Table A1 for detailed variable definitions. The sample includes annual property-level data for real estate leasing companies over the period 2002 - 2007. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Property Investment/ Lagged Assets	Initial Improvements/ Lagged Assets	Subsequent Improvements/ Lagged Assets	Building Class	Occupancy Rate
	[1]	[2]	[3]	[4]	[5]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.005**	0.004**	0.001*	0.091**	0.035***
	(0.002)	(0.002)	(0.000)	(0.042)	(0.012)
Lagged Log Assets	-0.019***	-0.015***	-0.003**	-0.005	-0.001
	(0.001)	(0.001)	(0.001)	(0.018)	(0.009)
Property-Level Type × Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Observations	8,836	8,842	62,234	705	44,825
Number of Firms	114	114	119	41	104
Adjusted - R^2	0.660	0.655	0.264	0.210	0.109

Table 19: **Corporate-Level Financing and Real Activities for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from firm-level financing and real activity regressions. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Variable Rate Debt/ Total Debt	Long-Term Debt/ Total Debt	Interest Rate Volatility	Debt Change	Real Estate Investments	Leverage	Exit Propensity	Tax Provision/ Revenue
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.083**	0.042**	-0.087**	0.016**	0.025***	0.006	-0.020*	-0.002*
	(0.040)	(0.021)	(0.038)	(0.007)	(0.008)	(0.021)	(0.012)	(0.001)
Lagged Log Assets	0.010	0.028*	-0.006	-0.021***	-0.029*	0.053***	-0.020**	-0.001
	(0.041)	(0.016)	(0.029)	(0.008)	(0.015)	(0.014)	(0.010)	(0.001)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,991	1,789	1,405	3,101	3,099	3,101	3,101	2,874
Number of Firms	151	121	112	152	152	152	152	147
Adjusted - R^2	0.644	0.370	0.502	0.131	0.182	0.827	0.0435	0.323

Table 20: **Property-Level Diversification for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from property-level diversification regressions. Refer to Table A1 for detailed variable definitions. The sample includes annual property-level data for real estate leasing companies over the period 2002 - 2007. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Property Type Diversification	Geographic Diversification
	[1]	[2]
Pre-event Low Real Estate Revenue × Post Jobs Act	-0.161**	-0.077*
	(0.067)	(0.043)
Lagged Log Assets	-0.005	-0.043**
	(0.025)	(0.016)
Property-Level Type × Year Fixed Effects	Yes	Yes
Company Fixed Effects	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed
Observations	12,468	12,180
Number of Firms	124	124
Adjusted - R^2	0.885	0.229

Figure 1: **Interest Rate Swaps and Caps Maturity**

This figures plots the proportion of interest rate swaps and caps notional amounts with maturity ≤1 year, >1 and ≤3 years, >3 and ≤5 years, and >5 years maturity. The sample includes derivatives contracts initiated during 2001q3 - 2007q2 for our sample of RELCs. Data on interest rate swaps and caps is collected manually from 10-Qs.

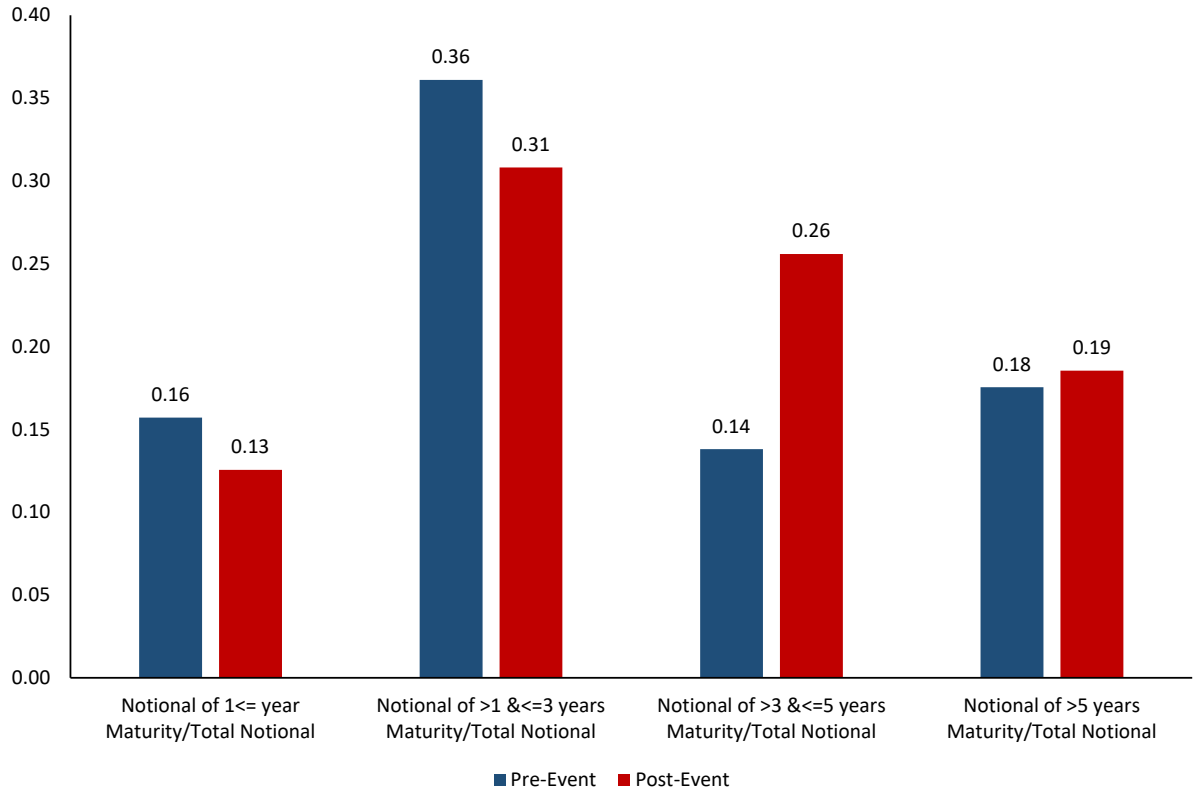


Figure 2: **Early Debt Payoff**

This figures plots early debt payoff in our main sample during 2002-2004 (pre-event) and 2005-2007 (post event). Data on early debt payoff is from Compustat.

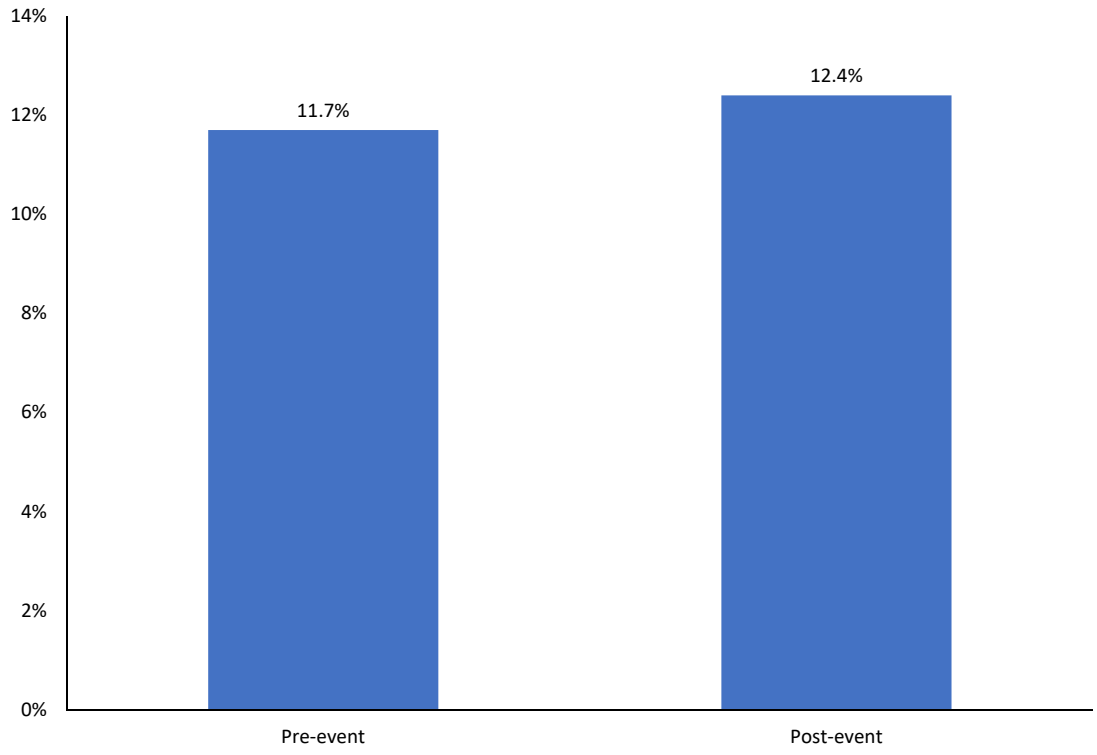


Figure 3: **Percentage of Real Estate Leasing Companies by Property Type**

This figure reports the percentage of real estate leasing companies in our sample by property type. The property types include, Diversified, Health Care, Hotel (Hotel and Casino), Industrial, Multifamily, Office, Retail (Shopping Center, and Regional Mall), and Specialty (Manufactured Home, Self-Storage, and Cineplex Theaters). The sample includes real estate leasing companies level data over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate.

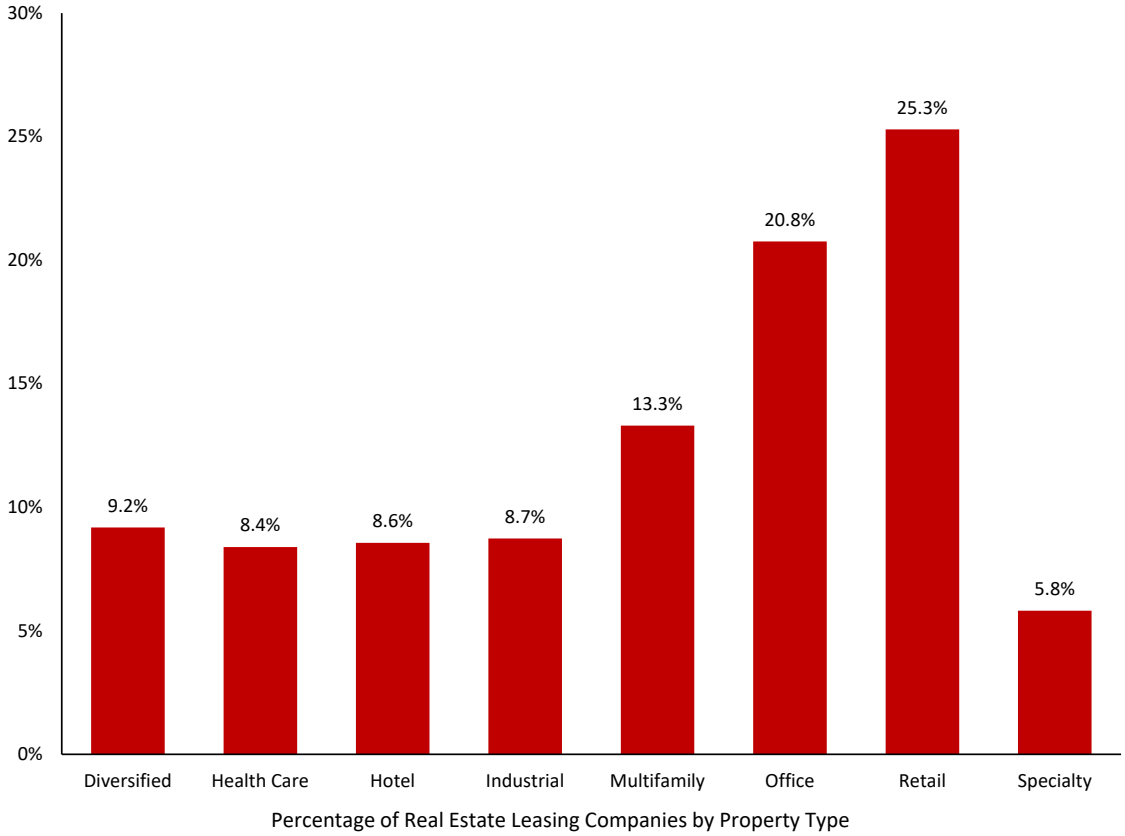


Figure 4: **Debt Maturity by Year**

This figure reports the percentage of debt maturity by year (from current year to year 5+) for the real estate leasing companies in our sample in 2004q2. Data is from S&P Global Market Intelligence SNL Real Estate.

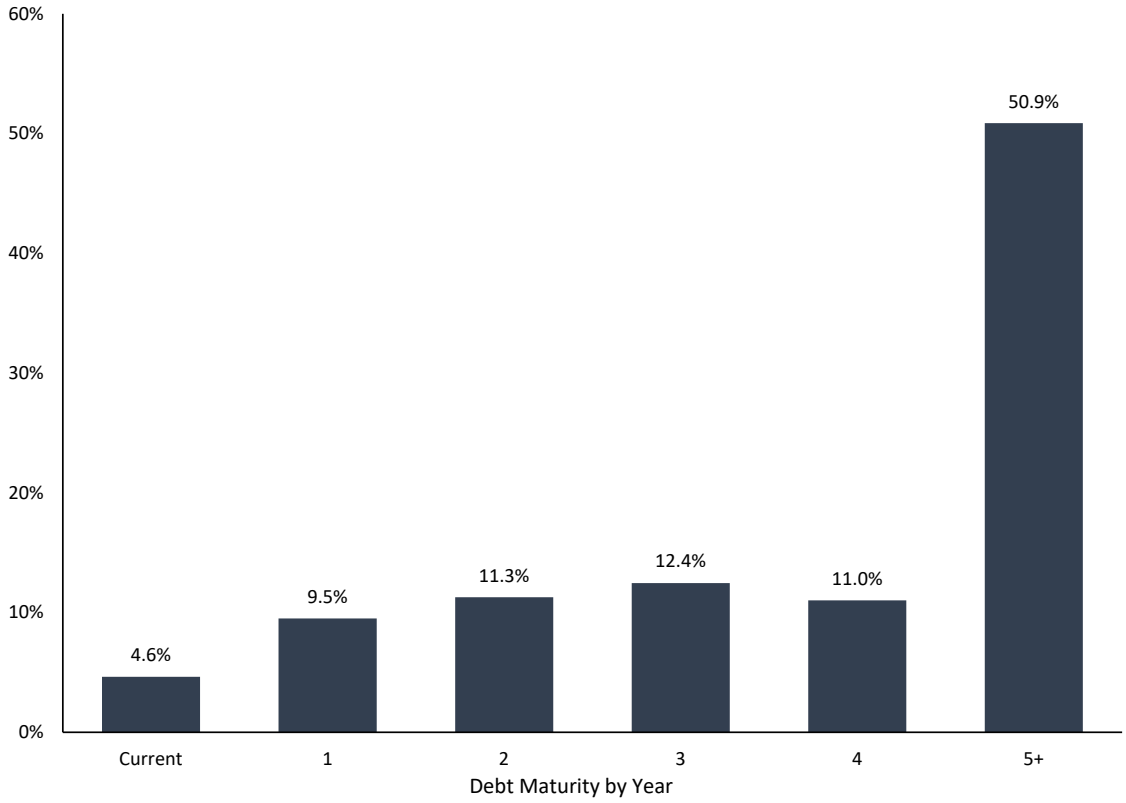


Figure 5: **Expense Categories in the Real Estate Leasing Industry**

This figure displays average interest expenses and other expense categories as a percentage of total expenses over the period 2001-2007 for real estate leasing companies. Data is from S&P Global Market Intelligence SNL Real Estate.

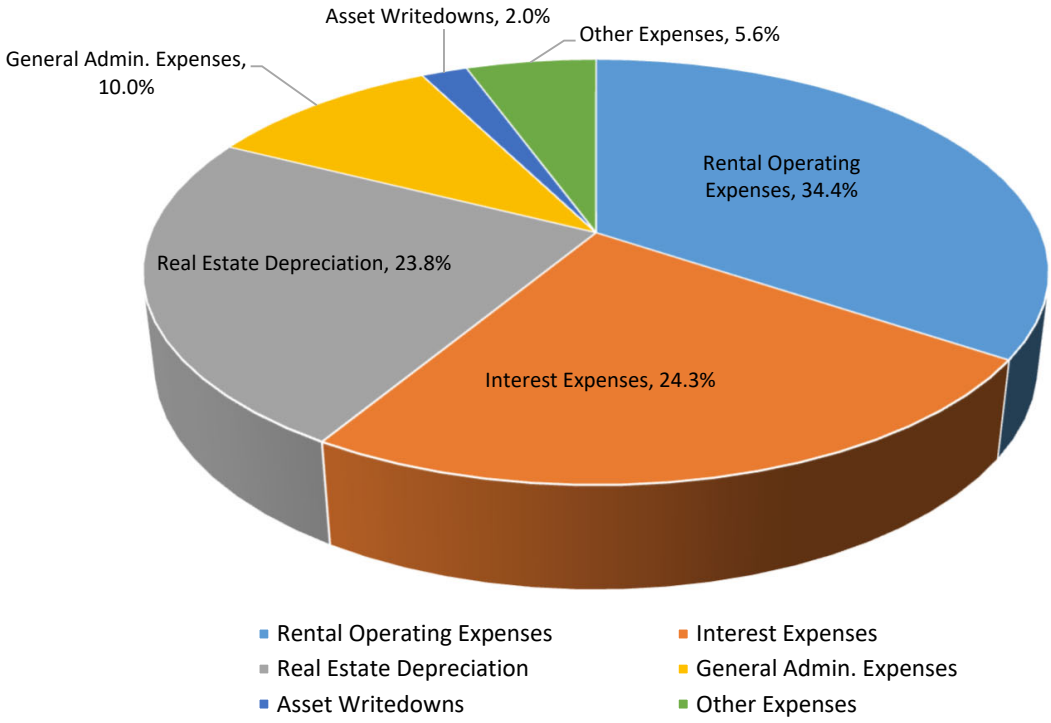


Figure 6: **Notional Amount of Derivatives Contracts by U.S. Commercial Banks**

This figure reports the notional amount of derivative contracts ($ trillions) by U.S. insured commercial banks and trust companies. The information is presented for interest rate (IR) derivatives, foreign exchange (FX) derivatives, equity (EQ) derivatives, commodity (CM) derivatives, and credit risk (CR) derivatives. The data is from the Office of the Comptroller of the Currency (OCC), derivatives quarterly reports.

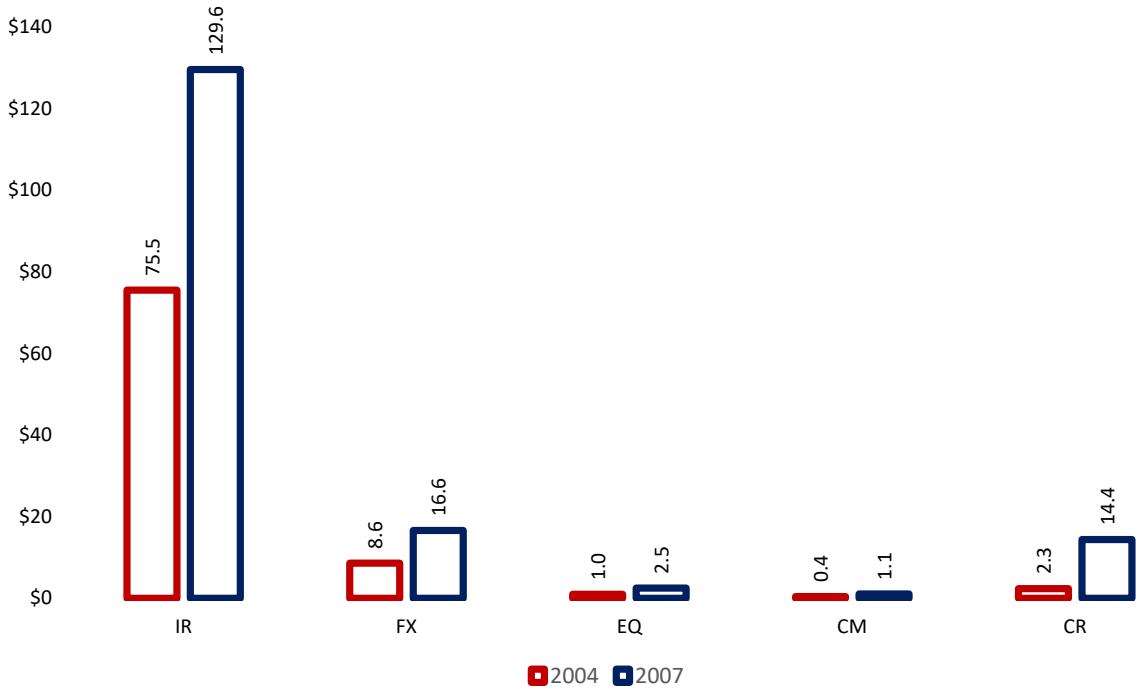
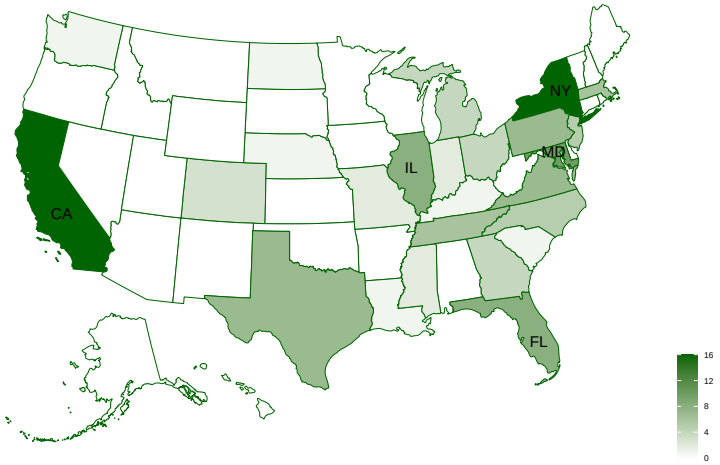
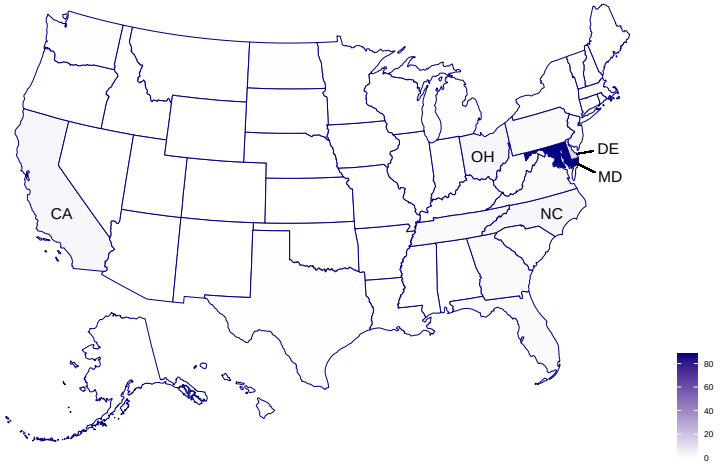


Figure 7: **Headquarter and Incorporation States**

This figure displays geographical heat maps of headquarters (Panel A: 129 firms) and incorporation (Panel B: 130 firms) states of the RELCs in our sample in 2003. The top five states in terms of number of headquarters are CA (16), NY (16), MD (10), FL (8), and IL (8). The top five states in terms of number of incorporation are MD (88), DE (13), CA (3), NC (3), and OH (3). Headquarters information is obtained from parsing corporate filings in the SEC EDGAR database. Incorporation information is from CRSP (item stinc).



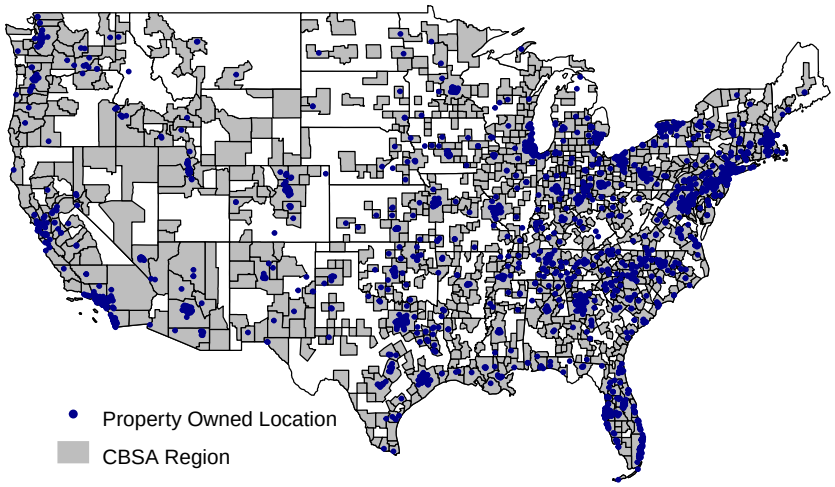
(a) Headquarters States



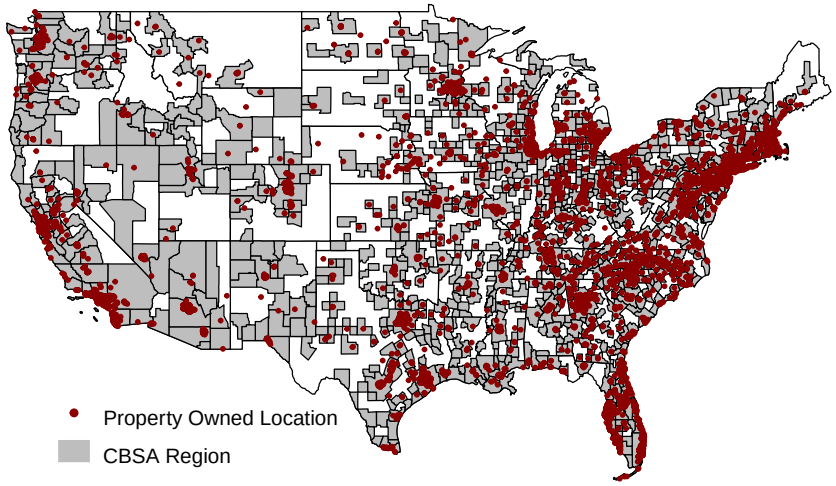
(b) Incorporation States

Figure 8: **Geocoded Property-Level Ownership**

This figure displays the geographical locations across U.S. CBSA of properties owned by the treated (Panel A: 2,637 properties) and control (Panel B: 13,352 properties) RELCs in our sample in 2004q2. Each dot represents a property location. Geocoded property-level data is from SNL Property Transactions.



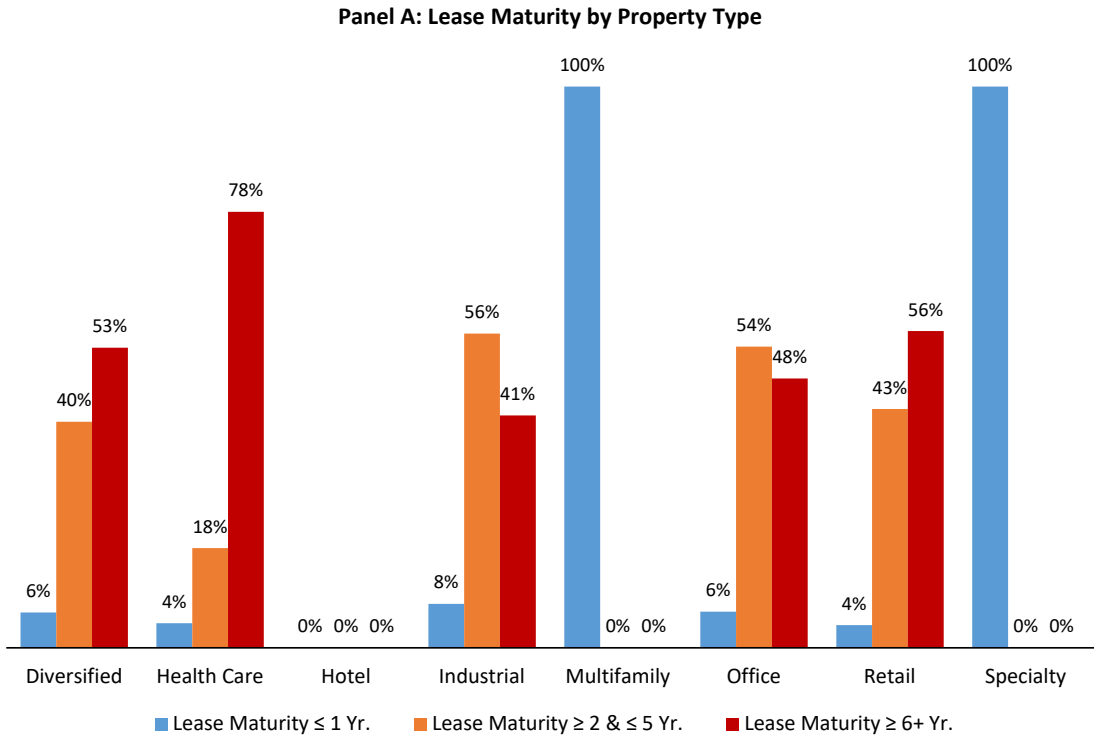
(a) Properties Owned by Treated Firms in 2004q2



(b) Properties Owned by Control Firms in 2004q2

Figure 9: **Lease Maturity and Financing Pattern by Property Type**

This figure, Panel A, reports the percentage of leases maturing within 1 year from the current year, between 2 to 5 years from the current year, and from year 6 onward by property type. Panel B displays financing patterns by property type. The sample includes the real estate leasing companies in our sample in 2004q2. Data is from S&P Global Market Intelligence SNL Real Estate.



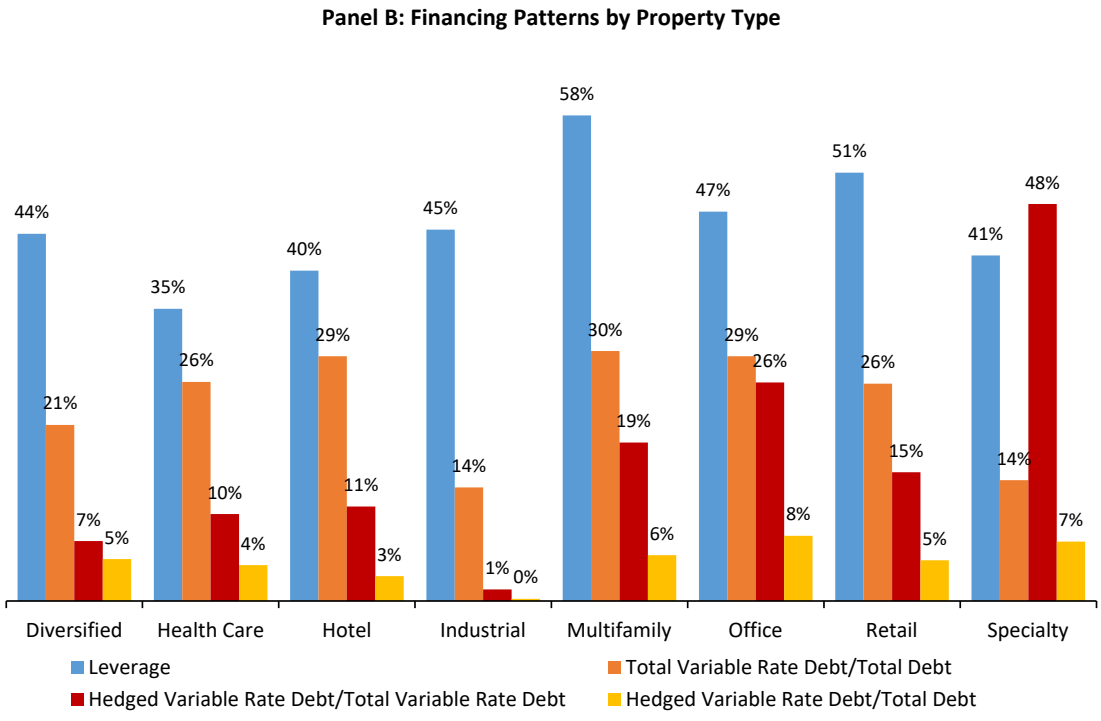
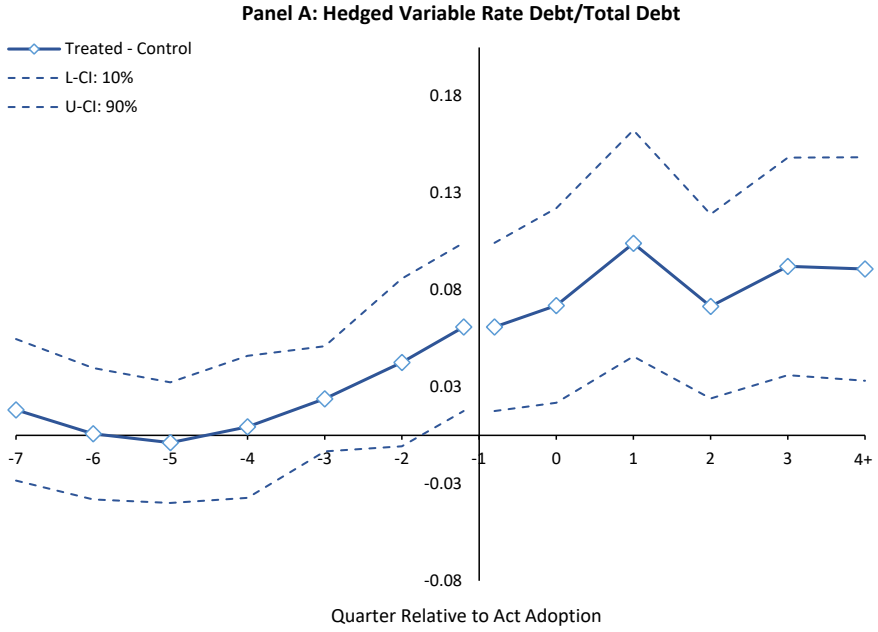


Figure 10: **Hedging for Low Rental Revenue Firms Around the Jobs Act: Treated vs. Control Companies**

This figure reports the point estimates from hedging regressions, using a dependent variables the ratio of hedged variable rate debt to total debt (Panel A) and the ratio of hedged variable rate debt to total variable rate debt (Panel B). The regression specifications are the same as those in columns [2] and [4] of Table 4, except that the effect of Pre-event Low Real Estate Revenue is allowed to vary by quarter for each quarter starting seven quarters prior to the Jobs Act and ending three quarters after the adoption. We also plot the estimate on the interaction of Pre-event Low Real Estate Revenue with an indicator equal to 1 starting in quarter four after the Act adoption and ending in 2007q2. Quarter 0 is 2004q2. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Ninety-nine percent confidence intervals are also plotted.



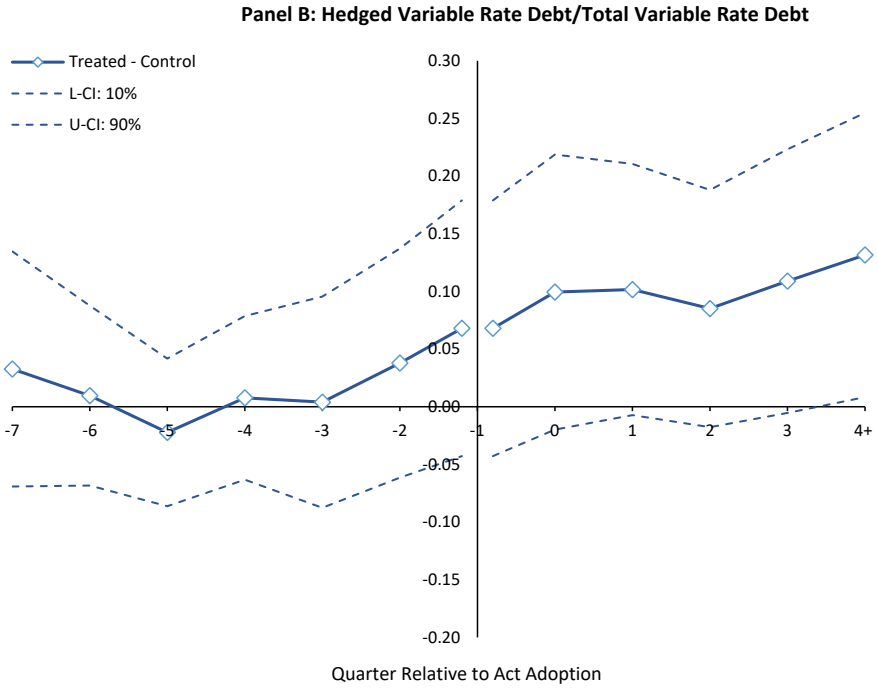


Figure 11: **Market Interest Rates**

This figure plots the quarterly fed funds rate based on the end-of-quarter monthly rate (left y-axis) and the fed funds standard deviation based on the previous 12 months fed funds rate (right y-axis). Fed funds rates are from the Federal Reserve Economic Data (FRED) database. The sample period is from 1994q1-2020q4.

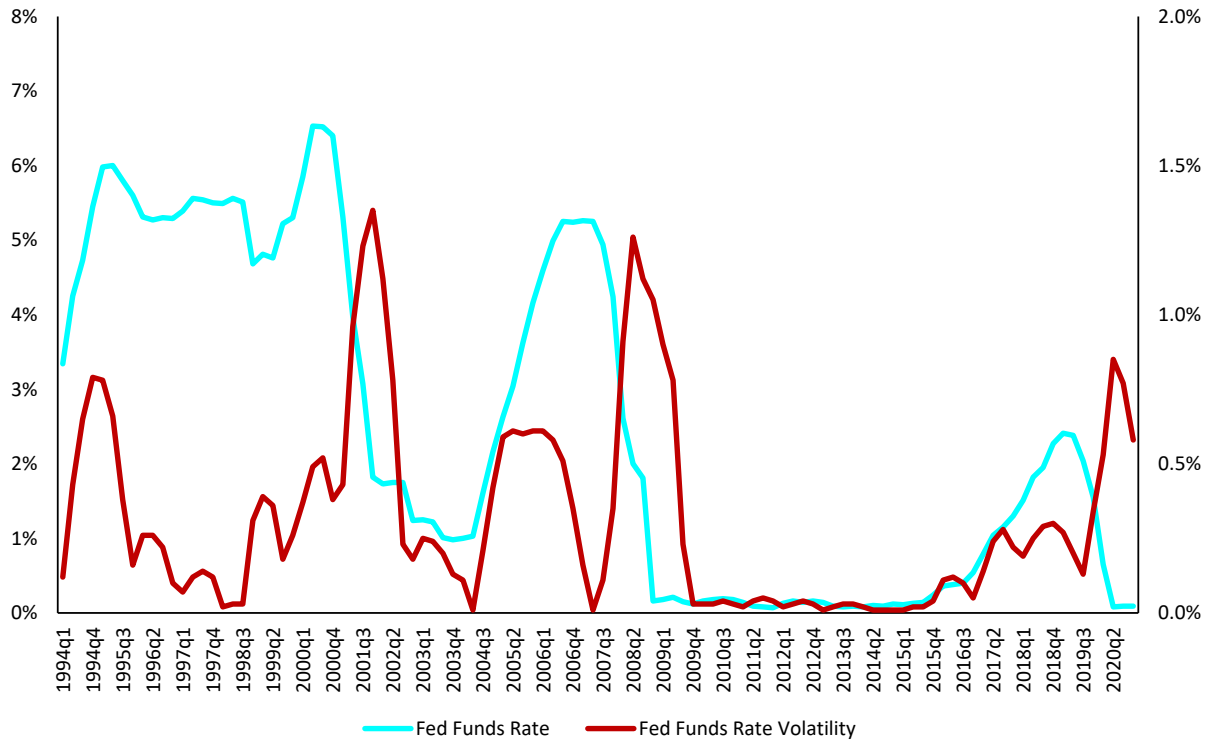


Figure 12: **Interest Rate Swap Fixed Rate, LIBOR, and Treasury Yield**

This figure plots the quarterly interest rate swap fixed rate of a 3-year maturity interest rate swap with the 3-month LIBOR rate as the floating rate. The data is for semi-annual swaps, for which cash flow exchanges occur every six months. It also plots the 3-month LIBOR rate and the 3-year maturity treasury yield. Data on interest rate swap fixed rates and the LIBOR rate is from Bloomberg. Data on the 3-year treasury yield is from the U.S. Department of the Treasury. The sample period is from 1994q1-2020q4.

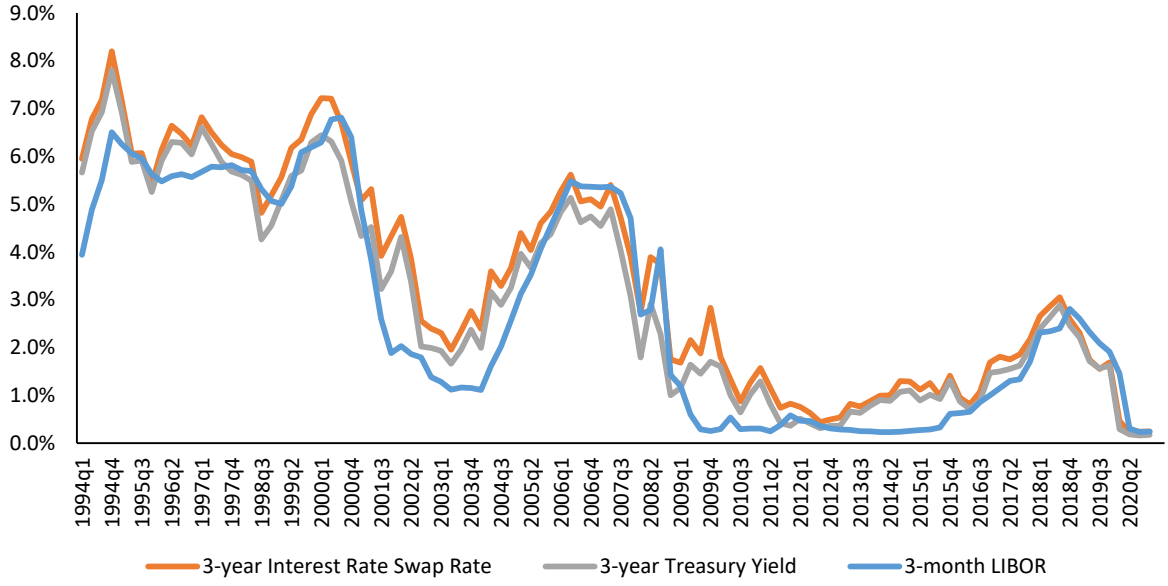


Figure 13: **Commercial Real Estate Prices, Mortgages, and Stock Prices**

This figure plots the log of quarterly commercial real estate price index, the log of total value of commercial real estate mortgages, and the log of S&P 500 index level. Data on the commercial real estate index and the total value of all commercial real estate mortgages is from the Federal Reserve Economic Data (FRED) database. Data on the S&P 500 index level is from CRSP. The sample period is from 1994q1-2020q4.

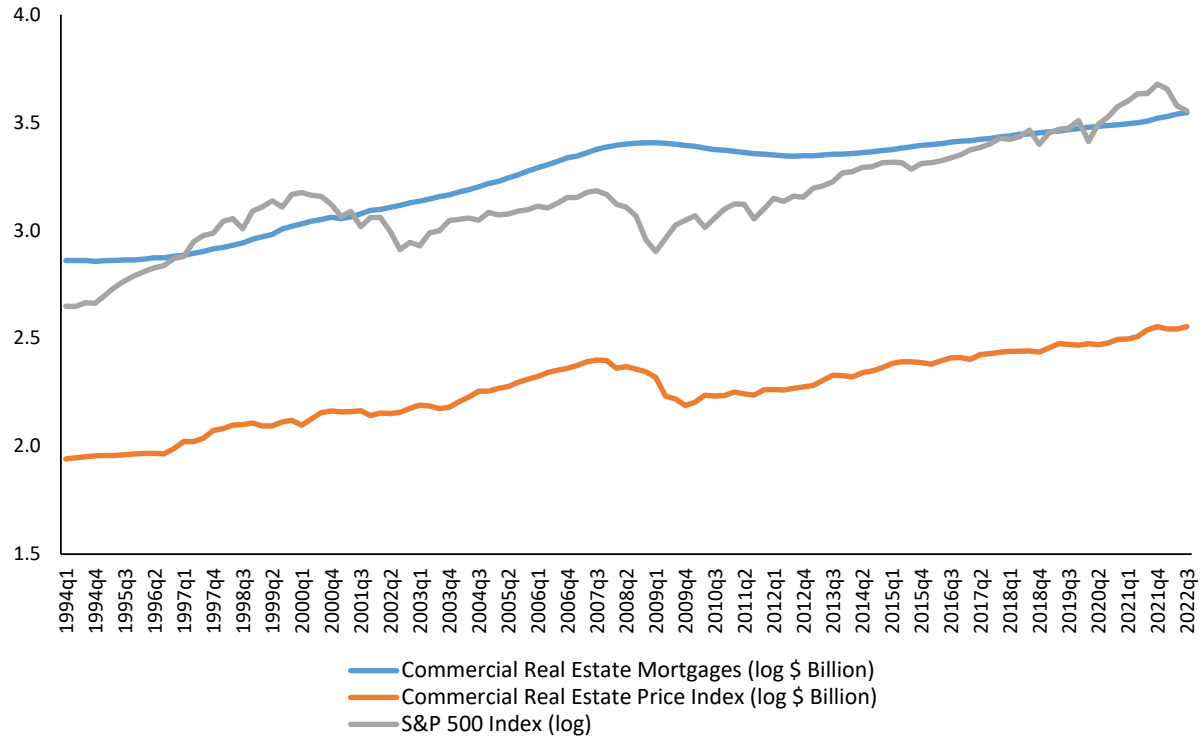


Figure 14: **Loan Charge-off Rates**

This figure plots the quarterly charge-off rates for 1-4 family residential real estate loans, multifamily commercial real estate loans, commercial real estate loans excl. multifamily, business (commercial and industrial) loans, real estate construction and development loans, and home equity loans. Data is from the Federal Deposit Insurance Corporate (FDIC) Quarterly Banking Profile and includes all FDIC-insured institutions. The sample period is from 1994q1-2020q4.

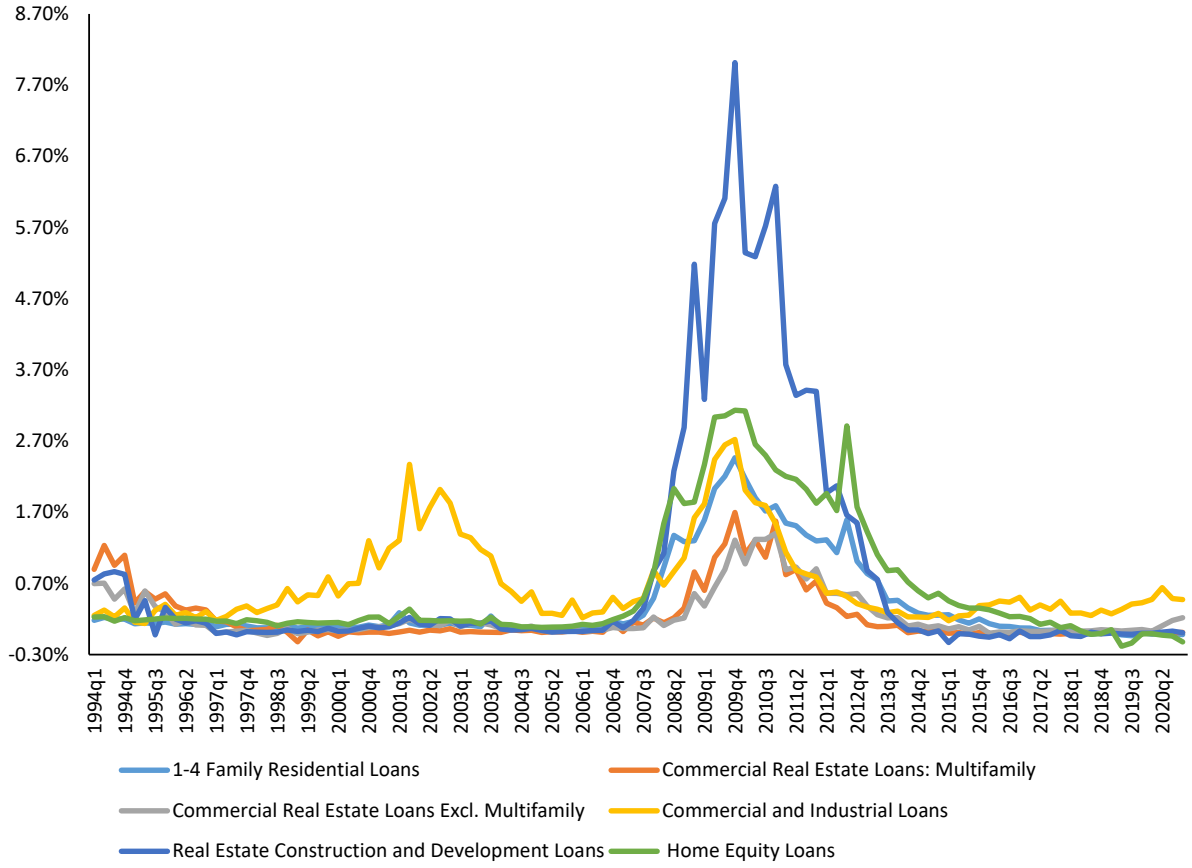


Figure 15: **Bankruptcies and Exits**

This figure, Panel A, reports the number of bankruptcies for tax-exempt real estate leasing companies (RELCs), mortgage REITs, non-financial firms (all public firms, excluding firms with SIC codes 6000-6999), and financial firms excluding RELCs. The 7 mortgage REIT bankruptcies (1 in 1998, 3 in 2007, 1 in 2008, 1 in 2009, and 1 in 2010) involves entities specializing in residential/multi-family mortgages exclusive or in combination with other commercial real estate mortgages. Panel B reports the number of RELCs exiting the sample (left y-axis) and the number of RELCs exiting the sample in a given year as a percentage of the total RELCs at the end of the previous year (right y-axis). In 2007q1-q2 there were 11 exits, while in 2007q3-q4 there was 1 exit. Bankruptcy data is from the UCLA-LoPucki Bankruptcy Research Database, which includes public firms with $100 million in assets. Data on exits is from S&P Global Market Intelligence SNL Real Estate. The sample period is from 1994-2020.

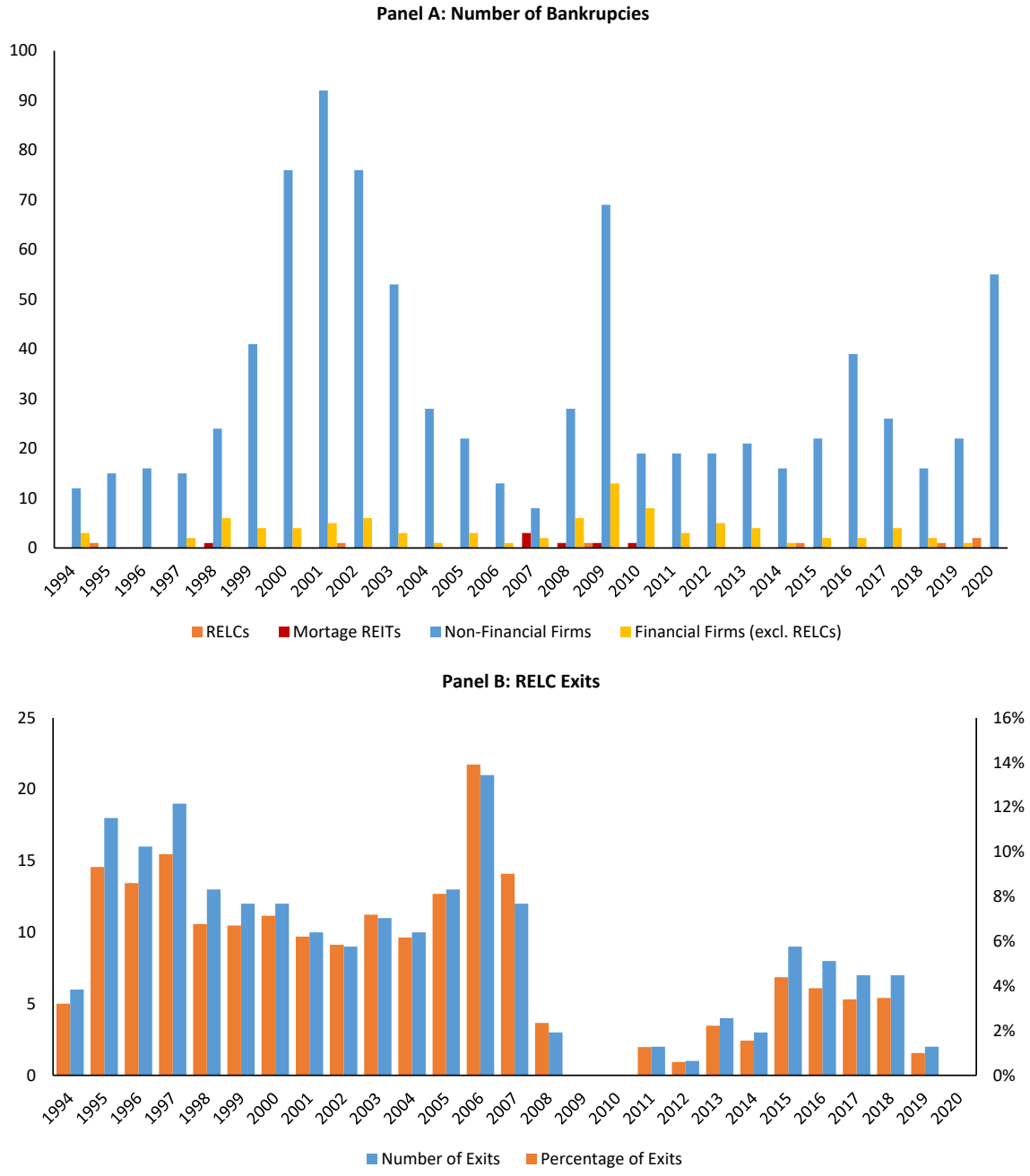
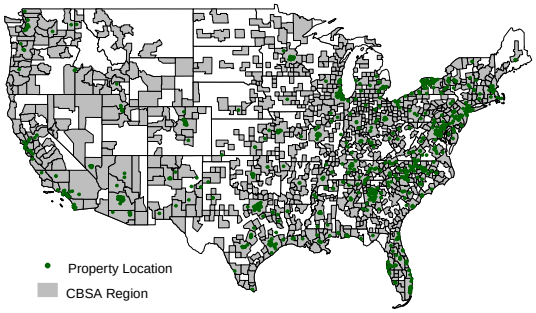
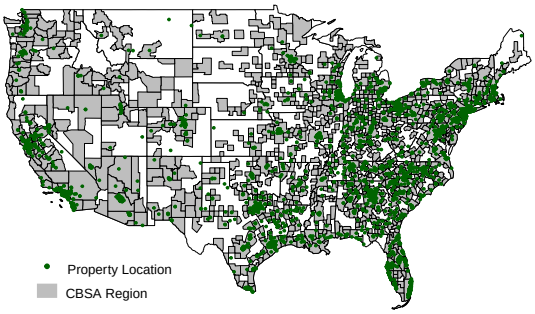


Figure 16: **Geocoded Property-Level Acquisitions**

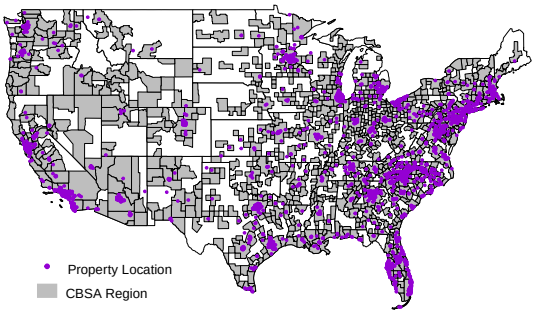
This figure displays the geographical locations across U.S. CBSA of the properties by our the firms in our sample during our 2001q3 – 2007q2. Panels A and B show property acquisitions by the treated RELCs in the pre-event (983 properties) and the post-event (2,995 properties) period, respectively. Panel C and D show property acquisitions by the control RELCs in the pre-event (3,642 properties) and post-event (5,399 properties) period, respectively. Each dot represents a property location. Geocoded property-level data is from SNL Property Transactions.



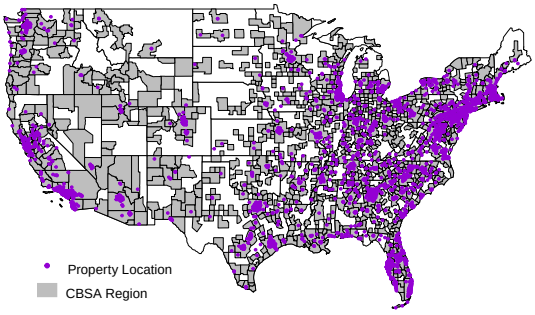
(a) Treated-Firm Acquisitions: Pre-event



(b) Treated-Firm Acquisitions: Post-event



(c) Control-Firm Acquisitions: Pre-event



(d) Control-Firm Acquisitions: Post-event

Appendix to
Hedging, Access to Credit, and Investment

Erasmo Giambona Anil Kumar Ricardo Lopez A.

Keywords: Regulation, Jobs Act, tax-exempt real estate leasing companies, interest rate hedging, access to credit, investment.

JEL classification: G32; G33; M41.

Giambona: Syracuse University, egiambon@syr.edu; Kumar: Aarhus University and Danish Finance Institute, email: akumar@econ.au.dk; Lopez: Syracuse University, rlopezal@syr.edu. We are grateful for comments and suggestions from seminar participants at Indiana University, SKEMA Business School, University of Amsterdam, and University of Connecticut. We are also thankful to Scott Helberg of RSM US LLP, Dara Bernstein, Tony Edwards, and John Worth of NAREIT, Rob Barton and Chase Schmitt of Chatham Financial, and Eric Matuszak of Ernst & Young for extensive comments and discussions on the treatment of hedging transactions for tax-exempt real estate leasing companies.

Table A1: **Key Variables.** This table provides detailed definitions of the key variables used in this article.

Variable	**Definition**
Weighted Average Interest Rate	The weighted average interest rate on all variable and fixed rate debt accounting for hedging (SNL key field 134201).
Exit Propensity	A dummy variable equal to one in the quarter in which the firm exits the sample due to M&A activities or bankruptcy, and zero otherwise.
Hedged Variable Rate Debt /Total Debt	The ratio of the sum of variable rate debt swapped for fixed-rate debt (SNL key field 134195) plus variable rate debt subject to interest-rate cap agreements (SNL key field 134180) to total debt (SNL key field 134203).
Hedged Variable Rate Debt /Total Variable Rate Debt	The ratio of the sum of variable rate debt swapped for fixed-rate debt (SNL key field 134195) plus variable rate debt subject to interest-rate cap agreements (SNL key field 134180) to total variable debt (SNL key fields 134188 + 134195).
Swapped Fixed Rate Debt /Total Debt	The ratio of fixed rate debt swapped to variable rate debt (SNL key field 134194) to total debt.
Swapped Fixed Rate Debt /Total Fixed Rate Debt	The ratio of fixed rate debt swapped to variable rate debt (SNL key field 134194) to total fixed rate debt (SNL key field 134192).
Variable Rate Debt /Total Debt	The ratio of total variable debt (SNL key fields 134188 + 134195) to total debt.
Long-Term Debt /Total Debt	The ratio of the sum of debt maturing during next year and the years after next year (SNL key fields 134284 + 134286 + 134288 + 134290 + 134292) to total debt.
Interest Rate Volatility	Standard deviation of the weighted average interest rate on all variable and fixed rate debt accounting for hedging (SNL key field 134201) based on the past four quarters with a minimum of three quarterly observations for the estimation. Pre-reform standard deviation is estimated in the sample 2000q3-2004q2 which yields pre-reform standard deviation observations from 2001q3-2004q2. Post-reform standard deviation is estimated in the sample 2004q3-2007q2, and thus due to the four quarters requirement yields post-reform standard deviation observations from 2005q3-2007q2.
Debt Change	The ratio of the change in total debt to lagged total assets (SNL key field 131929).
Real Estate Investments	The ratio of the change in real estate assets (SNL key field 132112) to lagged total assets.
Tax Provision/ Revenue	The ratio of the total income tax provision (SNL key field 132721) to total revenue (SNL key field 141780).
Real Estate Revenue	The ratio of sum of rental revenue (SNL key field 132520) plus operating real estate revenue (SNL key field 132526) to total revenue (SNL key field 141780).
Pre-event Low Real Estate Revenue	An indicator for companies with real estate revenue below the sample 25^{th} percentile in the year before the passage of the American Jobs Creation Act (2003q3-2004q2).
Post Jobs Act	An indicator equals to one in the quarter of the passage of the Jobs Act (2004q3) and the following quarters, and zero otherwise.
Total Operating Revenue	The ratio of the sum of rental revenue (SNL key field 132520) plus operating real estate revenue (SNL key field 132526) plus mortgage income (SNL key field 132537) plus gains on sales of real estate (SNL key field 132714) to total revenue (SNL key field 141780).

Table A1 continued.

Variable	Definition
Pre-event Low Total Operating Revenue	An indicator for companies with total operating revenue below the sample 25^{th} percentile in the year before the passage of the American Jobs Creation Act (2003q3-2004q2).
Real Estate & Cash Holdings	The ratio of the sum of real estate assets (SNL key field 132112) plus cash and cash equivalents (SNL key field 132167) to total assets.
Pre-event Low Real Estate & Cash Holdings	An indicator for companies with real estate & cash holdings below the sample 25^{th} percentile in the year before the passage of the American Jobs Creation Act (2003q3-2004q2).
Leverage	The ratio of total debt to total assets.
Operating Profitability	The ratio of net operating income (SNL key field 132708) to total assets.
Total Profitability	The ratio of net income (SNL key field 132740) to total assets.
Earnings Volatility	The ratio of the standard deviation of net income using 12 quarters of past consecutive observations to the average assets estimated over the same period.
Log Assets	The natural logarithm of total assets (SNL key field 131929).
Lease Maturity $\leq$ 1 Yr.	The ratio of the dollar amount of leases maturing within 1 year from the current year (SNL key field 134376) to the sum of dollar amount of all leases maturing within 1 year until year 6+ (SNL key fields 134376+134377+134378+134379, 134380+134381).
Lease Maturity $\geq$ 2 & $\leq$ 5 Yr.	The ratio of the dollar amount of leases maturing between 2 to 5 years from the current year (SNL key field 134377+134378+134379+134380) to the sum of dollar amount of all leases maturing within 1 year until year 6+.
Lease Maturity $\geq$ 6+ Yr.	The ratio of the dollar amount of leases maturing from year 6 onward from the current year (SNL key field 134381) to the sum of dollar amount of all leases maturing within 1 year until year 6+.
Early Debt Payoff / Lagged Assets	The ratio of long-term debt reduction (Compustat item DLTR) minus lagged long-term debt due in one year (Compustat items DD1) to lagged total assets (Compustat item AT).
Mortgages / Lagged Assets	The ratio of a property's 1st encumbrance (SNL key field 225557) for mortgage type (SNL key field 226663) to lagged total assets. Property-level data is from SNL Property Transactions.
Log of Years to Maturity	The natural logarithm of a property's 1st encumbrance days to maturity (SNL key field 225561) for mortgage type (SNL key field 226663) annualized. Property-level data is from SNL Property Transactions.
Property Investment / Lagged Assets	The ratio of a property's initial costs (SNL key field 221778) to lagged total assets. Property-level data is from SNL Property Transactions.
Initial Improvements /Lagged Assets	The ratio of a property's initial improvement costs (SNL key field 221777) to lagged total assets. Property-level data is from SNL Property Transactions.
Subsequent Improvements /Lagged Assets	The ratio of a property's subsequent improvement costs (SNL key field 221780) to lagged total assets. Property-level data is from SNL Property Transactions.
Building Class	A dummy variable equal to one if the property's building class (SNL key field 220586) equals A, and zero otherwise. Property-level data is from SNL Property Transactions.
Occupancy Rate	A property's occupancy rate (SNL key field 221759). Property-level data is from SNL Property Transactions.

Table A1 continued.

Variable	Definition
Property Type Diversification	A dummy variable equal to one if an acquired property's property type (SNL key field 225476) in year n is not among the top three property types among all properties held by a firm in year $n-1$, zero otherwise. Property-level data is from SNL Property Transactions.
Geographic Diversification	A dummy variable equal to one if an acquired property's Metropolitan Statistical Area (SNL key field 220581; MSA) in year n is not among the top three MSAs among all properties held by a firm in year $n-1$, zero otherwise. Property-level data is from SNL Property Transactions.

Table A2: **Descriptive Statistics.** This table reports descriptive statistics for the real estate leasing companies in our sample over the period 2001q3 - 2007q2. Refer to Table A1 for detailed variable definitions. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions for the period 2002 - 2007.

Panel A - Pre-event Low Real Estate Revenue: Yes

Variables	Mean	St. Dev.	Min.	25th PCTLE	Median	75th PCTLE	Max.	Obs.
Weighted Average Interest Rate	5.968	0.835	3.800	5.610	5.950	6.380	10.000	275
Exit Propensity	0.012	0.111	0.000	0.000	0.000	0.000	1.000	804
Hedged Variable Rate Debt/Total Debt	0.049	0.126	0.000	0.000	0.000	0.004	0.626	694
Hedged Variable Rate Debt/Total Variable Rate Debt	0.125	0.245	0.000	0.000	0.000	0.115	1.000	569
Swapped Fixed Rate Debt/Total Debt	0.003	0.008	0.000	0.000	0.000	0.000	0.026	721
Swapped Fixed Rate Debt/Total Fixed Rate Debt	0.005	0.013	0.000	0.000	0.000	0.000	0.038	595
Variable Rate Debt/Total Debt	0.299	0.304	0.000	0.076	0.204	0.441	1.000	714
Long-Term Debt/Total Debt	0.885	0.284	0.185	0.801	0.949	1.003	1.504	419
Interest Rate Volatility	0.199	0.248	0.000	0.074	0.130	0.241	2.454	139
Debt Change	0.024	0.072	-0.091	-0.008	0.000	0.037	0.243	799
Real Estate Investments	0.033	0.084	-0.069	-0.006	0.000	0.035	0.370	799
Tax Provision/Revenue	0.002	0.010	-0.026	0.000	0.000	0.000	0.032	768
Real Estate Revenue	0.772	0.188	0.284	0.712	0.835	0.895	1.011	786
Total Operating Revenue	0.823	0.145	0.504	0.766	0.871	0.925	1.014	786
Real Estate & Cash Holdings	0.687	0.224	0.095	0.574	0.743	0.858	0.989	804
Leverage	0.429	0.206	0.000	0.302	0.459	0.566	0.831	804
Assets ($B)	2.199	3.866	0.000	0.148	0.663	2.590	23.744	804
Operating Profitability	0.019	0.008	0.001	0.014	0.020	0.023	0.040	794
Total Profitability	0.010	0.011	-0.020	0.004	0.010	0.017	0.034	801
Earnings Volatility	0.010	0.012	0.001	0.003	0.005	0.012	0.044	791
Early Debt Payoff/Lagged Assets	0.099	0.147	-0.051	0.002	0.045	0.143	0.558	158
Mortgages/Lagged Assets	0.018	0.027	<0.001	0.001	0.004	0.025	0.091	979
Mortgages Years to Maturity	7.569	4.220	1.025	4.000	7.002	10.586	30.515	558
Property Investment/Lagged Assets	0.006	0.016	<0.001	0.001	0.001	0.003	0.088	2,853
Initial Improvements/Lagged Assets	0.005	0.013	0.000	<0.001	0.001	0.003	0.073	2,855
Subsequent Improvements/Lagged Assets	0.002	0.006	<0.001	<0.001	<0.001	0.001	0.130	7,646
Building Class	0.960	0.198	0.000	1.000	1.000	1.000	1.000	148
Occupancy Rate	0.926	0.158	0.000	0.922	0.988	1.000	1.000	11,104
Property Type Diversification	0.519	0.500	0.000	0.000	1.000	1.000	1.000	4,482
Geographic Diversification	0.858	0.349	0.000	1.000	1.000	1.000	1.000	4,378

Panel B - Pre-event Low Real Estate Revenue: No

Variables	Mean	St. Dev.	Min.	25th PCTLE	Median	75th PCTLE	Max.	Obs.
Weighted Average Interest Rate	6.253	0.827	2.600	5.710	6.200	6.780	9.340	1,690
Exit Propensity	0.018	0.132	0.000	0.000	0.000	0.000	1.000	2,316
Hedged Variable Rate Debt/Total Debt	0.062	0.117	0.000	0.000	0.000	0.080	0.626	2,216
Hedged Variable Rate Debt/Total Variable Rate Debt	0.190	0.278	0.000	0.000	0.000	0.364	1.000	2,046
Swapped Fixed Rate Debt/Total Debt	0.002	0.007	0.000	0.000	0.000	0.000	0.026	2,228
Swapped Fixed Rate Debt/Total Fixed Rate Debt	0.003	0.010	0.000	0.000	0.000	0.000	0.038	2,191
Variable Rate Debt/Total Debt	0.252	0.200	0.000	0.116	0.219	0.328	1.000	2,294
Long-Term Debt/Total Debt	0.965	0.212	0.185	0.849	0.981	1.072	1.504	1,390
Interest Rate Volatility	0.182	0.188	0.000	0.078	0.134	0.222	2.570	991
Debt Change	0.019	0.056	-0.091	-0.005	0.007	0.030	0.243	2,302
Real Estate Investments	0.028	0.075	-0.069	-0.006	0.006	0.035	0.370	2,300
Tax Provision/Revenue	0.001	0.007	-0.026	0.000	0.000	0.000	0.032	2,106
Real Estate Revenue	0.966	0.043	0.491	0.952	0.978	0.994	1.011	2,298
Total Operating Revenue	0.969	0.041	0.504	0.958	0.982	0.995	1.014	2,298
Real Estate & Cash Holdings	0.869	0.089	0.095	0.833	0.886	0.931	0.989	2,316
Leverage	0.529	0.162	0.000	0.462	0.533	0.626	0.831	2,316
Assets ($B)	2.670	3.408	0.011	0.762	1.513	3.153	26.270	2,316
Operating Profitability	0.025	0.007	0.001	0.021	0.024	0.028	0.044	2,295
Total Profitability	0.007	0.009	-0.020	0.003	0.007	0.011	0.034	2,310
Earnings Volatility	0.007	0.007	0.001	0.002	0.004	0.008	0.044	2,284
Early Debt Payoff/Lagged Assets	0.127	0.137	-0.051	0.020	0.085	0.192	0.558	485
Mortgages/Lagged Assets	0.016	0.023	<0.001	0.002	0.006	0.018	0.091	2,253
Mortgages Years to Maturity	8.053	4.576	0.493	5.333	7.767	10.363	39.860	1,004
Property Investment/Lagged Assets	0.0117	0.019	<0.001	0.001	0.004	0.012	0.088	6,021
Initial Improvements/Lagged Assets	0.009	0.016	0.000	0.001	0.003	0.010	0.073	6,025
Subsequent Improvements/Lagged Assets	0.001	0.009	<0.001	<0.001	<0.001	0.001	0.883	54,814
Building Class	0.960	0.196	0.000	1.000	1.000	1.000	1.000	624
Occupancy Rate	0.914	0.146	0.000	0.900	0.967	1.000	1.000	34,223
Property Type Diversification	0.636	0.481	0.000	0.000	1.000	1.000	1.000	8,663
Geographic Diversification	0.778	0.416	0.000	1.000	1.000	1.000	1.000	8,541

Table A2 continued.

Panel C - Combined Sample

Variables	Mean	St. Dev.	Min.	25th PCTLE	Median	75th PCTLE	Max.	Obs.
Weighted Average Interest Rate	6.213	0.834	2.600	5.700	6.130	6.700	10.000	1,965
Exit Propensity	0.016	0.127	0.000	0.000	0.000	0.000	1.000	3,120
Hedged Variable Rate Debt/Total Debt	0.059	0.119	0.000	0.000	0.000	0.067	0.626	2,910
Hedged Variable Rate Debt/Total Variable Rate Debt	0.176	0.272	0.000	0.000	0.000	0.332	1.000	2,615
Swapped Fixed Rate Debt/Total Debt	0.002	0.007	0.000	0.000	0.000	0.000	0.026	2,949
Swapped Fixed Rate Debt/Total Fixed Rate Debt	0.003	0.011	0.000	0.000	0.000	0.000	0.038	2,786
Variable Rate Debt/Total Debt	0.263	0.229	0.000	0.108	0.216	0.344	1.000	3,008
Long-Term Debt/Total Debt	0.947	0.233	0.185	0.840	0.972	1.062	1.504	1,809
Interest Rate Volatility	0.184	0.196	0.000	0.077	0.133	0.223	2.570	1,130
Debt Change	0.020	0.061	-0.091	-0.005	0.006	0.031	0.243	3,101
Real Estate Investments	0.029	0.078	-0.069	-0.006	0.004	0.035	0.370	3,099
Tax Provision/Revenue	0.001	0.008	-0.026	0.000	0.000	0.000	0.032	2,874
Real Estate Revenue	0.916	0.132	0.284	0.905	0.963	0.991	1.011	3,084
Total Operating Revenue	0.932	0.103	0.504	0.921	0.970	0.992	1.014	3,084
Real Estate & Cash Holdings	0.822	0.159	0.095	0.780	0.868	0.922	0.989	3,120
Leverage	0.503	0.179	0.000	0.435	0.516	0.616	0.831	3,120
Assets ($ billion)	2.549	3.537	0.000	0.573	1.362	2.942	26.270	3,120
Operating Profitability	0.023	0.008	0.001	0.019	0.023	0.027	0.044	3,089
Total Profitability	0.008	0.010	-0.020	0.003	0.008	0.012	0.034	3,111
Earnings Volatility	0.007	0.009	0.001	0.002	0.004	0.009	0.044	3,075
Early Debt Payoff/Lagged Assets	0.120	0.140	-0.051	0.013	0.076	0.183	0.558	643
Mortgages/Lagged Assets	0.016	0.025	<0.001	0.002	0.005	0.021	0.091	3,232
Mortgages Years to Maturity	7.880	4.456	0.493	4.918	7.669	10.419	39.860	1,562
Property Investment /Lagged Assets	0.010	0.018	<0.001	0.001	0.003	0.009	0.088	8,874
Initial Improvements/Lagged Assets	0.008	0.015	0.000	<0.001	0.002	0.007	0.073	8,880
Subsequent Improvements/Lagged Assets	0.001	0.008	<0.001	<0.001	<0.001	0.001	0.883	62,460
Building Class	0.960	0.197	0.000	1.000	1.000	1.000	1.000	772
Occupancy Rate	0.917	0.149	0.000	0.906	0.970	1.000	1.000	45,327
Property Type Diversification	0.596	0.491	0.000	0.000	1.000	1.000	1.000	13,145
Geographic Diversification	0.805	0.396	0.000	1.000	1.000	1.000	1.000	12,919

Table A3: **Correlations.** This table reports selected correlations. The sample includes real estate leasing companies in 2004q2. Refer to Table A1 for detailed variable definitions. Data is from S&P Global Market Intelligence SNL Real Estate. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	Real Estate Revenue	Operating Profitability	Total Profitability	Assets ($B)
Operating Profitability	0.565***			
Total Profitability	-0.098	0.274***		
Assets ($B)	0.125	-0.003	-0.080	
Leverage	0.405***	0.278***	-0.327***	0.192**

Table A4: **Hedging for Low Rental Revenue Firms after the Jobs Act: Commercial Real Estate Price and Mortgage Ratio Controls.** This table presents estimations from hedging regressions. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1]-[2]) and the ratio of hedged variable rate debt to total variable rate debt (columns [3]-[4]). Pre-event Low Real Estate Revenue is an indicator for companies with real estate revenue below the sample 25^{th} percentile in the year (2003q3-2004q2) before the passage of the Jobs Act. Post Jobs Act is an indicator equals to one in the quarter of the passage of the American Jobs Creation Act (2004q3) and the following quarters, and zero otherwise. Lagged CRE Price (Mortgage) Ratio is the lagged percentage change in the Commercial Real Estate (CRE) Price Index (Mortgage Value). The percentage change in the Commercial Real Estate (CRE) Price Index (Mortgage Value) is calculated as the difference between the CRE Price Index (Mortgage Value) at time t and $t-1$ divided by the time $t-1$ CRE Price Index (Mortgage Value). Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Data is from S&P Global Market Intelligence SNL Real Estate. Data on CRE Price Index and CRE Mortgage Value (total value of all commercial mortgages) is from the Federal Reserve Economic Data (FRED) database. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt		Hedged Variable Rate Debt/ Total Variable Rate Debt	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.066**	0.067**	0.105**	0.094*
	(0.026)	(0.026)	(0.050)	(0.054)
Pre-event Low Real Estate Revenue × Lagged CRE Price Ratio	0.002		0.001	
	(0.002)		(0.003)	
Pre-event Low Real Estate Revenue × Lagged CRE Mortgage Ratio		0.006**		0.016**
		(0.002)		(0.007)
Lagged Log Assets	0.001	0.001	0.023	0.023
	(0.011)	(0.011)	(0.031)	(0.031)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,893	2,893	2,601	2,601
Number of Firms	149	149	148	148
Adjusted - R2	0.617	0.617	0.596	0.596

Table A5: **Hedging for Low Rental Revenue Firms after the Jobs Act: Firms with a Minimum Number of Observations Pre- and Post-Act.** This table presents estimations from hedging regressions requiring that firms have a certain number of observations pre- and post-reform. The dependent variables are the ratio of hedged variable rate debt to total debt (columns [1] and [3]) and the ratio of hedged variable rate debt to total variable rate debt (columns [2] and [4]). Refer to Table A1 for detailed variable definitions. The sample in columns [1]-[2] ([3]-[4]) includes real estate leasing companies over the period 2001q3 - 2007q2 that have at least 4 (12) quarterly observations of lagged log assets and hedged variable rate debt during both the pre-reform (2001q3-2004q2) and post-reform (2004q3-2007q2) periods. Data is from S&P Global Market Intelligence SNL Real Estate. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variables:	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt	Hedged Variable Rate Debt/ Total Debt	Hedged Variable Rate Debt/ Total Variable Rate Debt
	Minimun 4 quarters		Minimun 12 quarters	
	[1]	[2]	[3]	[4]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.078***	0.111**	0.087**	0.122*
	(0.028)	(0.054)	(0.033)	(0.064)
Lagged Log Assets	-0.005	0.004	-0.038	-0.098
	(0.014)	(0.045)	(0.028)	(0.059)
Property Type × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed	Absorbed	Absorbed
Observations	2,485	2,255	1,454	1,283
Number of Firms	114	114	61	61
Adjusted - R^2	0.610	0.597	0.678	0.707

Table A6: **Other Hedging for Non-Affected Non-Financial Firms: Additional Placebo Tests.** This table presents estimations from hedging regressions for a sample of non-financial firms. The dependent variables are indicators for commodity hedging (columns [1], [3], [5] and [7]), and currency hedging (columns [2], [4], [6] and [8]). Hedging data using keywords is parsed from annual reports, items 7A and 8. Pre-event Low Operating Revenue is an indicator for companies with the ratio of sales minus extraordinary revenue (COMPUSTAT Items sale - xido) to sales below the sample 25^{th} percentile in fiscal year 2003 (columns [1]-[2]), fiscal year 1999 (columns [3]-[4]), fiscal year 2009 (columns [5]-[6]), and fiscal year 2012 (columns [7]-[8]). Post-2003 is an indicator equal to one in the fiscal year of the passage of the American Jobs Creation Act (2004) and the following years, and zero otherwise. Post-1998 is an indicator equal to one in the fiscal year of the passage of the placebo act (1999) and the following years, and zero otherwise. We follow a similar logic for Post-2009 and Post-2012. Refer to Table A1 for detailed variable definitions. The sample includes all U.S. firms in COMPUSTAT except financial firms (SIC 6000-6999) over the period 1996 - 2015. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

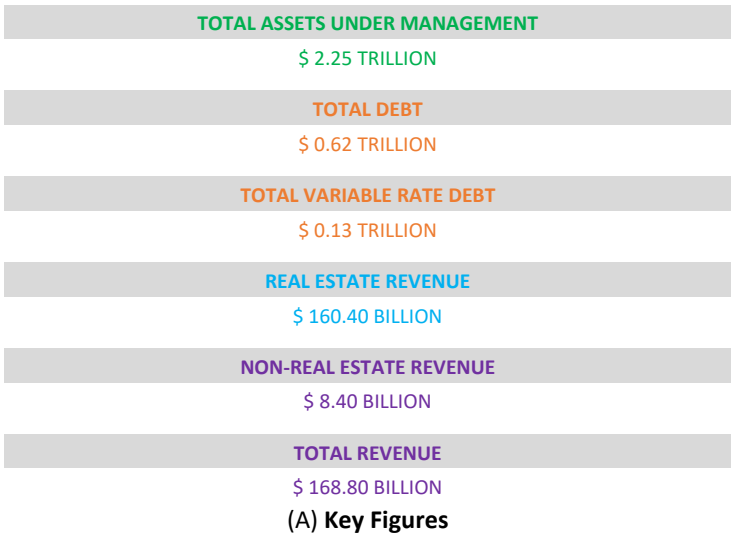
Dep. variable:	Commodity Hedging	Currency Hedging	Commodity Hedging	Currency Hedging	Commodity Hedging	Currency Hedging	Commodity Hedging	Currency Hedging
Sample Period:	2001-2006		1996-2001		2007-2012		2010-2015	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Pre-event Low Operating Revenue × Post-2003	-0.003	-0.014						
	(0.008)	(0.009)						
Pre-event Low Operating Revenue × Post-1999			0.001	-0.004				
			(0.009)	(0.011)				
Pre-event Low Operating Revenue × Post-2009					-0.002	0.004		
					(0.011)	(0.013)		
Pre-event Low Operating Revenue × Post-2013							-0.015	0.005
							(0.011)	(0.012)
Lagged Log Assets	0.005**	0.022***	0.008***	0.028***	0.010***	0.025***	0.017***	0.033***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)
SIC-4 Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,216	32,216	38,489	38,489	24,689	24,689	23,822	23,822
Number of Firms	6088	6088	7761	7761	4742	4742	4717	4717
Adjusted - R2	0.504	0.464	0.390	0.364	0.489	0.465	0.624	0.604

Table A7: **Number of Acquisitions for Low Rental Revenue Firms after the Jobs Act.** This table presents estimations from number of acquisitions regressions. The dependent variable is the natural logarithm of the firm-level number of property acquisitions. Refer to Table A1 for detailed variable definitions. The sample includes real estate leasing companies over the period 2001q3 - 2007q2. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Standard errors are clustered at the firm level, and reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dep. variable:	Log Number of Acquisitions	
	[1]	[2]
Pre-event Low Real Estate Revenue × Post Jobs Act	0.314*	0.337**
	(0.160)	(0.162)
Lagged Log Assets		-0.211**
		(0.095)
Property Type × Year-Quarter Fixed Effects	Yes	Yes
Company Fixed Effects	Yes	Yes
Pre-event Low Real Estate Revenue	Absorbed	Absorbed
Post Jobs Act	Absorbed	Absorbed
Observations	1,558	1,550
Number of Firms	125	125
Adjusted - R^2	0.333	0.333

Figure A1: **The Real Estate Leasing Industry in 2021**

Panel A presents key figures about real estate leasing companies in 2021. Panel B shows the different types of assets under management by real estate leasing companies in 2021. Data is from S&P Global Market Intelligence SNL Real Estate.



(A) **Key Figures**

(B) **Assets Under Management**

Figure A2: **Number of Regulatory Restrictions: 1970-2021**

This figure plots the number of regulatory restrictions for all U.S. industries combined (left y-axis) and the real estate industry (right y-axis), NAICS 531, over the period 1970-2021. Number of restrictions are estimated applying textual analysis to the Code of Federal Regulations and assigned to a given NAICS industry based on the probability that they will be relevant for that industry (see Al-Ubaydli and McLaughlin, 2015 for details). Data is available on the website of the Mercatus Center at George Mason University (https://www.reghub.ai/).

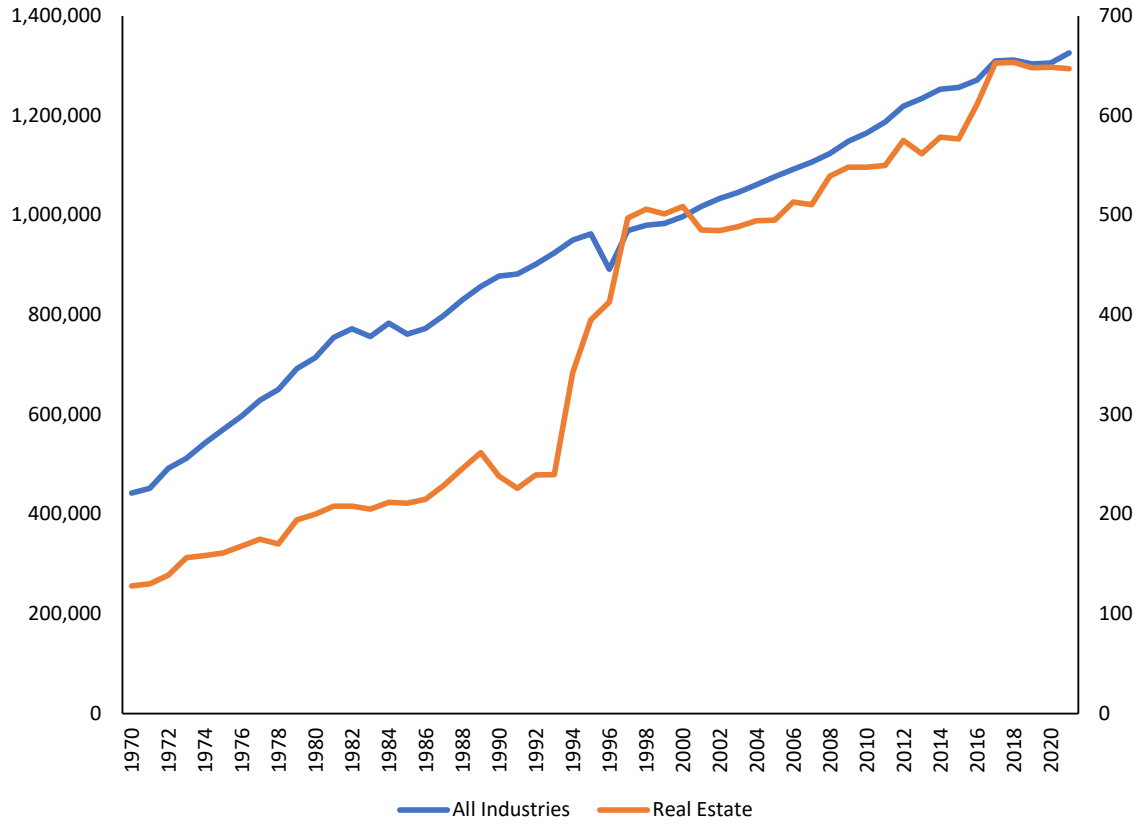
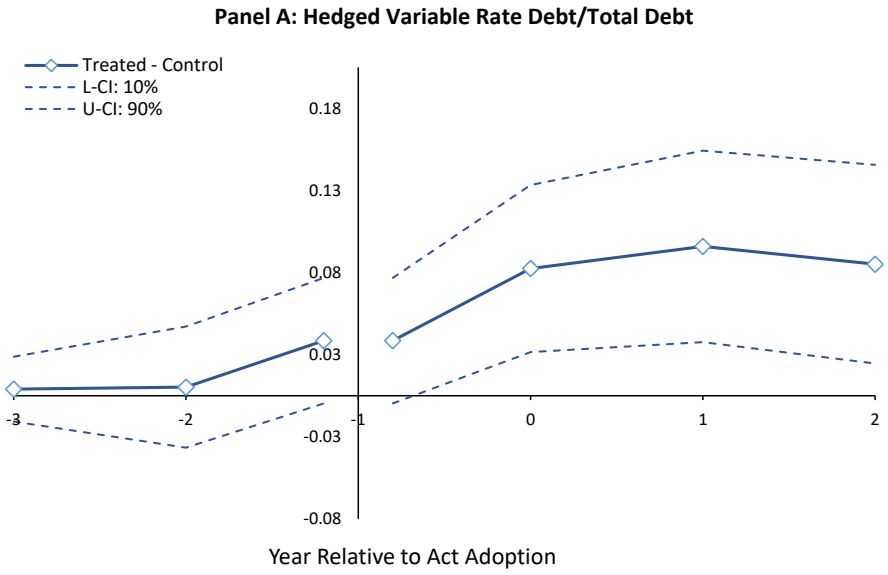


Figure A3: **Hedging for Low Rental Revenue Firms Around the Jobs Act: Using Annualized Data**

This figure reports the point estimates from annualized hedging regressions, using as dependent variables the ratio of hedged variable rate debt to total debt (Panel A) and the ratio of hedged variable rate debt to total variable rate debt (Panel B). In the regressions, the effect of Pre-event Low Real Estate Revenue is allowed to vary by year for each year starting three years prior to the Jobs Act and ending three years after the adoption. Year 0 is 2004q3 - 2005q2, the first year following the passage of the Act in 2004q3. To obtain annualized data, we calculate averages across four quarters of hedging variables and assets. For example, for year 0, we calculate averages across 2004q3 to 2005q2. The sample includes real estate leasing companies over the period 2000q3 - 2007q2, with 2000q3 - 2001q2 as the omitted year. Data is from S&P Global Market Intelligence SNL Real Estate. Ninety-nine percent confidence intervals are also plotted.



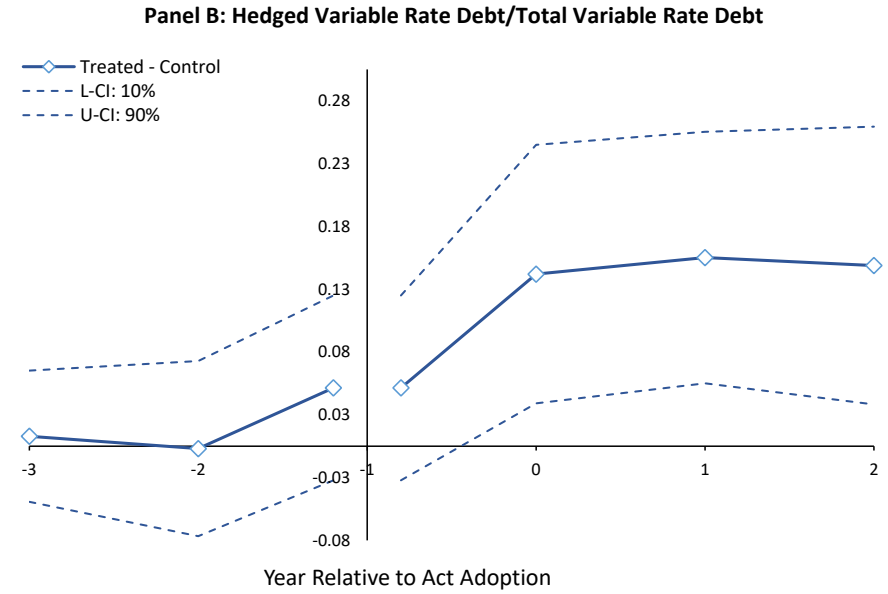


Figure A4: **Real Estate Leasing Companies Financing Patterns**

This figure plots the quarterly average leverage, hedged variable rate debt to total debt ratio, variable rate debt to total debt ratio, and hedged variable rate debt to total variable rate debt ratio for real estate leasing companies. Real estate leasing companies data is from S&P Global Market Intelligence SNL Real Estate. The sample period is from 1994q1-2020q4.

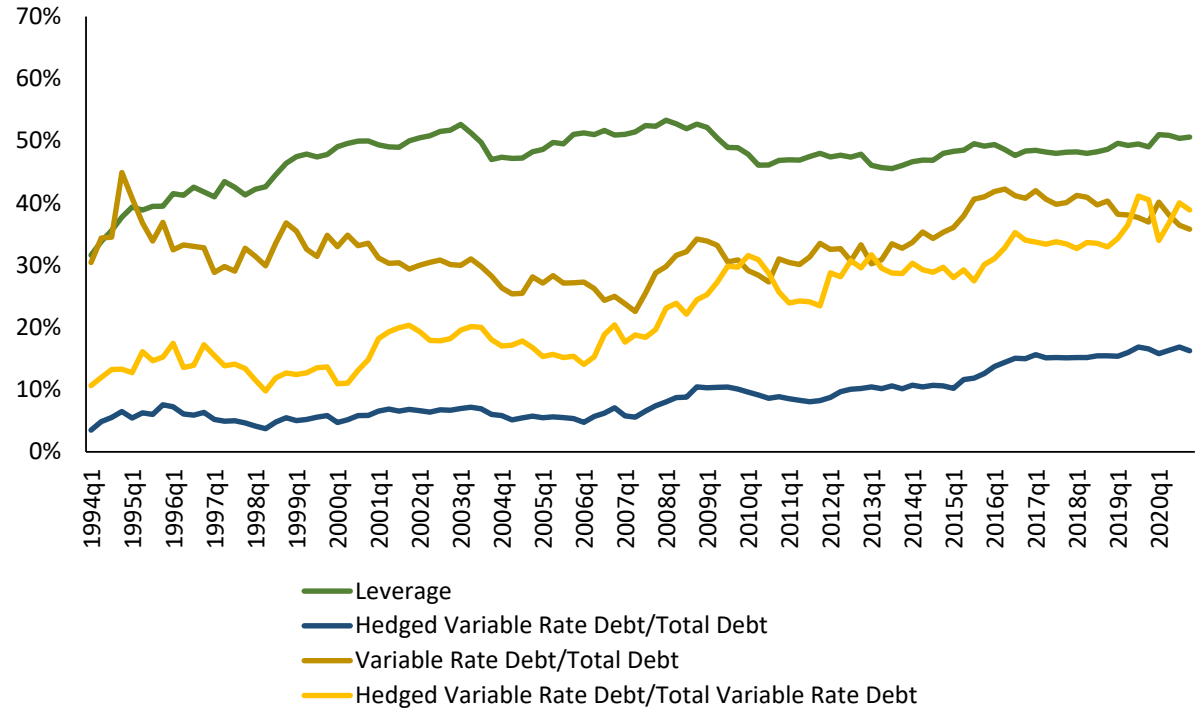
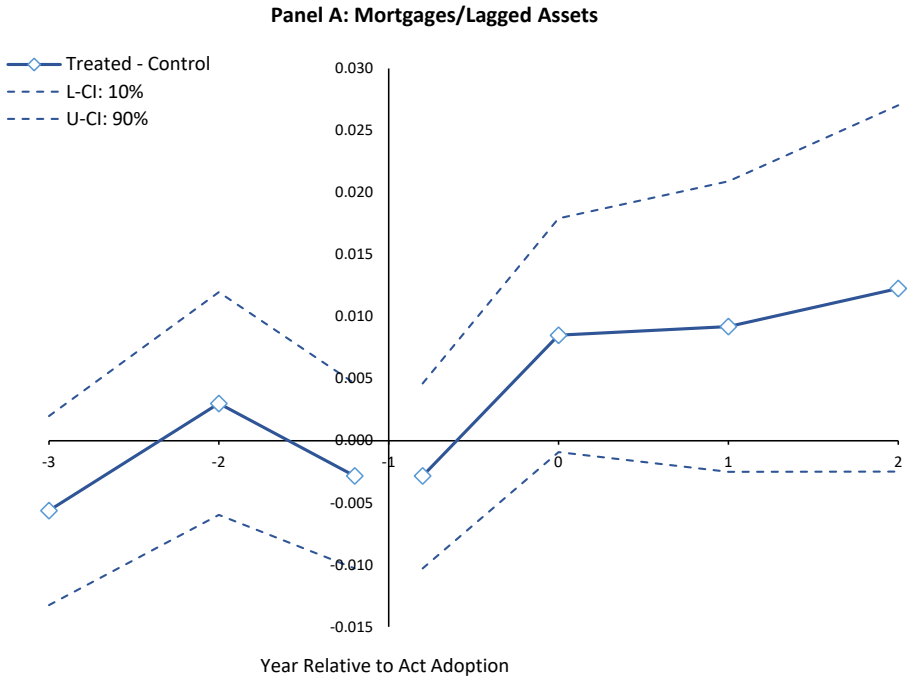


Figure A5: **Property-Level Financing for Low Rental Revenue Firms Around the Jobs Act**

This figure reports the point estimates from annualized property-level mortgage regressions, using as dependent variables the ratio of mortgages to lagged total assets (Panel A) and the natural logarithm of mortgages years to maturity (Panel B). In the regressions, the effect of Pre-event Low Real Estate Revenue is allowed to vary by year for each year starting three years prior to the Jobs Act and ending three years after the adoption. Year 0 is 2005, the first year following the passage of the Act in 2004q3. The sample includes annual property-level data for real estate leasing companies over the period 2001 - 2007, with 2001 as the omitted year. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Ninety-nine percent confidence intervals are also plotted.



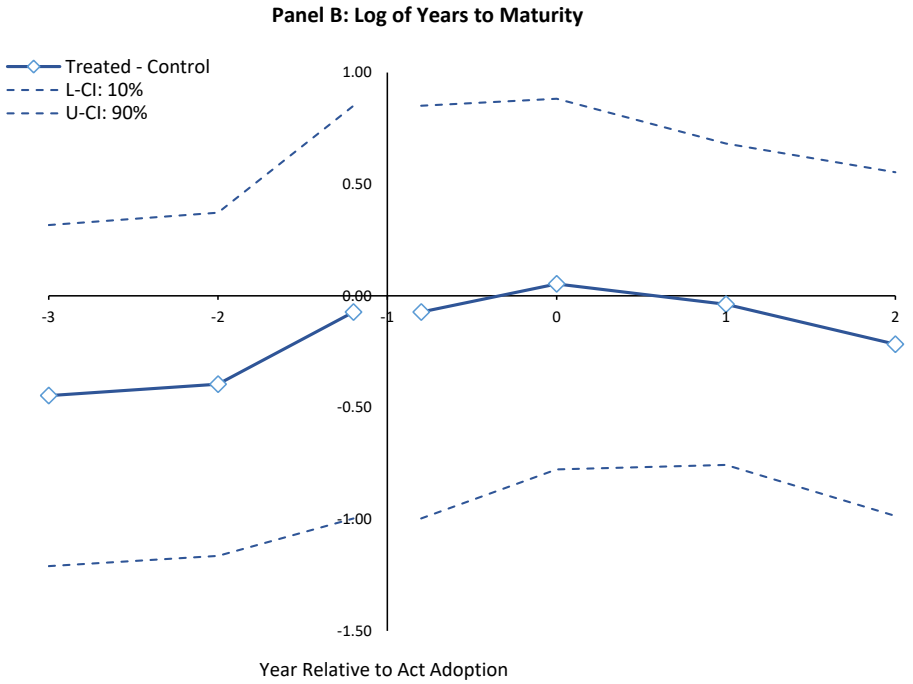
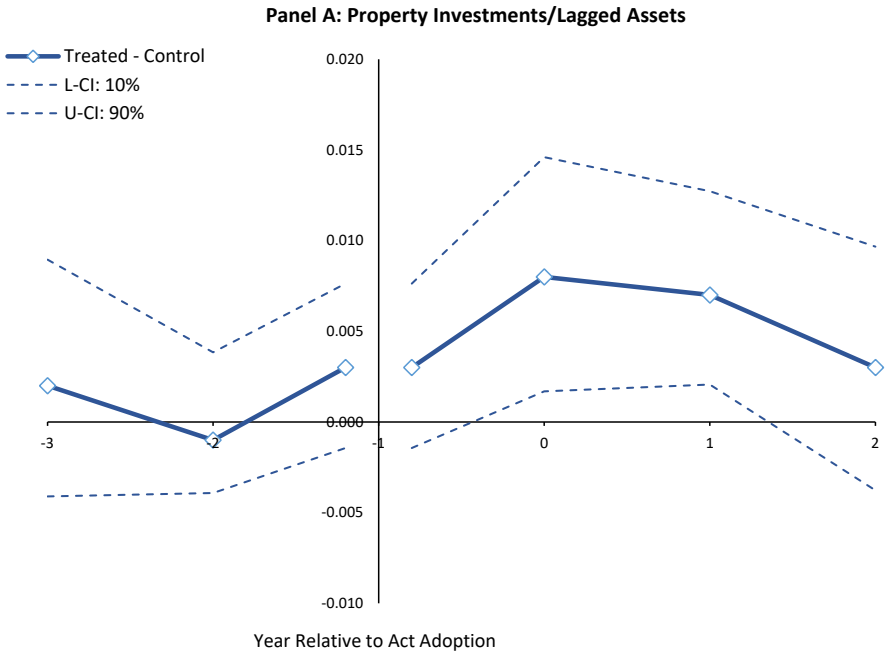


Figure A6: **Property-Level Investment for Low Rental Revenue Firms Around the Jobs Act**

This figure reports the point estimates from annualized property-level mortgage regressions, using as dependent variables the ratio of property investments to lagged total assets (Panel A), the ratio of initial improvements to lagged total assets (Panel B), the ratio of subsequent improvements to lagged total assets (Panel C), a building class dummy (Panel D), and occupancy rate (Panel E). In the regressions, the effect of Pre-event Low Real Estate Revenue is allowed to vary by year for each year starting three years prior to the Jobs Act and ending three years after the adoption. Year 0 is 2005, the first year following the passage of the Act in 2004q3. The sample includes annual property-level data for real estate leasing companies over the period 2001 - 2007, with 2001 as the omitted year. Firm-level data is from S&P Global Market Intelligence SNL Real Estate. Property-level data is from SNL Property Transactions. Ninety-nine percent confidence intervals are also plotted.



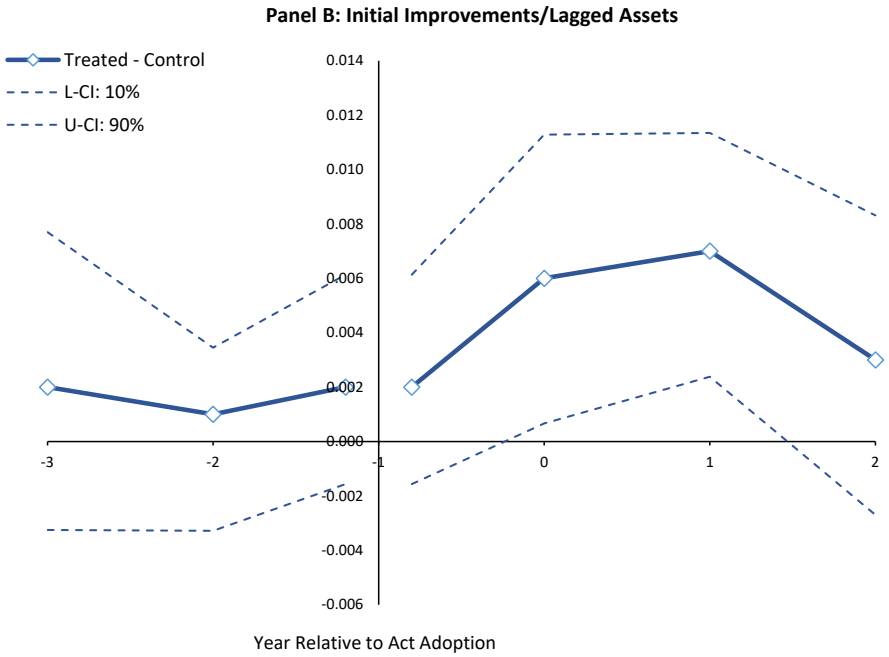
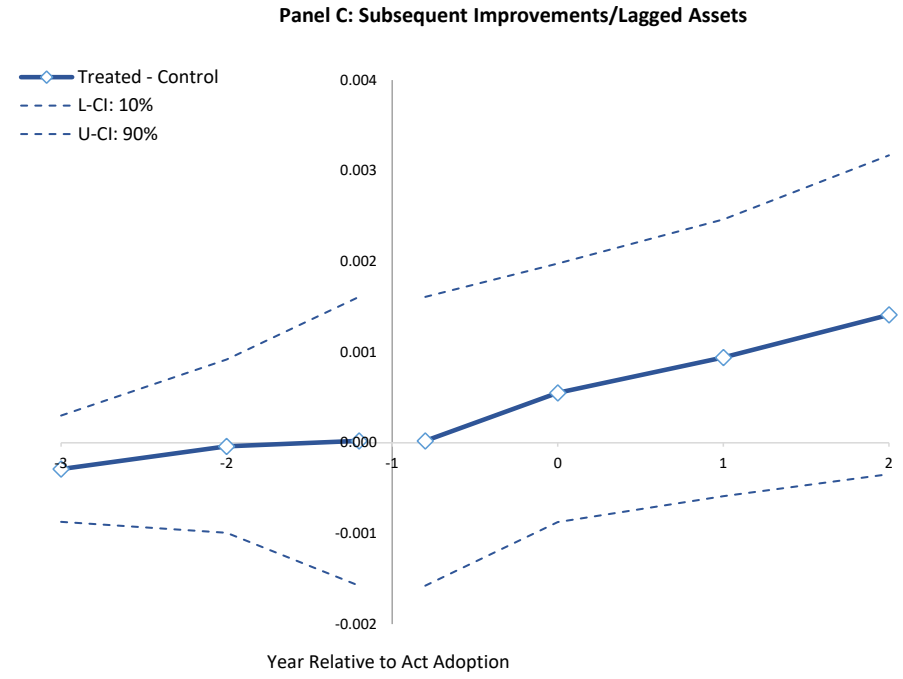


Figure A6: Property-Level Financing for Low Rental Revenue Firms Around the Jobs Act (cont.)



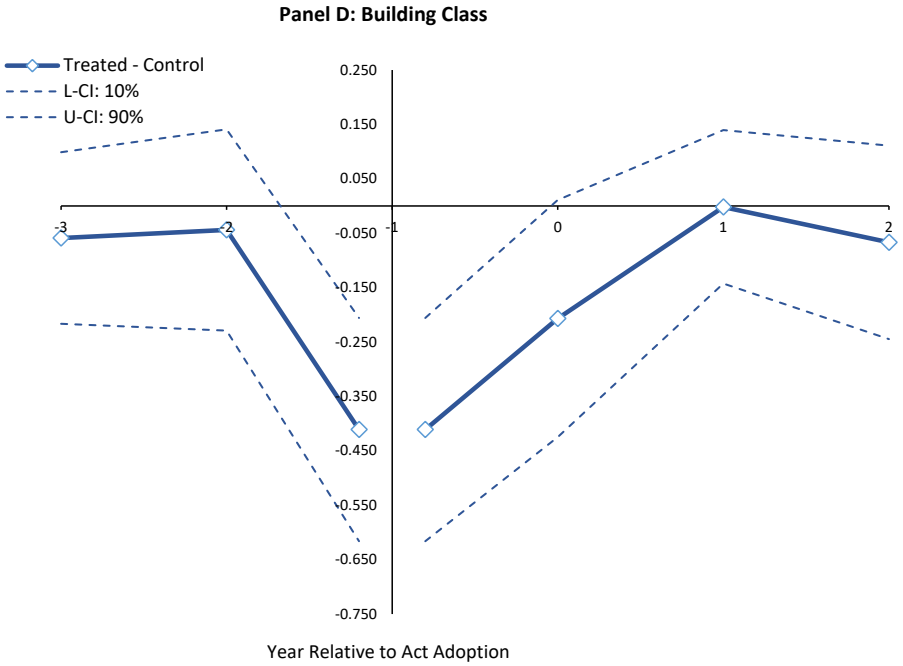


Figure A6: Property-Level Financing for Low Rental Revenue Firms Around the Jobs Act (cont.)